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STUDY OF ORGANIZATIONAL CULTURE: A CASE STUDY OF GARWARE HI-TECH FILMS LTD

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Abstract

Corporate sector is one of the important sectors of Indian Economy. The development of Indian Economy is depends on industrial sector, which is helping the development of agricultural sector also. This sector is providing employment opportunity 26.18 % to the Indian people¹. However the work performance of industrial employees is closely associated with the corporate work culture in respected establishment. So the work culture or organizational culture is defined as “The cumulative effect that leadership practices, Employees behavior, workplace amenities and organizational policies create on a worker/internal stakeholder”². In this paper it has attempted to the study of the corporate culture of industrial sector, which effect on the performance of all employees and management. However it attempted to the study of corporate culture of Garware polyester Ltd. Renamed as Garware Hi-Tech Films Ltd (GHFL)³ which is situated at Aurangabad industrial city. The GHFL Company is one of the leading manufacturers of Sun Control Films and Automotive Paint Protection Films globally.

Key Words: Culture, Governance, Corporate Sector, organization, leadership, subordinator

Introduction

Corporate culture is the working atmosphere in the company which leads to continuous improvement of performance of employees and total staff and management. So work culture is associated with the all employees have engaged in their work and duties. No one is interferer in the way of others but helps to each others. The leader who lead for team and just play the role as observer and guide to the subordinator if need, otherwise all the employees have work continuously for the better progress of organization or company. As above mentioned that, work culture is the efforts of all the workers, leaders, executives and top management which engaged in their work. That is cumulative effect that leadership practices, Employees behavior, workplace amenities and organizational policies create on a worker/internal atmosphere.”

A study of such Corporate culture which exit in Garware Hi-Tech Films Ltd (GHFL) researcher has studied as case study. A study is completed by conducted the survey, visiting in the every department of company, particularly corporate office, production department, human resource, Research & Development, stores and sales department. Few people were selected and interviewed to obtain the information for the study of Corporate culture and corporate governance, the working atmosphere in the company and explained the observation which conclude with the help of primary data in the last part of this paper.

Objective of the study.

- 1) To the study of corporate culture in the industrial sector,
- 2) To the study of corporate culture of Garware Hi-tech film ltd.
- 3) To the study of impact of corporate culture on the employees,
- 4) To the study of impact of corporate culture in the overall performance of organization

Research Methodology.

For the purpose of research of this concept, researcher has been used two types of data primary and secondary, however primary data and information has been collected from the Garware Hi-tech film ltd. This information has been collected from Top level management, middle level executives from each department and from the employees which working in the said company. Therefore secondary information has been collected from company website, from internet and from the annual reports of Garware Hi-tech film ltd.

Corporate Governance

However the corporate culture is the fundamental part of corporate governance. The meaning of corporate governance is the systems by which companies are directed and controlled, Board of directors are responsible for the governance of their companies⁴. The shareholders role in governance is to appoint the directors and the auditors and satisfy themselves the appropriate governance structure in the place. Therefore in the Garware Hi-Tech Films Ltd. has the well corporate governance which privileged system of rules, principles and process by which a firm is directed and controlled. However its governance involved the balance the interest of company's many stakeholders, senior management, executives, customers, suppliers, financiers, the government and the community⁵. Since the Garware Hi-Tech Films Ltd's corporate governance provide the framework for attaining a company's objectives, it encompasses practically every sphere of management from action plans and internal controls to performance management and corporate disclosure, through the well and sound organizational work culture.

Needs of healthy corporate culture (Observations)

The following findings have been observed in the field survey which has been conducted in the various levels of employees. In the survey various questions has been asked to the employees. The employees have been answered on their own experience and benefits which they gets from company.

These employees has been explained their views which as following. The whole life is spent working in the office, the same work, the same people, the same routine and the same everything. I (respondents) am tired due to this routine work, the same daily work and same life. What is this life? Will it work like this? I have to do this, as there is no other option, honestly I have no interest in this routine and repetitive work. I (respondents) will definitely leave this job if I will get another job. This keeps coming so many questions in the mind of many people, they mention it frequently with their friends in the office, involve others in their hopes in an emotional but futile point and friends and other colleagues also join in with this situation. Overall such an atmosphere is created in the office or departments. A work culture tends to be created that is not beneficial to the office and the employees or anyone else. The creation of such an environment means lack of work culture in the office i.e. the organizational office. Such a work culture creates a great hindrance in the development of company, between the employees working in the office environment. "Shrjanshilta" means that creativity does not emerge and if it is inherent, it also gets stunted. For the example overall, two people push a stalled car from the front and two from the back, so the car stops where it is. No one among them is trying to change such an environment. But corporate governance and work culture works here by the manager. His team leader i.e. manager boss or senior department head plays an important role in changing such apathetic environment. A department head or manager creates an environment that gradually changes the previous work culture, but this is a gradual process of creation or creation. No one among them is trying to change such an environment. The leader creates an environment that gradually changes the previous work culture, but this is a gradual process spread in the organization to start the work culture.

First of all, it is important to note that if we consider the individual level, every person is a "Karma Yogi" or obedient to tender his service. Some have to do some "Karma", that is, everyone has to do work, for example, how a farmer cultivates?, A merchant does business, the Sun rises every day, the Moon does the same work, in nature no one bothers in his work, in the same way every person is there to fulfill his duty, everyone realizes that it is his duty to do his work, the work culture begins in the true sense, the awareness that is reflected in the work, the employees are created in the people there. And develops, whatever task or challenge is faced, the employees easily accept it and become successful in their work easily, as they become accustomed to it, this is called a specific work culture. As the team leader has the duty to create work culture, it is also everyone's responsibility, overall, the environment that is created and continues to evolve is called work culture in the true sense.

In an office where every employee is conscientious in their work, no one tells anyone to do the work or does not ask anyone to do the work, in short there is no need for it. It is called work culture. The creation of such a work culture means that every person contributes to the overall development of the office and the company. In short any employee Does not feel bored, does any work easily and happily, feels like life, whatever work comes, the employee does it easily and happily, no one gives names (criticism) to anyone or no one has time to give such names (criticism), who is busy in their work or whatever. It takes practice, it is called work culture. Cultivating such a work culture in everyone leads to the development of the organization, the company, the country, but this

should happen in every area and it should start at the individual level and should be cultivated in the organization as a whole. Here individual selfishness, corruption, there is no scope for shortcuts. Above all these things are observed in the Garware Hi-Tech Films Ltd (GHFL) at almost all the department and all the employees and among the executives and top management.

In short organizational culture leads to create good and healthy atmosphere in the company which motivate the employees. The employees contribute their best service. The efficiency and activeness has improved. Overall impact of such culture leads to development of employees, development of company and lastly development of society and country.

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E-COMMERCE AND DIGITAL MARKETING: CHALLENGES AND OPPORTUNITIES

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Abstract

From the beginning, the internet has fundamentally altered our lives. Particularly in terms of how businesses keep their information and market their goods, it has a revolutionary effect on how businesses operate. Digital marketing and e-commerce have emerged as two new hot subjects that have significantly impacted a company's ability to compete. It goes without saying that the tourism industry has experienced a substantial shift in management due to this reality. There is, in reality, a large range of expanding tourism-related goods and services available globally. Due to the constantly evolving nature of these new necessities, traditional marketing and commerce strategies are no longer effective. For this reason, it's crucial that players adjust to different methods. Because they can't succeed otherwise, it is imperative that players learn to adapt to new methods of product promotion and sales. Even said, it is important to recognize that this growth also means major changes for the industry's participants, despite the duty to use digital media to promote today's tourism.

Keywords: Business, Industry, Digital Media, Commerce Strategies, Company's Ability, goods and services.

Introduction

The fusion of e-commerce and digital marketing forms a dynamic synergy that is foundational to the success of businesses operating in the online marketplace. E-commerce, representing the electronic exchange of goods and services, has become an integral component of modern commerce. In parallel, digital marketing serves as the driving force behind establishing and expanding the online presence of these e-commerce ventures. This abstract delves into the multifaceted relationship between e-commerce and digital marketing, exploring key dimensions that define their collaboration. The phrase "digital marketing" refers to a wide range of advertising strategies used to connect with consumers online. It is represented by a wide range of service, product, and brand marketing strategies that, in addition to mobile and conventional TV and radio, primarily use the Internet as a primary promotional medium. The Indian market is moving more quickly than ever now. The internet is a channel for marketers to communicate with customers. People in India increasingly spend more time online daily, browsing the internet and using social media like Facebook, WhatsApp, and other sites.

Objectives of the Study

1. To Study of E-Commerce
2. To Study of Digital Marketing

Challenges in E-commerce and Digital Marketing:

Intense Competition:

The digital marketplace is highly saturated, leading to fierce competition among e-commerce businesses. Standing out and gaining visibility amidst numerous competitors is a significant challenge.

Data Security Concerns:

E-commerce involves the exchange of sensitive customer information. Ensuring robust cybersecurity measures to protect against data breaches and fraud is a constant challenge.

Adapting to Technological Changes:

Rapid technological advancements require businesses to continually adapt. Staying current with the latest technologies, such as AI, AR, and VR, can be resource-intensive.

Customer Trust and Privacy:

Building and maintaining customer trust in an online environment is challenging. Concerns about data privacy, secure transactions, and the authenticity of products can impact customer confidence.

Supply Chain Disruptions:

E-commerce relies on efficient supply chains. Disruptions, whether due to global events or logistics challenges, can result in delays and affect customer satisfaction.

Global Regulatory Compliance:

Operating in a global market means adhering to diverse regulations. Compliance with various international laws regarding data protection, taxation, and consumer rights can be complex.

Cart Abandonment:

Cart abandonment remains a prevalent issue in e-commerce. Understanding and addressing the factors that lead to customers abandoning their carts is crucial for improving conversion rates.

Digital Marketing Saturation:

With the proliferation of digital marketing channels, there's a risk of saturation. Cutting through the noise and ensuring that marketing messages reach the target audience can be challenging.

Opportunities in E-commerce and Digital Marketing:

Global Market Reach:

E-commerce provides the opportunity to reach a global audience. Businesses can expand their market beyond geographical constraints, tapping into new customer bases.

Personalized Marketing:

The wealth of customer data allows for personalized marketing strategies. Tailoring promotions, product recommendations, and content to individual preferences enhances the customer experience.

Mobile Commerce Growth:

The surge in mobile device usage presents a significant opportunity. Optimizing e-commerce platforms for mobile and implementing mobile marketing strategies can capitalize on this trend.

Innovative Technologies:

Embracing innovative technologies such as AI, AR, and VR can enhance the shopping experience. Virtual try-ons, chatbots for customer service, and personalized recommendations are examples of tech-driven opportunities.

Social Commerce Integration:

Integrating e-commerce with social media platforms enables businesses to leverage social commerce. Direct shopping features on platforms like Instagram and Facebook can drive sales.

Subscription-Based Models:

Subscription-based models provide a recurring revenue stream. Offering subscription services for products or premium content can enhance customer loyalty.

Sustainability Focus:

Growing awareness of environmental issues creates opportunities for e-commerce businesses to adopt sustainable practices. Green initiatives and eco-friendly product offerings can attract environmentally conscious consumers.

Data-Driven Decision-Making:

The abundance of data allows for informed decision-making. Analyzing customer behavior, market trends, and campaign performance enables businesses to refine strategies and optimize results.

Voice Commerce Adoption:

The rise of voice-activated devices opens up opportunities for voice commerce. Optimizing platforms for voice search and enabling voice-activated shopping experiences can cater to this growing trend.

Conclusion

The function of digital marketing has become indispensable in the e-commerce world, where the digital marketplace is teeming with opportunities and difficulties. An internet business's capacity to interact and connect with customers can make or kill it. The E-commerce Services offered by North Rose Technologies are a prime example of how e-commerce companies can become market leaders by utilizing the potential of digital marketing. Digital marketing is the engine that propels the success of e-commerce in the current day, from increasing online exposure to nurturing tailored client connections. Businesses that capitalize on the potential of digital marketing will be best positioned to prosper in the fast-paced world of e-commerce as the digital landscape continues to change.

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A STUDY OF SATISFACTION OF VISITORS ABOUT THE ADOPTION OF TECHNOLOGY IN TOURISM INDUSTRY OF AURANGABAD DISTRICT

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Abstract:

The process of digitization that followed the era of the Third Industrial Revolution ushered in a new era called "Industry 4.0" (Fourth Industrial Revolution). Based on the dynamics of Industry 4.0 development, the Tourism 4.0 concept now reinforces the perception of technology-based changes in the tourism industry, which are highly interconnected and similar to physical (real-world and digital technology combination) systems. Therefore, the purpose of this study is to identify the potential impacts (positive and negative) of Technology and its factors to satisfying visitors in the tourism industry of Aurangabad district, to study and analyze the development stages of tourism in the context of adoption of new technology. The study highlights the importance of training smart device and software developers in the tourism sector and developing the conceptual, technical and innovative skills of industry professionals in the management of technological infrastructure, suggesting relevant recommendations for the integration of tourism in technology.

Keywords: Industry 4.0, tourism 4.0, smart tourism, e-tourism, m-tourism, tourism industry.

Tourism in Maharashtra:

India, a tourism hotspot in the world, has a large bouquet of tourist attractions to boast of. Its widespread diversity has always attracted both foreigners as well as its' own citizens alike, to explore its mirth and gaiety that it has to offer the world.

The name Maharashtra first appeared in a 7th century inscription and in a Chinese traveler's account. Its name may have originated from *rathi*, which means, "chariot driver". At that age Maharashtra was full of builders and drivers of chariots who formed a *maharathis*, a "fighting force." The state known for its sheer size and diversity is located on the western part of the country. It has a varied landscape bounded by the Western Ghats that stretch out into the mists as far as the eye can see. The innumerable forts, that adorn the State, stands proud and strong,

depicting its historic past. Additionally scores of temples sculpted into and out of basalt rock, throng the atmosphere. Its diverse and colorful cultures are all woven into one gigantic quilt that represents the true nature of the State. The colorful festivals of the State galvanise the sleepy thousands into fervent motion. And her miles of silver, white beaches, stretched taut and inviting over the entire coast. The exquisite Mashru and Himru crafts, Bidri Ware, Paithani Saris, Sawantwadi Crafts, Warli Paintings, Kolhapuri.

Literature Review

Researcher Alami and his team used the term "Smart technology in tourism" for the first time in their research on technology to measure the level of online shopping desire of customers in the Malaysian hotel industry. The concept of Smart technology in tourism was hailed by the Malaysian government as an initiative to take tourism to the next level of opportunities in the digital economy. However, the authors did not elaborate on the nature of technology in tourism in their study and only made recommendations on the government's technology in tourism action plan for further tourism development.

The first includes Yildiz and Davutoglu's transition from traditional tourism to technology in tourism and the use of "Industry 4.0" technologies in the context of tourism.

Stark Peken's research was devoted to the challenges of marketing to change the technology in tourism paradigm: in his research, he points to Tourism 4.0 as a new paradigm. Tourism 4.0 uses "industry 4.0" key supporting technologies (e.g. Internet of Things (IoTh), big data, blockchain, artificial intelligence (AI), virtual and augmented reality (VR)) to unlock the innovative potential of the sector

Objectives of the Research

The purpose of the proposed research is to collect relevant statistics related to tourism, study the tourism industry in Aurangabad district through Technology and suggest recommendations for development and promotion of tourism industry.

The detailed methodology followed for estimating the total number of domestic and foreign visitors and tourists to the Aurangabad district of Maharashtra state from July 2023 till October 2023 is given in the report.

Application of Technology in Tourism Industry: “Virtual reality” allows the client to enter another world by changing the physical world into a virtual type. Extended Reality provides features that allow tour operators to show their customers the real physical environment that hotels offer in a direct, real-time three-dimensional environment.

In the field of tourism, the Internet of Things (IoT), which is used to increase travel planning and satisfaction, provides customers with the following services:

- a. availability of transport;
- b. geographical online services;
- c. weather forecast;
- d. flight control via smart device;
- e. tracking of rented cars;
- f. search for hotels and book rooms at the last minute

Autonomous robots will be used in the tourism industry to enhance the consumer experience.

Research Methodology

The Methodology, Estimation Procedure and the research survey instruments are given below: a. This study was conducted in Aurangabad district destinations of tourist interest of Maharashtra.

b. Selection of Tourist Destinations and Locations: Important destinations of tourist attraction and their location in the Aurangabad district were selected randomly.

c. Survey Period: The field survey was conducted for a period of 04 months (July 2023 till October 2023) at selected destinations. In a particular month at a particular destination the survey was done for 2 days (Saturday and Sunday) covering one specified week.

d. Survey Instruments: The survey instruments or questionnaires covers three types of survey, namely, survey at destinations (Short Survey), survey at exit point(s) (Exit Point Survey) and survey at accommodation units (AUs).

e. A total of 4 surveys were conducted for this study at Bibika Tomb, Pan Chakki and Pan Chakki Museum, Daulatabad Fort and Ajanta Caves. They were:

- e.1. The Counting Survey: In this survey, head counts were taken at each tourist destination in the state. This survey was conducted every month from October 2011 till March 2012
- e.2. The Short Survey: In this survey, 20 tourists per tourist destination in the Aurangabad district were interviewed at each tourist location and information regarding tourists' duration of visit, place of stay, frequency of visit, nationality/residence state, etc. was collected. This survey was conducted every month from July 2023 till October 2023.
- e.3. The Accommodation Survey: In this survey, accommodation units in the Aurangabad district were visited and information regarding number of domestic and foreign guests staying, number of bed nights spent, employee details and residency state/ country of guests was collected. This survey was done every month from July 2023 till October 2023.

e.4. The Exit Survey: In this survey, information regarding, background of tourists, their expenditure, their place of stay, mode of traveling, etc. were collected. This survey was conducted on a quarterly basis and 20 tourists or visitors were interviewed at each tourist destination in this survey.

Data from all the above surveys were used to calculate the number of tourists or visitors to the Aurangabad district.

Surveyed tourist destination

The destinations included in the study are listed below. These destinations were included based on primary and secondary research and after discussions with tourism destination officials.

1. Bibika Tomb
2. Pan Chakki and Pan Chakki Museum,
3. Daulatabad Fort
4. Ajanta Caves.

Sample Covered in Destination Survey

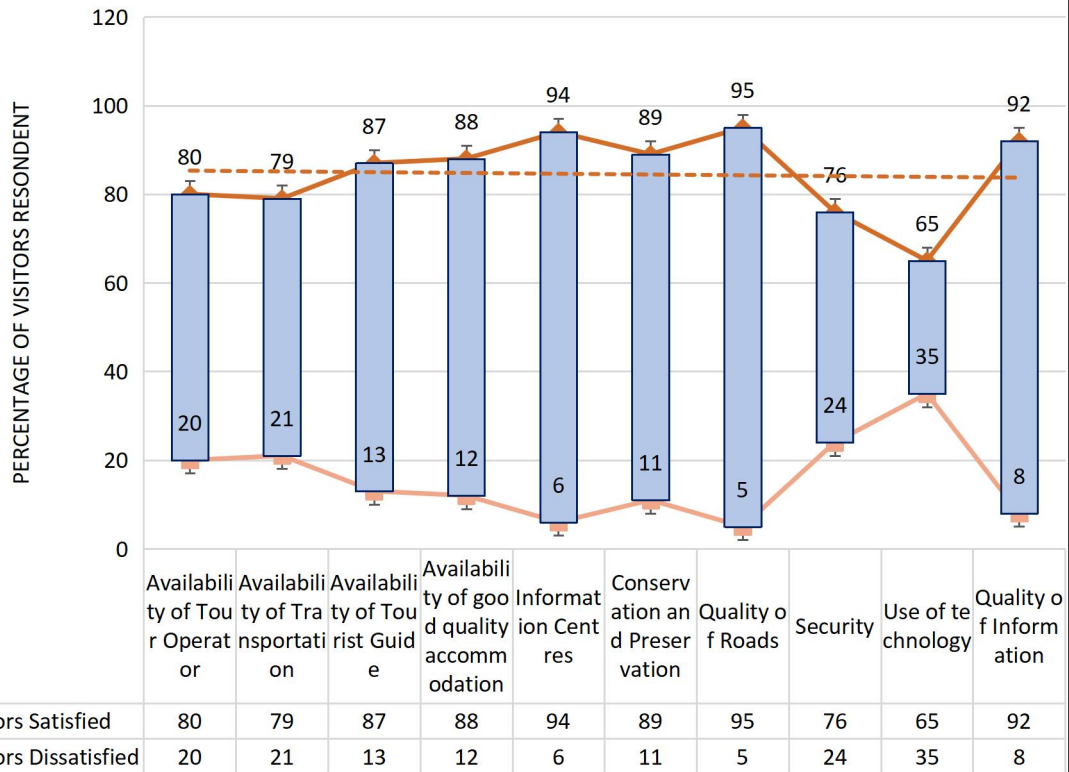
Bibika Tomb (Makbara)	20
Pan Chakki and Pan Chakki Museum	20
Daulatabad Fort	20
Ajanta Caves.	40
Total	100

Findings of the Research:

Satisfaction Level of Services by Sample Visitors in the Aurangabad district.

Services	% of Visitors	
	Satisfied	Dissatisfied
Availability of Tour Operator	80	20
Availability of Transportation	79	21
Availability of Tourist Guide	87	13
Availability of good quality accommodation	88	12
Information Centres	94	6
Conservation and Preservation	89	11
Quality of Roads	95	5
Security	76	24
Use of technology	65	35
Quality of Information	92	8

SATISFACTION LEVEL OF SERVICES BY SAMPLE VISITORS IN THE AURANGABAD DISTRICT.



Recommendations and Conclusion.

Conservation and Preservation: Research has revealed that the present condition of tourist places and museums in Aurangabad district is not sufficient. The research recommends that tourist destinations and museums adopt global best practices to develop and maintain their facilities and technologies wherever possible. This research recommends the management of tourist sites and antiquities museums in Aurangabad district to establish model procedures for preservation and archiving of artefacts. Apart from ensuring consistent service and facilities of tourist places and museums in Aurangabad district, this research suggests to help in benchmarking the work of contractors. The research also recommends the tourist sites and museums of Aurangabad district to formulate their individual museum policies and issue a conservation and management plan for the development and promotion of the tourism industry in Aurangabad .

Use of technology: This research recommends the use of specific technology to improve maintenance of museums and sites. These include:

- (i) use of virtual reality in galleries,
- (ii) central database of digitised artefacts and sites, and
- (iii) blockchain technology to catalogue artefacts and sites.

This research also recommending that using QR code to link to webpages with online maps, a detailed history of artefacts, and facts about a tourist place and museum for an interactive experience.

Staffing and Training: Research observations have shown that museums are often understaffed, with vacancies at ASI as high as 29%.

Considering that more staff can be trained using new technology for the development of tourist site and object museum in Aurangabad district, it is necessary to recommend to the Aurangabad Municipal Corporation and the State Government to increase the budgetary allocation for the training of tourist site and object museum staff. The following important recommendation is made to encourage students who have completed their college education through research to pursue a career in this field.

- (i) Arranging annual visits to tourist places and object museums by colleges,
- (ii) Colleges to introduce tourism and object museology courses for students and
- (iii) Colleges to include information on local monuments in curriculum for students.

Funding: A Development Committee for Tourist Places and Museums in Aurangabad District should be established. This committee should work to promote the funding of tourist places and museums in Aurangabad district through donations, corporate social responsibility and sponsorship and adopt further measures to try and increase the revenue of tourist places and museums.

Security: Tourism for development and promotion of tourism industry in Aurangabad district

To ensure safety and security at sites, museums and archaeological sites, the research recommended the following measures:

- (i) Installation of security systems and surveillance drone cameras for tourist destinations,
- (ii) patrolling by personnel using technology for tourist sites and
- (iv) Conducting physical security audits for tourist sites monitored using technology.
- (V) Implementation of disaster management plans for tourist destinations wherever necessary.

State-run tourist attractions and museums:

The research recommends that central government and state government run museums share their expertise with state owned museums and local departments respectively. The research found that there is insufficient funding for tourist attractions and museums run by state governments, most of which are focused on local management only. The research recommended increasing the inadequate subsidies to tourist destinations and museums and encouraging earlier disbursement of subsidies.

Footfall: Through the Industry 4.0 technology, the research recommended the adoption of the following action plans for the development, publicity, promotion and footfall of the tourism industry in Aurangabad district:

- (i) Using hyper-local marketing and social media to promote tourism industry destination exposures.
- (ii) collaborating with other tourism industry venues for e-exhibition of artefacts through a pre-planned rotation schedule,
- (iii) Engaging local communities and artisans around tourism industry sites to create linkages with local communities,
- (iv) development of e-facilities providing information on restrooms, parks and souvenir shops to increase tourism opportunities in tourism industry destinations, and
- (iv) Charges for filming in tourism sites and museums in the tourism industry by charging online.

Encroachment at Tourist Destinations: To deal with encroachment at tourist destinations, the research recommends the following.

- (i) Construction of boundary walls to define site limits,
- (ii) Empowering officials at tourist destinations using new technologies to deal with encroachment at tourist destinations and

(iii) Enlisting the help of local communities for the preservation of the monument. For that, using e-tools such as media, internet etc.

Promotion and Publicity: The research noted the importance of publicity in attracting foreign tourists to any tourist destination. To attract the growing tourist population, the research recommends the following:

(i) Adding an e-learning component through creation of museums, open-air amphitheatres and parks around lighthouses,

(ii) making the tourist website attractive and user friendly to attract foreign and domestic tourists, and

(iii) Specially highlighting unexplored and lesser-known tourist destinations on the Ministry of Tourism website to increase international interest in Indian tourism. Further, the research recommended improving reception/facility/information centers with the help of travel agencies and local businesses.

Conclusion

In the current era of rapid tourism development, it is important to ensure the sustainable development of tourism activities that do not adversely affect the social and natural environment of any tourist destinations and facilities. At the same time, in the current situation, every destination and object of tourism requires constant innovation to compete with others.

The analysis of secondary sources obtained through the Internet during the research will help to answer the following questions: firstly, when the term technology appeared and what its stages of development were; secondly, how the term is now understood in the example of technology in tourism.

Tourism is recognized as a strategic sector that can contribute to the overall well-being of the country. Therefore, one of the tasks of our research is to make scientific based proposals to properly train future professionals working in the field of tourism and hospitality, focusing on all aspects of technology in tourism. This is due to the fact that the basic knowledge and practical skills in the field of tourism alone will not be enough for future professionals working in the field of technology in tourism. In order to become a competitive employee of the industry in the future, it is necessary to have expertise that enables to work with technology in tourism industry, including analytical and creative thinking, the ability to manage big data. This requires the development and improvement of existing educational programs that include competence relevant to the requirements of technology in educational institutions.

Given the results of this research, we suggest that the concept of technology in tourism be studied more broadly and in depth, and increase the weight of intellectual research in this area. This is because most studies do not have sufficient basis to explain the difference between technology and “smart” tourism, and in some cases they are used as substitutes. Therefore, we believe that further research on this topic is needed.

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A STUDY ON CONSUMER PERCEPTION OF DIGITAL MARKETING

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Abstract

The purpose of this study was to find out how many of them prefer and use online marketing. The main objective of the study is to find out the factors affecting the purchase of products and services and to find the level of satisfaction of online shoppers. The article explains which products to target with digital marketing, for how many years the product must be purchased, how you prefer to pay the amount, etc.

Keywords: Consumer Perception, Digital Marketing, Marketing

Introduction

Digital marketing is a very popular term that has been used in different countries. Digital Marketing is also known as "Internet Marketing" or "Online Marketing". At first, most people were not aware of this digital marketing system. Later, the technology was updated and people got information about digital usage. Access is through online electronic devices such as mobile phones, tablets, laptops, etc. Digital marketing is the term by which business organizations can use technologies to promote and sell their products and provide services to their customers. It is one of the best sources to promote business worldwide through digital marketing. In digital marketing, companies can give customers and users the opportunity to submit product comments, product reviews, feedback and ratings so that companies can make the necessary changes if necessary. Customer support is very important in internet marketing. The purpose of this study on customer attitudes towards online purchase decisions (perception) were to reveal to consumers and propensity to buy online. The Organization for Economic Cooperation and Development (OECD) defines electronic commerce as "commercial transactions involving both organizations and individuals and based on the processing and transmission of digitized information, including text, sound and visual images, through open networks or closed gateways to the Internet .

“Therefore, electronic commerce can be defined as the transfer of goods and services between a buyer and a seller using the Internet as a means of commerce. E-commerce is a type of business transaction that does not involve paperwork or require physical interaction. Unlike traditional shopping, online shopping is characterized by features such as anytime, anywhere shopping, access to a wide range of brands and product options, payment options by credit card, debit card, e-wallet or cash. Delivery, product delivered to your door, easy and convenient return policy and no intrusion. This made e-shoppers and shopping experiences, because virtual stores are great in terms of simplicity, choice and affordability. Brick-and-mortar retailers can no longer afford to ignore the promise of this resource. Consumers want to shop online and e-shopping has really matured. Retail footprint is not considered. Also, customers do not have the opportunity to touch and feel the products they buy in the real world.

Review of Literature

Preetham D - (Jul 4, 2021) In his study "Consumer Perception to Online Marketing", the researcher argues that the e-shopping platform benefits the store and also increases online shopping. The online platform offers a variety of products at a reasonable price and a payment method that is also very easy to pay. E-commerce also improves consumer buying habits. The researcher should focus his research on the network framework, the effectiveness of online marketing in rural areas and focus on the opportunities and threats of online marketing. Finally, the researcher states in his research that internet marketing is a gift to both businessmen and consumers. Nowadays everyone uses the internet because of the advancement of technology. Technology plays a key role in buying and selling goods and services.

Raunaque, N., Zeeshan, M. and Imam, M.A. (2016) - “Researcher in his study “Consumer Perception towards Online Marketing in India”, consumers still fear loss of money and also worthless product delivered. In the past days, many events happened every day, we also saw in the newspapers. Improve the relevant consumer protection

policy, product quality, return the money in a certain time and also reduce the fear of consumers. Only then will online marketing be effective and beneficial to the end users.

Thakur, S. and Aurora, R. (2015) 'Consumer Perception: A Study of Online Marketing' said that online shopping is convenient, easy to buy products and services at reasonable prices. When it comes to traditional purchase of goods and services, we can go to more stores and compare quality, price and finally buy goods and services. It takes some time. But shopping online saves consumers time and energy.

Objectives of the study

- 1) A study of consumer perception towards Digital marketing.
- 2) A study the impact of Digital Marketing on Consumer.

Research Methodology

The research methodology describes the research structure used in the current study. This section discusses the size of the research sample and the procedure used to choose participants for the study. The study was based on primary & secondary sources of information. The reliability of research instruments was examined in order to determine their suitability

Sample Size

Data was collected from 200 respondents based on the consumers who purchase the products through online mode with the help on digital marketing.

Table No. 1 Gender wise distribution of the Respondents

Sr. No	Particular	% of the Respondents
1	Male	60 (30%)
2	Female	140 (70%)
	Total	200 (100%)

Table No.1 shows that, 70% of the respondents are female and 30% of the respondents are male. It is inferred that the majority of the respondents are female.

Table No. 2 Age wise Distribution of the Respondents

Sr. No	Particular	No of the Respondents
1	Above 40 Years	49
2	30-40 Years	78
3	20-30 Years	53
4	Below 20 years	20
	Total	200 (100%)

Table No.2 shows that, 78 respondents belong to the age group of 30 to 40 years, 53 of the respondents belong to the age group of 20 to 30 years, 49 of the respondents belong to the age group of above 40 years and 20 of the respondents belong to the age group below 20 years. The study reveals that majority (78) of the respondents belong to the age group of 30 to 40 years.

Table No. 3 Perception/Awareness of Digital Banking

Sr. No	Particular	No. of the Respondents
1	Yes	170
2	No	30
	Total	200

Table No.3 shows that majorities (170) of the respondents are aware of Digital marketing and 30 of the respondents are less aware of Digital marketing. It is inferred that the majority (170) of the respondents are much aware of Digital marketing.

Table No. 4. Digital marketing is used to purchase product

Sr. No	Particular	No. of the Respondents
1	Yes	80
2	No	120
	Total	200

Table.No.4 shows that, majority (120) of the respondents are not using Digital marketing to purchase products and 80 of the respondents use Digital marketing to purchase product. It is inferred that majority (120) of the respondents Digital marketing are not use to purchase products.

Table No. 5 Impact of Digital Marketing on Consumer

Sr. No	Particular	No. of the Respondents
1	Positive	155
2	Negative	45
	Total	200

Table No.5 shows that majorities (155) of the respondents are positive impact and 45 of the respondents are Negative impact. It is inferred that the majority (155) of the respondents are Positive impact on consumer of the Digital marketing.

Suggestions

- Need to implement proper consumer protection policies and regulations because, lot of online users lost their money and energy.
- Need to extend the supply the products in all areas.
- Deliver the correct (accurate) product.
- Marketing plans should be made with consider the perception of online marketing.

Conclusion

The Internet has grown tremendously as a means of communication, leading to the creation of a global online marketplace for businesses and consumers. Marketing researchers and industry commentators suggest that this is a

challenging time for ad agencies as they enter the interactive age. Responding to these important changes will affect the structure and functionality of advertising. The research carried out in this study is a response to the questions developed in the study of the Internet and its effect on the consumer. Based on this study, the researcher found that online advertisements are effective. The study also states that buying products does not have a significant impact on consumers, and they consider online advertisements to be reliable and compare them from other sources as well. Online advertisements are very reliable and play a role in creating consumer awareness and providing correct information about products and services.

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EFFECT OF GST ON LOCAL RETAILERS IN THE AREAS OF WESTERN SUBURBS

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This study investigates the impact of Goods and Services Tax (GST) on local retailers in the Western Suburbs of Mumbai. The findings reveal that a significant number of retailers face GST compliance issues, e-way bill challenges, and adverse effects due to frequent changes in GST rates. The transition to GST brought about various problems, including clarity on credit availability, managing transition inventory, and interpretation of rules governing transition stock. Despite these challenges, the study concludes that GST has had a positive impact on the Indian economy, as perceived by a majority of the respondents.

The research suggests several measures for improvement, such as enhancing the GST infrastructure, increasing the registration limit, organizing regular training programs for retailers, avoiding frequent changes in provisions, and simplifying procedures. However, the study acknowledges limitations related to the geographical scope and sampling, emphasizing the need for cautious interpretation of generalizations made from the sample. Overall, this research contributes valuable insights into the complex dynamics and challenges faced by retailers in adapting to the GST regime.

Introduction

The Goods and Services Tax (GST) in India, implemented in 2017, consolidates central and state taxes, reducing double taxation and creating a unified national market. It aims to lower the overall tax burden by 25%-30%, making goods more transparently priced for consumers. GST promotes economic growth, competitiveness, and formalization of the economy. Approved in September 2016, it replaced various indirect taxes, becoming effective in April 2017. With a "one nation, one market, one tax" approach, GST dismantled inter-state barriers, transforming India into a unified market of 1.3 billion citizens. The dual GST model involves CGST, SGST, and IGST, but its implementation faced criticism for complexity, high tax rates, and operational issues. Despite challenges, GST streamlines trade, benefits manufacturers, traders, consumers, and enhances government revenues.

As stated by the President of India Sri Pranab Mukherjee on the launch of GST from the Central Hall of Parliament on 30 June 2017, **"GST is the result of a broad consensus arrived at between the Centre and the States and is a tribute to the maturity and wisdom of India's democracy"**.

Objectives

Following objectives were framed for the study:

1. To find out issues faced by retailers in complying with the GST
2. To study the significant issues related to e-way bill faced by retailers
3. To evaluate the impact of frequent changes in GST rates

Literature Review

B. D. Hansraj & M. Naga Sulochna (2018) in their research paper made an attempt to bring out Impact of GST in Retail Sector: The impact of GST on retail sector is going to be optimistic from both operations and taxation point of view. Retail businesses will grow more, thus contributing to overall growth of Indian economy. GST will remove total indirect taxes, increase supply chain efficiency and facilitate input tax credit. The end price for consumers will also reduce due to GST. Except some clauses, GST will promote retail sector in a huge way. It can

be understood that by the passage of the Goods and Services Tax as a uniform tax rate. It will be considered as a very positive development in Retail Sector.

Mohammad Ali Roshidi (2016), conduct a study on “Awareness and perception of tax payers towards Goods and Service Tax implementation. The study attempts to find out what level of awareness and perception to GST taxpayers in Malaysia. This study only consists of 256 civil service servants of the secondary school teachers in the kaulakangsar, Perak. Data collected using questionnaire. The result shows that moderate and majority of respondents give a high negative perception to the GST. The eventually causes the majority of respondents did not accept implementation of GST in Malaysia.

Times of India dated (27 July, 2017), stated that the GST implication across different places for the same product has wider differences which the consumers are unaware, resulting them in surprise. Ex A Rasamalai sold in counter at a shop is taxed with 5% but if it is served in the hotel it is taxed with 18% this has resulted in difference of consumers shopping to purchase the similar products.

Vineet Chauhan (2018), Conduct a study on “Measuring Awareness about implementation of GST.” A study survey of small business unit of Rajasthan State in India. The study seeks to evaluate the awareness of the business owners about GST difficulties they face to encase of the current awareness about it. 148 small business owners were analyses in order to identify the awareness about GST from Rajasthan state and the kind and extent of relief provided and the implementation of the provision under GST Law.

Research gap:

From the review of literature in the chapter, following research gaps are found out that there is no much comprehensive study done post GST implementation on Retailors. This comprehensive research work intends to bridge this gap to some extent.

GST: An Overview and Analysis

The implementation of the Goods and Services Tax (GST) in India was a historical move, as it marked a diverse change in indirect tax system in the country. The amalgamation of a large number of taxes (levied at a central and state level) into a single tax is expected to have big advantages. One of the most important benefits of the move is the eradication of double taxation or the elimination of the cascading effect of taxation. Indian goods are also expected to be more competitive in international and domestic markets post GST implementation. The history of the Goods and Services Tax (GST) in India dates back to the year 2000 and culminate in 2017 with four bills relating to it becoming an Act.

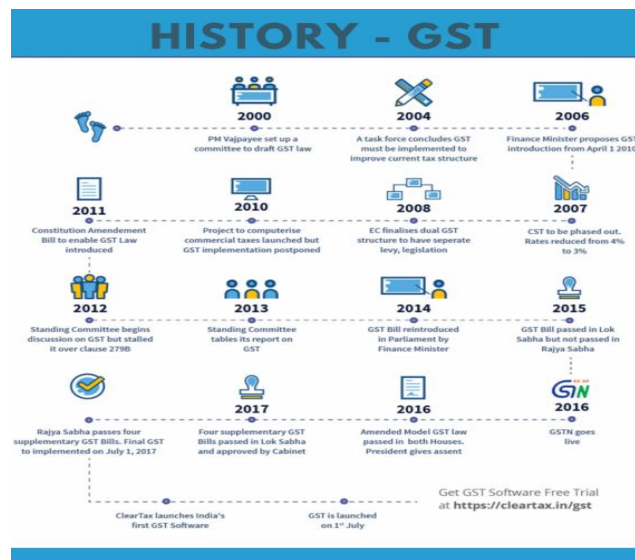


Fig 3.1: History of GST

Goods and Services Tax (GST):

GST stands for Goods and Services Tax. It is an Indirect tax which introduced to replacing a host of other Indirect taxes such as value added tax, service tax, purchase tax, excise duty, and so on. GST levied on the supply of certain goods and services in India. It is one tax that is applicable all over India.

The GST is imposed at variable rates on variable items. The rate of GST is 18% for soaps and 28% on washing detergents. GST on movie tickets is based on slabs, with 18% GST for tickets that cost less than ₹100 and 28% GST on tickets costing more than ₹100 and 28% on commercial vehicle and private and 5% on readymade clothes. The rate on under-construction property booking is 12%. Some industries and products were exempted by the government and remain untaxed under GST, such as dairy products, products of milling industries, fresh vegetables & fruits, meat products, and other groceries and necessities.

Check posts across the country were abolished ensuring free and fast movement of goods. Such efficient transportation of goods was further ensured by subsuming octroi within the ambit of GST.

The Central Government had proposed to insulate the revenues of the States from the impact of GST, with the expectation that in due course, GST will be levied on petroleum and petroleum products. The central government had assured states of compensation for any revenue loss incurred by them from the date of GST for a period of five years. However, no concrete laws have yet been made to support such action. GST council adopted concept paper discouraging tinkering with rates.

GST works as follows:

- **Manufacturer:** The manufacturer will have to pay GST on the raw material that is purchased and the value that has been added to make the product.
- **Service Provider:** Here, the service provider will have to pay GST on the amount that is paid for the product and the value that has been added to it. However, the tax that has been paid by the manufacturer can be reduced from the overall GST that must be paid.
- **Retailer:** The retailer will need to pay GST on the product that has been purchased from the distributor as well as the margin that has been added. However, the tax that has been paid by the retailer can be reduced from the overall GST that must be paid.
- **Consumer:** GST must be paid on the product that has been purchased.

Impact of GST on the retail sector:

1. **Effective Supply Chain:** GST eliminated the need for multiple warehouses, reducing expenses related to rentals, maintenance, and staff salaries for the retail sector.
2. **Seamless Input Tax Credit:** Under GST, retailers can claim credits for various indirect taxes, such as excise duties and import duties, resulting in improved financial efficiency.
3. **Lowered Prices:** Reduced operational costs due to streamlined supply chains and increased input tax credits have led to lower prices for consumers, boosting sales volume in the retail sector.
4. **Anti-profiteering Challenges:** Implementation of anti-profiteering measures has led to litigation for FMCG companies, with ambiguous provisions and lack of specific computation methods adding complexity.
5. **Promotional Schemes Disputes:** The retail sector's promotional schemes, including buy one-get one and loyalty points, face disputes and differing rulings under GST, creating uncertainty.
6. **Discounts and Taxation Position:** The tax treatment of discounts, especially secondary discounts, varies across the retail industry, leading to disputes and litigations.

7. **Reduction in Compliances:** While rate rationalization has made FMCG and retail items more competitive globally, the frequent changes in GST rates pose a challenge for businesses to stay updated and incur additional costs for system updates.
8. **Classification Ambiguities:** Despite multiple clarifications, issues persist in the classification of retail items, creating ambiguity in determining applicable GST rates for various products such as chapati, flavored protein powder, and skincare product.

RESEARCH METHODOLOGY

This chapter explains the nature of the research and the rationale for choices for selection of specific techniques and methods. The chapter plots the design for the methodical elements of the research. These include the research purpose, the hypotheses, details of population, sample, the questionnaire, methods and procedures to test the hypotheses, reliability of survey instruments etc.

Nature of the study

Type of Research

The study is a mix of qualitative and quantitative research. Most of the primary data is in the form of opinions and views of the respondents. The primary nature of the data used is qualitative. Simultaneously, a reasonable level of quantification has been used in the study to reach objective and measurable conclusions. The research's main objective was to find out the effect of GST on local retailers in the areas of Western Suburbs of Mumbai. Despite the use of a reasonable number of quantitative measures, it has to be kept in mind that the quantitative results are more directional.

Research evidence

An empirical approach was adopted. Both secondary and primary data were extensively used in the research.

Primary data was gathered from local retailers from Western Suburbs of Mumbai.

Secondary data was sourced from the latest research and has been duly cited.

Research Variables, modeling, and relationships to be investigated

Research variables:

- Compliance issues faced by retailers
- Issues related to e-way bill
- Impact of frequent changes in GST rates

Resource identification for elements identified above:

Secondary Data resources used were agency research, publications by individuals, research publication by institutions, annual reports, etc.

Purpose of research and formulation of hypotheses

The main purpose of the research was to find out the effect of GST on local retailers in the areas of Western Suburbs of Mumbai.

Based on the purpose and the scheme of variables following hypotheses were formulated:

Ho1: There are no major GST compliance issues faced by retailers

Ha1: There are major GST compliance issues faced by retailers

Ho2: There are no major issues faced by retailers related to e-way bill

Ha2: There are major issues faced by retailers related to e-way bill

Ho3: There is no significant impact of frequent changes in GST rates

Ha3: There is a significant impact of frequent changes in GST rates

Data was collected from the local retailers in the areas of Western Suburbs of Mumbai.

Proforma of the questionnaire is given at the end of the thesis in an annexure. These were administered through Google Forms.

Population and Sample

1. Population

The population of local retailers in the areas of Western Suburbs of Mumbai was estimated to be a large population.

2. Sample Size

To draw meaningful inferences and conclusions, a minimum sample size of 100 is recommended (Alreck and Settle, 2003). Questionnaires were sent to around 400 retailers. 268 responses were received.

Method of Sampling

The nature of the research being qualitative, the demand for accurate quantitative analysis was not there. Convenience and purposive sampling method was followed. The respondents' selection was made based on judgment, where the possibility of getting the responses was relatively higher. Judgmental sampling is a non-probability sampling technique where the researcher selects units to be sampled based on their knowledge and professional judgment. This type of sampling technique is also known as purposive sampling and authoritative sampling.

Limitations

1. Limitation due to geographical area: The study was limited to western suburbs of Mumbai.
2. Limitations due to sampling

Sampling is not free from limitations. Website like Money Matters, Study Lecture Notes etc. state that sampling in general has the following limitations –

- a) Inadequacy of the samples.
- b) Chances for bias.
- c) Problems of accuracy.
- d) Difficulty of getting the representative sample.
- e) Untrained manpower.
- f) Absence of the informants.
- g) Chances of committing the errors in sampling.

All these possibilities tend to limit the quality of data that is available for the research. The generalizations made on the basis of the sample for the population are subject to the limitations as stated above.

However due care has been exercised to minimize the impact of these limitations on the present study. Further wherever appropriate, statistical tests and methods have been used to ensure reasonably objective calculations and conclusions.

Research Findings:

- a. **Profile Findings:** Turnover: 90 respondents had a turnover of Rs.20-50 lakhs, 112 between Rs.51-99 lakhs, and 66 above Rs.100 lakhs. ii. Employee Strength: 50 had <5 employees, 152 had 5-10 employees, and 66 had >10 employees. iii. Business Type: 154 engaged in services, 114 in trading. iv. Business Size: 90 small units, 112 medium-size units, and 66 large units.
- b. **Other findings:** Impact on Demand: 156 respondents saw a positive impact on product demand, 68 saw a negative impact, and 44 reported no impact. ii. Transition to GST: 130 found it smooth, 116 difficult, and 22 very difficult. iii. GST Compliance Issues: Rated most important or very important, with a weighted average of 1.91 on a scale of 1-5. iv. E-way Bill Issues: 154 faced problems, 114 did not; rated most important or very important with a weighted average of 1.91. v. Government Response: 164 felt the government responded to industry needs, 104 disagreed. vi. Transition Time Adequacy: 138 felt the government gave adequate time, 50 disagreed, and 80 were unsure. vii. Problems in Transition: Various issues, with 120 respondents citing interpretation of rules as the main problem. viii. Price Impact: 169 felt prices increased, 28 decreased, and 71 reported no impact. ix. Supply Chain Impact: 122 felt impacted, 88 did not, and 58 were unsure. x. GST Quarterly Return Filing Problems: Rated most important or very important with a weighted average of 2.36. xi. Causes of Increased GST Compliance: Various reasons, with 126 respondents attributing it to the requirement to file transaction-level details. xii. Effects of Frequent GST Rate Changes: Rated high severity or very high severity with a weighted average of 3.95. xiii. Positive Features: 114 respondents highlighted allowing credits on interstate purchases and stock transfers. xiv. Overall Impact on Indian Economy: 240 respondents believed GST had a positive impact, 28 disagree.

The differences in turnover has an impact on average responses of compliances, and issues of e-way bill, but no impact on effects due to changes in GST rates.

Conclusion

- 1) There are significant GST compliance issues faced by retailers. These include Cost of compliance, Issues with portal, Procedures/Documentation, Lack of IT infrastructure, Lack of trained manpower, and others. Retailers by and large have reckoned these compliance issues to be of high importance, that is, they are facing problems in complying with the GST Act.
- 2) There are major issues faced by retailers regarding e-way bill which is an important document with reference to the GST Act. These issues include lack of availability of infrastructure, Limited validity period, Lack of knowledge, Lack of flexibility, Tracking of bill for modification, and others.
- 3) Frequent changes in GST rates are adversely and severely affecting retailers. These effects are in the form of Confusion among employees, Conflict with customers, Dispute with tax authorities, Arguments with suppliers, and Difficulty in pricing.
- 4) Retailers had encountered different problems while transiting to the GST regime. These included Clarity on the availability of credit, against service tax export refund claims filed in the erstwhile regime, and are rejected under GST regime, Manage transition inventory at the distributor/ stockists/ retailer, Interpretation of rules governing transition stock and transition credits, and Clarity on computational aspects (such as eligibility to carry forward KKC, eligibility to carry forward credit on stock lying at various stock points).
- 5) Despite transition and other problems GST has had a positive impact on the Indian economy.

Suggestions

- 1) The GST infrastructure should be improved. The GSTN should improve its IT and non-IT infrastructure to facilitate smooth handling of a very large number of assesses that India has.
- 2) The present limit of Rs.20 lakhs for registration should be increased to Rs.50 lakhs. Small and medium sized businesses find it quite difficult to comply with the large number of provisions of the GST. Hence the limit should be increased.
- 3) Trade associations should regularly organize training programs for the retailers to update them of the changes in the Act and also for seeking clarification on complex issues.

- 4) There should not be frequent changes in the provisions including the rates to offer some kind of stable regime for the tax payers.
- 5) The government should take more efforts in simplifying procedures to the maximum extent possible.

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A STUDY OF SYSTEM OF OBTAINING BUSINESS LICENCES IN INDIA: CONCEPTUALIZING MODULE OF INTEGRATED PORTAL FOR LICENCES

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Abstract

Business licenses are permits issued by government agencies that allow individuals or companies to conduct business within the government's geographical jurisdiction. It is the authorization to start a business issued by the local government. A single jurisdiction often requires multiple licenses that are issued by multiple government departments and agencies. Business licenses vary between countries, states, and local municipalities. There are often many licenses, registrations and certifications required to conduct a business in a single location. Virtually every business must obtain a variety of business licenses, permits and registrations before opening its doors to the public. And, most licenses must be renewed periodically and updated when any information about the company or the business changes. If the business expands—either to new locations or by offering new products or services—additional permits will be needed. Failure to have the necessary permits can result in fines or even a business shut-down

Introduction

Licence means an official document which gives you formal and official permission to do, use, or own something. It may be in the form of a certificate, tag, document. Licence permission is nothing but to comply with the applicable laws, rules and regulations particularly required to any unit.

India is the fourth largest economy country in the world after United States of America, China, Japan. In twenty first century every country eyes India as manufacturing hub due to low labour cost and infrastructure cost as compare to other developed countries. For inviting new manufacturing units Government of India taking several steps to promote Ease of doing business. Also, Government of India is promoting local manufacturers by giving incentives, grants, subsidies under the project of Atmanirbhar Bharat.

For making India manufacturing hub the business registration process, Licence permission should be easy and system should be user friendly and in this phase Government also making changes in the system using Information Technology to make one comfort with ease of doing business. The use of Information Technology offers several advantages such as efficient use of scarce resources, increased operating efficiency, reduced transaction costs, lower cost for information storage, processing and communication, etc.

Starting is the first step toward success. Setting up a business in India isn't an easy task, but the country has made significant progress over the years, making it much easier for businesses to get started.

Licenses and permits are issued by the government of a certain municipality or state to allow firms to operate. For a specific individual to start a business in India, obtaining a business license is necessary. This is an important and needed document issued by a municipal council. Businesses are allowed to engage in defined activities in a given area. These licenses and permits are also used to check on businesses to determine whether or not they are following the law's standards.



Business licenses and permits have been used in the country for the past forty years, and state governments manage them via municipal corporation laws. This ensures that the business or trade is being held in a particular area, in a specific location and that no one is engaging in illegal business activities. The process of getting a license differs from one type of industry to the next, depending on a variety of criteria such as the number of workers, the sector, the type of business, the location of the firm, and so on.

Eligibility to Apply for a Business License:

The following are the requirements for applying for a business license:

- The applicant must be at least eighteen years old.
- The company should be lawful to operate.
- The applicant must have intent to start any business.

Most Popular Licenses in India

NAME OF LICENCE	INDUSTRY TO WHICH IT IS APPLICABLE	APPROVAL FROM AUTHORITY CENTRAL/ STATE
FDA Licence (Food And Drug Authority)	Drug manufacturing and trading company	State
FSSAI Licence (Food Safety And Standard Authority Of India)	Food product manufacturing and trading company	State/ Central depends on the activity of the company
IEC Licence (Import Export Code)	For import or export of any type of goods or services	Central
PSARA Licence (Private Security Agency Regulation Act, 2005)	For running private security agency	State
CPCB Licence (Central	For import of plastic for reprocessing of	Central

Pollution Control Board)	applicability depends on investment in the unit	
Fertilizer Licence	For manufacturing or trading of fertilizer	State
Seed Licence	For manufacturing or trading of seeds	State
Shop and Establishment Act Licence	For running business within the jurisdiction of municipal corporation	State
MPCB Licence (Maharashtra Pollution Control Board)	For any type of manufacturing company	State
Legal Metrology Licence	For weight and measurement of any product	Central
Trade Licence	For running business within the jurisdiction of municipal corporation	Local Body
BIS Licence (ISI Mark)	For manufacturing particular product mentioned in the guidelines of BIS	Central
Udyam	For setting up any type of business in India	Central
Factory Licence	For any type of manufacturing company subject to fulfillment of certain criteria	State
Liquor Licence	Depends on the type of product for manufacture or sell	State
AGMARK	For manufacturing unit subject to fulfillment of certain criteria	Central
Fire Licence (NOC)	For all type of industry	State
PT (Professional Tax)	For running business or profession in the state of Maharashtra	State
Environment Clearance Licence	For any type of manufacturing industries who manufacture or use hazardous product	Central
Music Licence	For playing music on the floors of shops, malls	Central

Getting a license is essential for any business, whether a large corporation or a small business. Like any other country, businesses in India must obtain various business licenses and permits and renew them from time to time as required. However, getting a license may be complicated and confusing, especially for small businesses with limited resources.

The procedure to get a business license in India is different for different businesses depending on specific criteria such as the size of the business, type of the business, the sector, geographical jurisdiction, etc.

Benefits of Getting a Business License

Getting a business license permits an entity to operate within the mandate of central and state regulations. Failing to obtain a license or renewing them in time may lead an entity to face a penalty, or worse, permanent termination of business.

Here are some benefits of obtaining a business license:

- Adherence to regulations also entails businesses getting access to various facilities, schemes, subsidies and support offered by the government of India or other organizations. Find out about the best business loans offered by the government of India.
- Another benefit is that businesses with licenses have a competitive edge over others during negotiation processes.
- A business license also instils faith in the business by the public and other stakeholders, holding businesses accountable for their actions.
- having a license will safeguard you from being shut down for operating an unauthorized business.
- Credibility is increased through licensing.
- when you license your business, it allows the intellectual property (IP) to cross borders. It is a much more relaxed and cost-effective approach to entering a foreign market and expanding your firm.

Business License Obtaining Procedure in India.

The business license obtaining procedure depends on the type of business, location, size etc. However, specific mandatory registrations that are common to most states are as follows:

Business Name Registration: It is advisable to get the business or brand name registered as early as possible to avoid copyright or other infringement issues later.

GST Registration: Entrepreneurs need to be informed about the different guidelines mentioned under the GST Act and get registration and other compliance as and when required.

State Business License: All business entities must obtain a trading license under state government regulations as and where necessary.

It is advisable to get expert and professional assistance with getting the right business license at the right time. This will help minimize the chances of penalty and error. Depending on the type, there is also a mandatory requirement of different permits while setting up a business.

Eligibility

The basic eligibility requirements for applying for a business license:

- The applicant should not be a minor, i.e., must be at least eighteen years old.
- The applicant must not be under any legal probation for a serious offence.
- The business should be legal.

Documents Required

The documentary requirement may be different for different types of authorities and types of businesses. However, the following is a general checklist of documents required for the registration process:

- Pan Card
- Driving License/Voter ID/Aadhaar Card
- Passport
- Bank statement
- An Address proof or a no-objection certificate from the landlord
- Rent Agreement or Lease Agreement
- Authority Letter of Business

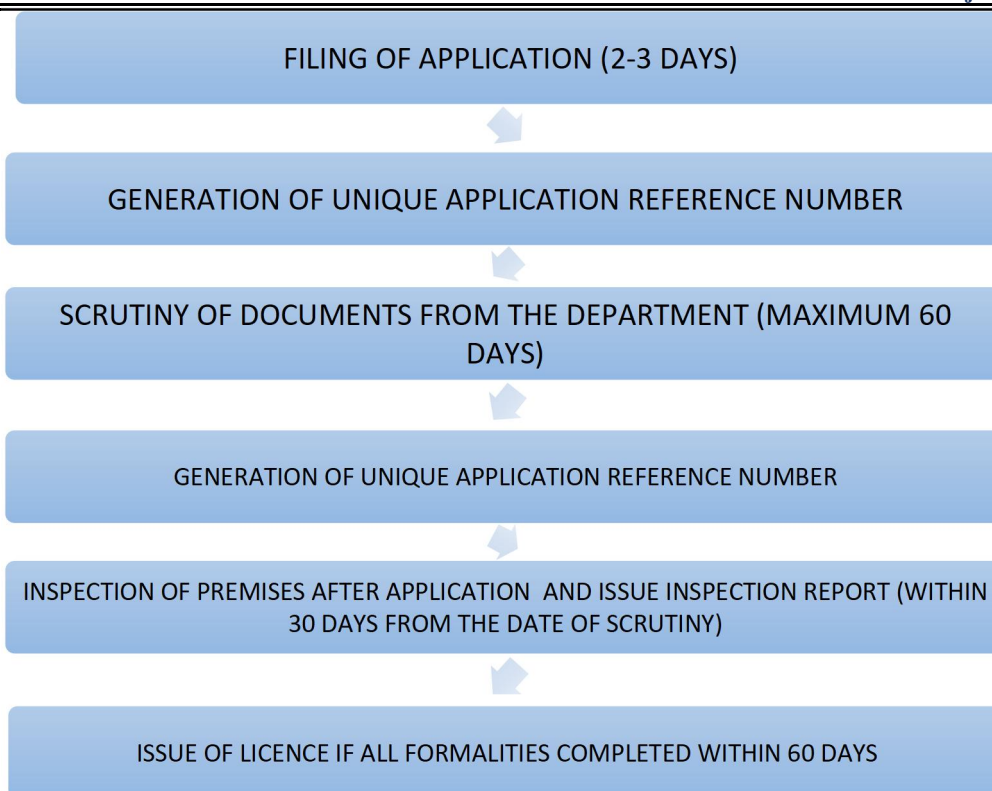
- Memorandum of Association and Article of Association.
- Partnership Deed

In India, every business setup or any unit required licences to start the operations or business activity. In this process some units required more than two or three permission before starting business operations which is elaborated in below mentioned table: for example,

FOOD PROCESSING COMPANY	FERTILIZER COMPANY	MINERAL WATER COMPANY	SECURITY AGENCY COMPANY
SHOP ACT LICENCE	SHOP ACT LICENCE	SHOP ACT LICENCE	SHOP ACT LICENCE
UDYAM REGISTRATION	UDYAM REGISTRATION	UDYAM REGISTRATION	UDYAM REGISTRATION
FSSAI LICENCE	FERTILIZER LICENCE	FSSAI LICENCE	PSARA LICENCE
ISO CERTIFICATION	ISO CERTIFICATION	ISO CERTIFICATION	PF AND ESIC
TRADEMARK	TRADEMARK	TRADEMARK	PT REGISTRATION
AGMARK	SEED LICENCE	BIS CERTIFICATION (ISI MARK)	LABOUR LICENCE
LEGAL METROLOGY LICENCE	GST REGISTRATION	LEGAL METROLOGY LICENCE	ISO CERTIFICATION
BARCODE	PF AND ESIC	BARCODE	TRADEMARK
GST REGISTRATION	PT REGISTRATION	GST REGISTRATION	GST REGISTRATION
PF AND ESIC		PF AND ESIC	PT REGISTRATION
PT REGISTRATION		PT REGISTRATION	
APEDA REGISTRATION			

The above table elaborates that how many registrations required for different companies. The requirement for licences or registrations depends upon the business activity of the unit. Licences or registration requirement is different as per the business activity of the company. For getting these each and every licences, government portals are different and the process of getting permission is different.

The below mentioned flow chart is an example for process of obtaining licence under FSSAI Act 2006;



LITERATURE REVIEW OF THE PROPOSED TOPIC

We are doing this research from start there is no reference of previous relevant literature done for proposed research topic. We are taking reference of different portal which is developed by Government of Maharashtra for single window approval for various permissions

NAME OF LICENCE	PORTAL DETAILS
FDA Licence (Food And Drug Authority)	https://fdamfg.maharashtra.gov.in/login.aspx
FSSAI Licence (Food Safety And Standard Authority Of India)	https://foscos.fssai.gov.in/
IEC Licence (Import Export Code)	https://www.dgft.gov.in/CP/
PSARA Licence (Private Security Agency Regulation Act, 2005)	https://psara.gov.in/
CPCB Licence (Central Pollution Control Board)	https://eprplastic.cpcb.gov.in/#/plastic/home
Fertilizer Licence	https://aaplesarkar.mahaonline.gov.in/en/Login/Login
Seed Licence	https://www.india.gov.in/information-seed-licence-maharashtra
Shop and Establishment Act Licence	https://services.india.gov.in/service/detail/shop-and-establishment-registration-1
MPCB Licence (Maharashtra Pollution Control Board)	http://portal.mpcb.gov.in/registration

Legal Metrology Licence	https://vaidhmapan.maharashtra.gov.in/
Trade Licence	https://services.india.gov.in/service/detail/trade-license
BIS Licence (ISI Mark)	https://www.bis.gov.in/system-certification-overview/certification-process/system-certification-apply-online
Udyam	https://www.eudyogaadhar.org
Factory Licence	https://mahakamgar.maharashtra.gov.in/dish-license-renewal.htm
Liquor Licence	https://exciseservices.mahaonline.gov.in/Home/Service
AGMARK	https://agmarkonline.dmi.gov.in/DMI/
Fire Licence (NOC)	https://mahafireservice.gov.in/e-fire.php
PT (Professional Tax)	https://mahagst.gov.in/en
Environment Clearance Licence	https://environmentclearance.nic.in/
Music Licence	IPRS website and PPL website.

RESEARCH METHODOLOGY

1. Primary data collection

These details and data will be collected through questionnaire and observation.

2. Secondary data collection

This data basically will be gathered from information available on online portals, websites, applications and from industrial area (MIDC) near to any urban area about registration applicability, their compliances and whether they have hired different professionals for different compliances, information from Books, Journals, Thesis, Articles, etc. will be obtained.

3. Period of study

A Decades study from 2011 to 2021 will be undertaken for Research.

4. Geographical Scope

The scope of the study will be Maharashtra state because everywhere every person requires licences or registration to start any new business

5. Tools and Techniques of analysis

Appropriate information portal will be used to gather documentation part. For Statistical analysis Table, Graph will be used. MS Excel will also be used for making data analysis.

6. Sampling

Primary data will be collected through structures questionnaire from 500 respondents working in different segments, sectors and /scale of business enterprises in India. The respondents will be selected by adopting stratified sampling method.

There are number of micro/small/medium enterprises in Maharashtra. Hence, out of total number of industries in Maharashtra, I have selected number of industries for the study.

Hence, A senior person in industry dealing with legal matter or owner of micro/small/& medium enterprises are selected as sample for study.

The number of samples will be selected randomly from among the total population amounting to 10% of the total universe or population.

7. Limitations of Study

Study is limited to Maharashtra state only, due to time, money & physical constraints of researcher being alone.

RESEARCH QUESTION

- What are the licences required for particular business?
- Documents required for obtaining licences in india?
- What is the government fees?
- Do we need to apply separately for applicable licences?
- Do we need to visit the government office or it is online?
- Any compliances do we need to do before applying?
- What are the compliances after getting licence?
- What are the requirements need to fulfill after or before getting licences?
- What is the renewal process?
- What are the annual compliances like annual return filling?

OBJECTIVES OF THE PROPOSED RESEARCH

The specific objectives of the study will be

1. To find out the problems of licencing in India.
2. To study registration process of industries in India.
3. To study feasibility of single window system of licencing in India.
4. To find out feasibility of IT infrastructure in India and ways to optimum use of the same for licencing.
5. To study necessary elements to built integrated portal of licencing in boosting economy
6. To analyse contribution of ICT for sustainable licencing process.
7. To suggest measures of ease of doing business through easy availability of timeless registration process.



The ease of doing business is an important indicator of the investment friendly business climate in the country. Improvements in the ease of doing business will enable faster future growth of the state economy. Therefore, the Government of India had in May 2020, decided to link grant of additional borrowing permissions. The reforms stipulated in this category are-Completion of first assessment of 'District Level Business Reform Action Plan',

Elimination of the requirements of renewal of registration certificates/approvals/licences obtained by businesses under various Acts

CONCLUSION

As tedious as the process is, take time to make sure you have obtained all the necessary permits before you open your business. (And, keep records of the costs so you can claim a tax deduction for these expenses.) Once you have your required permits, put procedures in place ensure that they are all still current and the information submitted is still accurate. Keeping your licenses up-to-date helps to maintain your good reputation given today's increased focus on compliance and transparency.

This study is an attempt to promote ease of doing business by giving single window solutions for licences and registrations which will cause to make the compliances easy and to solve the problems of every businesses which they are facing while starting any unit. Due to lack of knowledge and non-availability of professionals in rural area people unable to do timely registrations, permissions and their compliances and because of this they face uncertain situations, losses, notices from Government departments. Most of the times many companies don't want to start business or new unit due to difficulty in getting permissions in due time. In last one decade India's ranking for business competitiveness is improved from 142th in 2014 to 63rd in 2020 which is very good sign to approach foreign companies and investment.

With this project one can take all necessary licences, permissions, registrations in due time from his own place without any hurdle or difficulty. It will also help to reduce the paperwork which will be environment friendly, less time to get permissions, reduction in cost to get permission from respective department, availability for 24*7 at comfort of applicant.

This initiative will lead to promote at global level to approach new manufacturing units, promote ease of doing business, bring new technology in no time, generate employment. This saved time can be devote to new inventions, innovations, research on new projects.

A CRITICAL STUDY OF NEW NATIONAL EDUCATION POLICY 2020 IN INDIA

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Abstract

The National Education Policy (NEP) 2020, introduced in India, aims to revolutionize education by emphasizing exclusivity, flexibility, and holistic development. Key features include restructuring schooling into a 5+3+3+4 format, prioritizing early childhood education through play-based learning, and encouraging multidisciplinary education for critical thinking. Vocational education integration and technology use aim to impart practical skills and bridge urban-rural education gaps. NEP 2020 advocates for regional language use till Grade 5, fostering linguistic diversity. It highlights research and innovation in higher education, proposing the National Research Foundation. Prioritizing diverse learners, it strives for exclusivity, catering to disadvantaged groups and special-needs individuals. This policy envisions an adaptable system preparing learners for 21st-century challenges, dependent on collaborative efforts from policymakers, educators, and communities for its successful realization. Additionally, the emphasis on technology integration and vocational education can lead to increased access and employ ability for students.

Keywords: Research and Development, Higher Education, NEP 2020

Introduction

The National Education Policy (NEP) of India, unveiled in 2020, marks a significant overhaul of the country's education system, aiming to transform it into a more holistic and inclusive framework. The policy, after over three decades, replaces the National Policy on Education introduced in 1986. This ambitious and comprehensive policy document covers various facets of education, ranging from early childhood to higher education, and emphasizes flexibility, creativity, and a multidisciplinary approach. One of the key highlights of the NEP 2020 is its focus on early childhood care and education, recognizing the critical importance of the formative years in a child's development. It proposes the establishment of a National Curricular and Pedagogical Framework for Early Childhood Care and Education (NCPFECCE), emphasizing play-based learning and promoting the overall cognitive and emotional growth of young children. Another significant aspect of the policy is the restructuring of school education. The NEP envisions a 5+3+3+4 curricular structure, dividing schooling into foundational (ages 3-8), preparatory (ages 8-11), middle (ages 11-14), and secondary (ages 14-18) stages. This restructuring aims to make education more flexible, experiential, and geared towards skill development rather than rote learning.

The policy also emphasizes the importance of vocational education from an early age, enabling students to gain practical skills alongside theoretical knowledge. It promotes the integration of vocational courses into the curriculum to ensure that students have a choice between pursuing higher education or entering the workforce with relevant skills. NEP 2020 advocates for a multidisciplinary approach in higher education, allowing students to choose courses from different disciplines and promoting greater flexibility in designing their academic paths. It proposes the establishment of a National Research Foundation (NRF) to foster a culture of research and innovation in higher education institutions. Language diversity and the promotion of regional languages are key components of the policy. It encourages the medium of instruction up to at least Grade 5 in the mother tongue or regional language, aiming to preserve and promote linguistic diversity while ensuring better cognitive development and learning outcomes for students. Moreover, the NEP 2020 emphasizes the use of technology in education, promoting online and digital learning resources to bridge the gap between urban and rural areas and enhance accessibility to quality education.

The policy also addresses various administrative and structural reforms, including the setting up of a single overarching higher education regulator, the restructuring of the assessment system to focus on holistic development, and the inclusion of disadvantaged groups and special-needs education to ensure an inclusive learning environment for all. While the NEP 2020 outlines a comprehensive vision for the transformation of India's education system, its

successful implementation requires concerted efforts from multiple stakeholders, including policymakers, educators, parents, and communities. It aims to create a more inclusive, flexible, and skill-oriented education system capable of nurturing the youth for the challenges of the 21st century.

Significance of the Study

The policy proposes the establishment of the Academic Bank of Credit (ABC), which would allow students to accumulate and transfer credits across disciplines and institutions, fostering a more versatile and inclusive higher education ecosystem. The NEP 2020 recognizes the significance of technology in education and aims to bridge the digital divide by ensuring access to digital resources and technology-enabled learning platforms. The policy envisions the establishment of a National Educational Technology Forum (NETF) to promote the integration of technology in education effectively. Another crucial aspect of the NEP 2020 is the emphasis on vocational education and the creation of a flexible and multidisciplinary higher education system.

Review of literature

The New Education Policy 2020 has been widely discussed in academic literature, with many researchers analyzing its vision for transforming education in India. *Mittal & Sinha, (2021)* have commended the policy's focus on nurturing creativity, critical thinking, and problem-solving skills among students, aiming to move away from rote learning. *Biswas, (2020)* have discussed the importance of bridging the digital divide and promoting digital learning to enhance access and equity in education. However, *Rathore & Sharma, (2020)* studies have pointed out the challenges of technology implementation, particularly in remote and rural areas with limited infrastructure and internet connectivity. *Ravi, (2020)* identified several challenges in implementing the NEP 2020. *Kumar & Rani, (2020)* Studies have highlighted the policy's emphasis on promoting holistic development, skill-based learning, and experiential education to prepare students for the challenges of the 21st century. *Swaminathan & Nayak, (2021)* have emphasized the need for substantial financial resources and effective coordination between central and state governments for successful implementation. Additionally, *Srivastava & Mishra, (2020)* have highlighted the importance of teacher training and professional development to equip educators with the skills required for implementing the learner-centric approach envisioned by the policy. Some studies have also raised concerns about the potential impact of the policy on the existing education infrastructure and the burden of implementation on schools and colleges.

Objectives of the Study

1. To know structure of National Education Policy 2020 in India
2. To assess of NEP 2020 on current education systemic Indian.
3. To critical study of of .NEP 2020 in India

Research Methodology

The study used descriptive type of research method and it has used secondary sources of data for all its analyses. Secondary data has been collected from various sources such as research journals, bulletin, books, editing articles from Magazines etc. Available secondary data will be extensively used for the study.

What does it mean? 5+3+3+4 Composition:

The most striking change in NEP 2023 is the replacement of 10+2 structure with 5+3+3+4 structure. For a long time, 10+2 is being used in our education system. As a result, the overall changes in that structure can be surprising to children. Below we will understand the meaning of the 5+3+3+4 structure and how it differs from the old 10+2 structure. Under the new pedagogic and circular structure, the administration has divided student learning into four sections. There are four sections namely Madhyamik, Middle, Preparatory and Foundation. These four stages of schooling will be critical components of students' academic development throughout their school career. The following is how these four stages of student learning will be divided.

1. **Foundation stage** is the first step in children's education. Students will be prepared for 5 years in this program. These five years will include Anganwadi, Pre-Primary and Kindergarten, as well as three years of first and second grade.

2. **Preparation phase** will be the second phase. This phase of education will also be of three years. The third, fourth and fifth classes will lay the foundation for the intermediate and secondary stages.
3. **The third stage of education** will be middle school. It is for students of class 6th to 8th. These three years will prepare students for the final part of their education, secondary school.
4. **Secondary phase** will be the final part of students' school life; Instead of two years, students will have four years from class 9 to class 12 to complete their secondary education.

Principles of National Education Policy

- Conducting high quality research.
- Connecting children with Indian culture.
- Developing literacy and numeracy skills in children.
- Developing quality education.
- Emphasis on developing children's creativity and logical thinking.
- Emphasis on educational assessment.
- Emphasis on teaching different languages to students
- Emphasis on the use of technology.
- Investing in the public education system.
- Making education policy transparent.
- Offering flexible learning options.
- Recognize and develop each child's potential.
- Teaching children good governance and empowering children.

Critical Study of NEP 2020

The National Education Policy (NEP) 2020 in India is a comprehensive reform aiming to revolutionize the country's education system. Its critical study involves examining both its strengths and potential challenges across various facets of education.

Strengths:

Holistic Approach: NEP 2020 emphasizes a holistic and multidisciplinary approach to education, focusing on the overall development of students rather than rote learning. This shift from content-based to competency-based education aligns with global educational reforms.

Early Childhood Education: The policy's emphasis on early childhood care and education acknowledges the crucial role of foundational years in a child's development. The introduction of play-based learning methods can significantly enhance cognitive and emotional growth.

Flexibility and Choice: The restructuring of the education system into a 5+3+3+4 format provides flexibility, allowing students to choose their learning paths and engage in vocational education early on. This promotes skill development alongside academic learning.

Language Diversity: Promoting the use of regional languages as the medium of instruction fosters inclusivity and cultural preservation. Research suggests that learning in the mother tongue can improve learning outcomes.

Technology Integration: NEP 2020 recognizes the importance of technology in education, advocating for digital resources to bridge the urban-rural divide and improve accessibility to quality education.

Higher Education Reforms: The emphasis on multidisciplinary education in higher education institutions and the establishment of the National Research Foundation (NRF) can foster a culture of innovation and research, aligning education with global standards.

Inclusivity: The policy strives for inclusivity by addressing the needs of disadvantaged groups, promoting special-needs education, and ensuring equitable access to education for all sections of society.

Challenges and Criticisms

Implementation Hurdles: The successful execution of NEP 2020 requires substantial funding, infrastructure development, and training for educators. Lack of resources and a phased roll out might impede effective implementation.

Language Transition: While promoting regional languages is beneficial, the transition might pose challenges, especially in areas where resources for teaching in regional languages are limited. Balancing linguistic diversity and standardization could be challenging.

Vocational Education Integration: Integrating vocational courses into the curriculum requires significant planning and resources. There might be resistance or logistical difficulties in providing adequate vocational training across diverse regions.

Assessment and Evaluation: Shifting from a content-centric evaluation system to a competency-based one might require an overhaul of assessment methods. Ensuring fairness and accuracy in assessing diverse skills could be a challenge.

Equity and Access: Bridging the urban-rural divide and ensuring equitable access to quality education remains a considerable challenge. Disparities in infrastructure, teacher quality, and technology accessibility need to be addressed.

Teacher Training and Capacity Building: Training teachers to adapt to the new pedagogical approaches and methodologies outlined in NEP 2020 is critical. This requires comprehensive and ongoing professional development programs.

Resource Allocation and Funding: The implementation of NEP 2020 demands substantial financial resources. However, the allocation of funds and sustained investment in education might pose challenges, especially a midst competing priorities in a developing economy.

Language Policy Challenges: While the emphasis on regional languages is commendable, the practical challenges of implementing a multilingual education system, especially in higher education and across diverse regions, need careful consideration and planning.

Transition and Adaptation Period: The transition from the existing education system to the new framework proposed by NEP 2020 requires a careful adaptation period, during which stakeholders need time to adjust, align resources, and overcome resistance to change.

Conclusion

From the above discussion it is concluded that the NEP 2020 represents a visionary road map for transforming India's education system, emphasizing inclusivity, flexibility, and skill development. While it has several strengths that align with global educational paradigms, it also faces substantial challenges related to implementation, equity, language transitions, and infrastructure. Addressing these challenges will require sustained efforts, collaboration among stakeholders, adequate funding, and effective policy execution strategies. It was also observed that the NEP 2020 presents an ambitious and comprehensive road map for transforming India's education system. While it addresses various critical aspects and aspirations for an inclusive and dynamic education ecosystem, the successful implementation hinges on effective execution, addressing the outlined challenges, and continuous evaluation and adaptation to ensure the policy's objectives are met effectively.

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AN EXPLORATORY STUDY OF CONSUMER DECISION MAKING WITH REFERENCE TO NUTRACEUTICALS

(With Special Reference to Consumers of Aurangabad & Jalna District)

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Abstract

The nutraceuticals market in India holds a lot of potential and is expected to double in the next five years and by almost five-folds between 2010 and 2020. The Indian nutraceuticals market has grown from \$1 billion in 2008 to \$1.820 billion. In this study researcher examined Consumer demographics such as gender, age, education, occupation, annual household income and place where the respondent is staying currently have no association with consumer decision making for nutraceuticals.

Key words : Nutrition, Pharmacetical, Consumer, decision making.

Introduction

The term nutraceutical was originally defined by Dr. Stephen L. DeFelice, founder and chairman of the Foundation of Innovation Medicine (FIM), Crawford, New Jersey. Nutraceutical foods are not subject to the same testing and regulations as pharmaceutical drugs. While no commonly accepted definitions of the terms ‘functional food’ and ‘nutraceutical’ exist, it suffices for the present purpose to adopt the definition furnished by the 2002 Merriam-Webster Medical Dictionary: ‘any foodstuff enhanced by additives and marketed as beneficial to health and longevity; also called nutraceutical that is held to provide health or medical benefits in addition to its basic nutritional value).

The Global Nutraceutical market is estimated to have a growth rate of 6.6% during period of 2012-2017 in protein and peptides segment of dietary supplement market. The non herbal segment of dietary supplement market will have a growth rate of 6.3% from 2012 to 2017. The omega fatty acid fortified food segment of functional food market will have a growth rate of 6.7% during the forecasted period. The North America and Asia Pacific nutraceutical market is expected to have a market share of 39.2% and 30.4% respectively in 2017. The dietary supplement market will be the fastest growing market from 2012 to 2017 as it helps in improving the body ability to heal and protect itself.

The Indian nutraceuticals market has grown from \$1 billion in 2008 to \$1.820 billion in 2013. With the passage of time and due to many international and local players in this segment the percentage share rose with a steady speed. The market is expected to cross \$2 billion by 2014.

The Indian nutraceuticals market valued at \$1,480 million in 2011 is expected to grow to \$2,731 million in 2016. “The nutraceutical market in India is estimated to grow to \$2,731 million in 2016 at a CAGR of 13%” according to Frost & Sullivan 2012 report.

The Indian market current holds a two per cent market share of the global nutraceutical market and is expected to increase by manifold in the years to come. Clearly, the nutraceuticals market in India holds a lot of potential and is expected to double in the next five years and by almost five-folds between 2010 and 2020.

Review of Literature :

Siew Li Teoh, Surachat Ngorsuraches, Nai Ming Lai, Mukdarut Bangpan & Nathorn Chaiyakunapruk,(2019) This study aims to systematically review and critically appraise all available evidence to identify the factors affecting consumers’ decisions in taking nutraceuticals. Questionnaire, interview or focus group studies which directly reported factors affecting consumers’ decisions in using nutraceuticals were included. A thematic synthesis method was employed to synthesis the findings from the included studies. Out of the 76 studies

included, the key factors identified as the most important factors motivating consumers to take nutraceuticals were the perceived health benefits and safety of nutraceuticals, as well as the advice from healthcare professionals, friends and family. **Jeffrey K. Aronson (2016)**, There are widespread inconsistencies and contradictions in the many published definitions of ‘nutraceuticals’ and ‘functional foods’, demonstrating wholesale uncertainty about what they actually are. Furthermore, in a 2014 lecture, the inventor of the term ‘nutraceutical’, confessing that nutraceuticals do not work, said that ‘the quest to demonstrate whether ... long-term supplementation [with nutraceuticals] can prevent serious diseases ... has come to an end’. Definitions of ‘nutraceuticals’ and related terms, still widely used, should therefore be explored systematically. There are no internationally agreed definitions of ‘nutraceuticals’ and ‘functional foods’, or of similar terms, such as ‘health foods’, or of terms related to herbal products, which are sometimes referred to as ‘nutraceuticals’, compounding the confusion. ‘Nutraceuticals’ and ‘functional foods’ are vague, nondiscriminatory, unhelpful terms; the evidence suggests that they should be abandoned in favour of more precise terms. **Lexicographic (Fishburn P.C. 1974)** In this rule, attributes are ranked according to their importance. The product offering best attribute level on the most important attribute is selected. If there is more than one product remaining, the procedure is repeated with the next most important attribute, and so on.

Satisficing (Simon H.A. 1955). Decision-maker specifies thresholds for every attribute. Product alternatives are eliminated if they have one or more attribute levels that are below the corresponding thresholds.

Need and Significance of the Research: Nutraceuticals has seen an immense growth in India. The Indian nutraceuticals market valued at \$1,480 million in 2011 is expected to grow to \$2,731 million in 2016. “The nutraceutical market in India is estimated to grow to \$2,731 million in 2016 at a CAGR of 13%” according to Frost & Sullivan 2012 report. There has been a dearth of studies pertaining to nutraceuticals, specially relating to the decision process among consumers. The consumption of Nutraceuticals is a fairly recent phenomenon – a trend that is growing rapidly. The science of Nutraceuticals is evolving every day and therefore there is need to understand the Nutraceuticals purchase. Marketers need to understand the consumption pattern and the decision making that is undertaken by any consumer before the indulges in purchase of a nutraceuticals. The significance of the present study is also to ascertain the psychology of individuals which drives them towards Nutraceuticals. The aim is to help marketers design their marketing mix elements effectively for getting a higher market share for their range of products.

Objectives of the Study: The objectives of the present study are as follows:

1. To assess the relationship between demographics such as age, income, city, education, lifestyle and gender play on the consumer decision making
2. To study the effect of health consciousness scale on the consumer decision making.

Hypothesis of the study :

The first hypothesis :- assessed the relationship between the demographics and consumer decision making of nutraceuticals. The six demographics include the gender, age, education, occupation, annual household income and place where the respondent lives currently.

H0: Consumer demographics such as gender, age, education, occupation, annual household income and place where the respondent is staying currently have no association with consumer decision making for nutraceuticals.

H1: Consumer demographics such as gender, age, education, occupation, annual household income and place where the respondent is staying currently have association with consumer decision making for nutraceuticals.

Consumer decision making : The scale developed by Engel, Blackheart, &Kollat, 1978; Engel, Blackwell, &Miniard, 1995. We have used the Five stage model of consumer decision making. The Reliability of the Scale was measured through Cronbach’s Alpha. The consumer decision making showed a reliability score of Cronbach’s Alpha –which signifies that the scale is reliable and satisfactory.

Methodology : Primary Data : Primary data was collected from structural questionnaire developed which included various attributes which play a role in influencing the purchase decision towards nutraceuticals .**Secondary Data :** Secondary data was collected from books, Research journals , Articles in

mangzines and news papers, reports of different organizations were also taken up for review. **Tools & Techniques of Analysis** : Data collected was analysed with the help of SPSS 12 version. Graph/ Charts drawn with the help of MS Excel.

Sample Size:

- Convenience Sampling Method is applied as there was no data related to Universe of Study. The sample which is collected and studied by using the convenient sampling technique.
- Since the universe is infinite.
- Researcher decided to apply Taro Yamane (1969) formula for estimating optimum sample size.
- Assuming that there is more than one lakh customers in Aurangabad and Jalna District the optimum size according to the formula is _____

- $$n = N \frac{1,00,000}{1 + 1,00,000 (0.05)^2}$$

$$n = 400$$

- Since there are two progressive districts of Aurangabad and Jalna I have decided to give balanced representation and adequate sample size for both districts amounting to 500 each totaling 1000 respondents from both the districts as optimum sample size which is more than 400 as per Tara Yamane formula.

Scope of The Study : Nutracutaical provides health and medical benefits including the prevention & treatment of Disease although India a country where 40% live in BPL category and a progressive Maharashtra State where earners and spenders are in large majority in Aurangabad and Jalna district. Which has a sizeable population which in-sighted me to investigate the position of Nutraceutical consumption.

Limitation of The study : A study of Maharashtra relating to Nutraceutical Consumption is more reliable but due to time, Money and Constraints study is limited to Aurangabad and Jalna District only.

Result & Discussion

Hypothesis testing :

The ANOVA output of the model herein is significant with F Value of 5.199. But when we look at the explained vs unexplained variance then we observe that the Errors are explaining the Dependent variable Purchase, more that the Regression on account of Independent variables.

Correlations

		Gender	Age Group	Income	Educ- ation	Occup -ation	City	PM
Gender	Pearson Correlation	1	-.165**	-.091**	-.017	.078*	.098**	.032
	Sig. (2-tailed)		.000	.004	.586	.013	.002	.309
	N	1000	1000	1000	1000	1000	1000	1000

Age Group	Pearson Correlation	-.165**	1	.471**	.105**	-.043	.145**	.058
	Sig. (2-tailed)	.000		.000	.001	.174	.000	.065
	N	1000	1000	1000	1000	1000	1000	1000
Income	Pearson Correlation	-.091**	.471**	1	.242**	-.096**	-.083**	.176**
	Sig. (2-tailed)	.004	.000		.000	.002	.008	.000
	N	1000	1000	1000	1000	1000	1000	1000
Education	Pearson Correlation	-.017	.105**	.242**	1	-.070*	-.238**	-.005
	Sig. (2-tailed)	.586	.001	.000		.026	.000	.878
	N	1000	1000	1000	1000	1000	1000	1000
Occupation	Pearson Correlation	.078*	-.043	-.096**	-.070*	1	.096**	-.057
	Sig. (2-tailed)	.013	.174	.002	.026		.002	.072
	N	1000	1000	1000	1000	1000	1000	1000
City	Pearson Correlation	.098**	.145**	-.083**	-.238**	.096**	1	-.092**
	Sig. (2-tailed)	.002	.000	.008	.000	.002		.003
	N	1000	1000	1000	1000	1000	1000	1000
PM	Pearson Correlation	.032	.058	.176**	-.005	-.057	-.092**	1
	Sig. (2-tailed)	.309	.065	.000	.878	.072	.003	
	N	1000	1000	1000	1000	1000	1000	1000

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Correlations

		PR-HC	PR-Status	PR-FNF	IS-Dr	IS-Gym	PM
PR-HC	Pearson Correlation	1	.417**	.334**	.418**	.401**	.574**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	1000	1000	1000	1000	1000	1000
PR-Status	Pearson Correlation	.417**	1	.524**	.454**	.594**	.281**

	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	1000	1000	1000	1000	1000	1000
PR-FNF	Pearson Correlation	.334**	.524**	1	.521**	.485**	.334**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	1000	1000	1000	1000	1000	1000
IS-Dr	Pearson Correlation	.418**	.454**	.521**	1	.499**	.432**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	1000	1000	1000	1000	1000	1000
IS-Gym	Pearson Correlation	.401**	.594**	.485**	.499**	1	.361**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	1000	1000	1000	1000	1000	1000
PM	Pearson Correlation	.574**	.281**	.334**	.432**	.361**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	1000	1000	1000	1000	1000	1000

** . Correlation is significant at the 0.01 level (2-tailed).

Positive correlation seen between Health Consciousness and Purchase. Positive correlation is also seen between Status, recommendation of Family and Friend, Doctor and Gym instructor and Purchase which are all significant.

Conclusion

Natural source is preferred by consumers. As 33.6% respondent preferred Ayurvedic and 19.5% preferred Herbal. Hence total of 53.1 % of the respondents stated to prefer natural source of nutraceuticals. Solid dosage form is preferred with 60.5% of the respondent preferring it and within that tablets are the most preferred dosage form probably due to convenience and availability. 33.5% of the respondents did not associate nutraceuticals with health. Hence there is need for companies to engage in market development activities and increase awareness. Moreover only 18.3% of the respondents stated to be consuming nutraceuticals on daily basis. 56.8% of the respondents choose nutraceuticals based on brand name. Hence advertising can help in improving acceptance of the brand. 46.7% of the respondents agree that they are influenced by packing, 57.3% of respondents agreed or strongly agreed that they choose nutraceuticals based on price. 73.2% of the respondents stated that they choose nutraceuticals based on quality. High scores on health awareness indicates that respondents are more likely to accept nutraceuticals. Strong positive correlation of 0.821 between Information Search and Problem Recognition was seen which is statistically significant. Hence nutraceutical companies need to build web presence and share information about their brands. They also need to provide answers to the queries posted by prospective or existing customers.

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A STUDY OF AGRICULTURE SECTOR ALLIED BUSINESS

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Abstract

Agriculture continues to be the most crucial sector of the Indian economy. With 26.8% contribution to the Gross Domestic Product (GDP) at current prices and providing employment to nearly 2/3rd of the work force, agriculture is so much at the centre stage in the Indian economy that any situational change in this sector, positive or negative, has a multiplier effect on the entire economy. The largest industries of the country like sugar, cotton, milk, oil etc. are dependent on agriculture for their raw materials. Besides, the agriculture sector and rural areas are the biggest markets for low priced and middle priced consumer goods, including durable use items.

Agriculture continues to be the main stay of the District Faridkot and is known for the production of Cotton, Rice, pulses, vegetables & fruit crops. Besides this, other agriculture allied activities includes area under Dairy farming, Goat and sheep rearing, poultry farming, fisheries, silk industry, Beekeeping, flower farming, forestry and pearl farming etc. all these options are the best agriculture sector allied business.

Keywords : Agriculture sector, allied Business, GDP, Farming, Industry

Introduction

More than 60% to 70% of the Indian population is dependent on agriculture and its allied activities for their livelihood. The agriculture sector provides employment to more than 52% of total labour of the country. The contribution of agriculture to india's total GDP (Gross Domestic Product) is between 14% to 15%.

Hence, it goes without saying that agriculture can potentially be a feasible business ides in India. also known as agribusiness, an agricultural business includes farming, production, marketing and management of agricultural commodities like grains, vegetables, fruits, and livestock. From a broader perspective, an agribusiness also consists of resource management, conservation, ranching and sales of the agricultural produce.

Review of Literature :

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Objectives :

The main objectives of the paper is to review the agriculture sector allied business in India.

Research Methodology :

The present study is based on the secondary data. To understand the agriculture sector allied business some publications that were largely published in six month have be considered. Published research papers and newspapers have also been considered to collect the secondary data.

☛ • Some agriculture sector allied business :-

1. Dairy farming
2. Goat and sheep rearing
3. Poultry farming
4. Fisheries
5. Silk industry
6. Beekeeping
7. Flower framing
8. Forestry
9. Pearl farming

Dairy farming:

Dairying also called dairy farming, branch of agriculture that encompasses the breeding, raising, and utilization of dairy animals, primarily cows, for the production of milk and the various dairy products processed from it.

The dairy groups includes milk, yogurt, cheese lactose – free milk and fortified soy milk and yogurt

Dairy products may benefit yours bones, reduce your risk of developing type 2 diabetes, and improve your body composition. They may also improve your hearts, health, although the evidence is inconclusive.

Goat and sheep rearing:

They are also called poor man cow. Raising / Rearing goats and sheep will contribute a lot to the economy by providing local employment and import and export. Goat farming. The main purpose of sheep and goat farming is to produce enough meat and wool for increasing population across the world.

Poultry farming:

Poultry farming is the form of animal husbandry which raises domesticated birds such as chickens, ducks, turkeys and geese to produce meat or eggs for food. Poultry mostly chickens- are farmed in great numbers. More than 60 billion chickens are killed for consumption annually. Chickens raised for eggs are known as layers, while chickens raised for meat are called broilers.

In the United States, the national organization overseeing poultry production is the food and Drug Administration (FDA). In the UK the national organisation is the Department for Environment food and Rural Affairs (Defra).

Fisheries:

The occupation, industry, or season of taking fish or other sea animals (such as sponges, shrimp, or seals). : fishing : a place for catching fish or taking other sea animals.

Types of fishery – a fin fishery and shell fishery capture fishery and culture fishery marine fishery and inland fishery fin fishery fish production involves fin fishery and shell fishery. Two main species of finned true fish are Catla and Rohu and that of shellfish such as prawns and molluscs.

Silk industry:

Silk is a natural protein fibre, some forms of which can be woven into textiles. The protein fibre of silk is composed mainly of fibroin and is produced by certain insect larvae to form cocoons. The best known silk is obtained from the cocoons of the larvae of the mulberry silkworm *Bombyx mori* reared in captivity (sericulture). The shimmering appearance of silk is due to the triangular prism- like structure of the silk fibre, which allows silk cloth to refract incoming light at different angles, thus producing different colours

Beekeeping

The science and art of managing honey bees called apiculture or beekeeping is a centuries- old tradition. The first beekeepers were hunters, seeking out wild nests of honey bees, which often were destroyed to obtain the sweet reward, called honey, for which these insects are named.

The main advantages of beekeeping are :-

@ Provides honey, which is the most valuable nutritional food.

@ Provides bee wax which is used in many industries, including cosmetics industries, polishing industries, pharmaceutical industries, etc.

@ Plays an excellent role in pollination.

Flowers farming:

Flower farming or floriculture is a branch of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and for floristry, comprising the floral industry. The development of new varieties by plant breeding is a major occupation of floriculturists.

Top 5 Profitable Flower Farming In India : -

1. Roses. India has the most suitable agro-climatic region for rose production.
2. Lily. It is a very popular flower and in high demand for gifting purposes.
3. Sunflower. This flower variety has high production.
4. Jasmine. It can be widely grown on any kind of soil.
5. Gerbera.

Forestry:

Forestry is the science and craft of creating, managing, planting, using, conserving and repairing forests, woodlands, and associated resources for human and environmental benefits. Forestry is practiced in plantations and natural stands.

Forests provide us with shelter, livelihoods, water, food and fuel security. All these activities directly or indirectly involve forests. Some are easy to figure out – fruits, paper and wood from trees, and so on.

Five hidden benefits of forests everyone should know :-

1. Forests nurture the soil
2. Forests absorb carbon.
3. Forests provide food for millions.
4. Forests are natural aqueducts.
5. Forests host 80% of Earth's biodiversity.

Pearl farming:

Pearl farming is a process of cultivating freshwater cultured pearls on the farm. For almost 2-5 years, farmers nucleate and take care of oysters to develop a pearl.

Demand for cultured pearls is rapidly increasing. Due to this, pearl farming in India is constantly gaining popularity. The best thing about pearl farming is the less investment and higher returns.

Pearls have great demand in national and export markets. You can easily pursue pearl farming subsequently with fish farming and other commercial aquaculture activities.

Talking about pearl farming profit, you can expect to earn 50-60% from what you invest. Furthermore, if you acquire the right pearl farming training and tools, you can expect to earn even 100% profit- but that's along road.

Benefits of pearl farming in India :-

Of all available pearls, 99% are cultured ones. They are derived from farming through mussels and oysters. Moreover, Odisha ranks first in terms of pearl farming in India.

Conclusion

Apart from traditional agriculture, Indian farmers can definitely change their economic condition if they do agriculture complementary businesses like Dairy farming, Goat and sheep rearing, poultry farming, fisheries, silk industry, Beekeeping, Flowers farming, forestry, pearl farming etc.

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COLONIAL CONCERN AND ENVIRONMENT IN AMITAV GHOSH'S THE LIVING MOUNTAIN

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Abstract

Amitav Ghosh's *The Living Mountain* explores the relationship between humans and the environment. He has written historical fiction. He has discussed topics such as colonialism and climate. The recent book of Amitav Ghosh, *The Living Mountain (2022)* is the best book on climate change. He has made his significant contributions to contemporary literature, particularly in the areas of history, culture and identity. Environment needs protection from human exploitation. This work depicts the love and care for nature by valley people who follow their ancient rituals to preserve natural treasure. The text explores the other side of urban people who project themselves as cruel and destroyer of nature.

Key Words:- Environment , Climate Change, Ecological, Valley, Mahaparbhata.

In the post colonial world among the post colonial writers Amitav Ghosh is very prominent. His books contain either post colonial scenario or the pre colonial and colonial scenario. As an Indian writer, he creates vivid images in his books where readers can easily enter into that world of imagery.

Amitav Ghosh said about his work, "I always dreamt of becoming a writer".

Amitav Ghosh is an Indian writer. He owns many prestigious awards. He got India's highest literary honor in 2018. He won the 54th Jnanpith award. Ghosh's ambitious novels use complex narrative strategies to probe the nature of National and personal identity particularly of the people of India and South Asia. He has written historical fiction and also written non - fictional works discussing topics such as colonialism and climate change.

Climate change is one of the most pressing issues of our time, and it's no wonder that it has caught the attention of both fiction and non-fiction writers like from dystopian novels to the data planet and our society.

In the last few years, the popularity of climate change literature has skyrocketed, as people become more aware of the urgent need to address the issue. The recent book of Amitav Ghosh, *The Living Mountain (2022)* is the best book on climate change. He has made his significant contributions to contemporary literature, particularly in the areas of history, culture and identity. In recent years, Ghosh has also turned his attention to the urgent issue of climate change, addressing it through his complex relationship between humans and nature and how it has been shaped over time. He draws on his experience of living in various parts of the world. From the Sundarbans in India to the Arctic Circle to illustrate the impact of climate change on different ecosystems and cultures.

Some of his past novels on the Climate change include "The Great Derangement: Climate Change and the Unthinkable," "Gun Island" and "Nutmeg's Curse". In "The Great Derangement" he argued that the Western idea of human exceptionalism has created a false sense of separation between humans and the natural world, leading to the belief that humans can control and exploit the environment without consequences, whereas "Gun Island" explores the impact of climate change on human society and culture. In addition to his novels, Ghosh has also written to take action to address the crisis.

Amitav Ghosh brilliantly explicates the serious issue of environmental degradation in his work *The Living Mountain*. The world is facing the problem of ecological disturbance and needs to be aware of it to the world. He continues his efforts to bring awareness to the environment. Environment needs protection from human exploitation. This work depicts the love and care for nature by valley people who follow their ancient rituals to preserve natural treasure. The text explores the other side of urban people who project themselves as cruel and destroyer of nature. The urban people project themselves as modern intellectual people and others should follow their instruction. The writer brings a twist in the climax and highlights the importance of ancient philosophy. The rituals and traditions are considered foolish whereas in reality it makes great sense to maintain the cordial balance between human and

nature. The healthy ecosystem proved the worth of ritual and traditions. Exactly the same happens at the end of the book where urban people accept the supremacy of valley people's knowledge. The writer has tried to impose the importance of nature in the modern living atmosphere where air becomes poisonous day by day. The world's first pandemic due to our ignorance.

Amitabh Ghosh targets climate change in his latest work *The Living Mountain* which is a great example of the anthropocene's impact on earth. This work has a wonderful example to express the power of nature. Human beings love their intelligence, power and some of them desire to hold each and everything in their hand. This work depicts the struggle between human and nature power. Both sources work differently; nature wants to serve living beings whereas some humans intend to use nature for their own benefits. The writer uses the "Anthropocene" concept in his work. *The Living Mountain* introduces the contemporary reality of relationships in the book. He has online friends for discussing new things to explore. This is a new trend of acquiring knowledge which provides various prospects to focus on serious issues. The Anthropocene is considered a new concept to study. The writer's friend had dreamt regarding anthropocene and harness of the human mind which is the kept to discuss with him. Author's friend Mansi dreamt about the beauty of the mountain valley. Mountain valley is enriched with the treasure of nature which makes this place heaven the earth. Valley people live in the valley and give immense respect to the environment. They acquired some knowledge about the mountain while respecting, loving and worshipping it. They had not kept the knowledge themselves therefore they spread the knowledge to the coming generation. They called the "Mahapharbat" to their beloved mountain for which they sing and dance. Their life moved around their "Mahaparbhat" because this mountain has given them precious tree, honey, herbs, mushroom, flowers, nuts etc. Valley people barter their Mahapharbat's treasures to other and take require items from urban merchants. The mountain's treasure became pleasure for valley people till outsider had not sunk into greed for that treasure. Urban merchant showed his keen interest to valley treasure and try to acquire all knowledge about the mountain valley. Urban merchant's interest created uneasiness among the valley people. Urban merchants make realize to Valley people a dumb who praised the nature as God. Valley people gives respect to nature as a God. They worshipped the mountain to whom they meant as Mahapharbat. The communication level developed between tribal and Mahapharbat during the process of worshipped. They danced and their feet's rhythm received some special signal from Mahaparbhat.

They decode the signal from Mahaparbhat and believe in the message which they understand. These signals mainly alert them from all positive and negative circumstances. The predictions help them to prepare mentally to handle for coming state of affairs. Exactly the same happens once; Mahaparbhat alerts them for coming disasters. "a cycle of time has ended,' they said,' and another one has begun : the cycle of tribulation. Strangers are coming from afar, a horde of them, armed with terrible weapons".(Ghosh13). The love and harmony merged so much in their life that helped them to live happily. The author projected his ecological concern through his work. He displayed nature and also showed its love back to them. People live in mountains and enjoy nature's treasury.

The natives while during the course of colonization had a tendency to lean towards the colonizer in Ghosh's lines, "The lives of the Anthropic seemed infinitely more exciting than our own wretched existence in the valley" "described exactly such existence in *The Living Mountain*. Gradually, the culture of the natives was altered. The people of the valley, who worshiped the mountain in reverence, instead began to attach romantic notions of the thrill of climbing the mountain. They were overwhelmed by the stories narrated by the Antrhopois and were fascinated by the climb itself. The natives were porters, muleteers, and sherpas who laboured for the Kraanis. The Kraanis began to trust the natives more and more and the elder man began to think that they could grab the power from the Kraanis. In due course the elderly men began to rebel and when it time came for them to overthrow the Kraanis, the Kraani disappeared and joined the anthroposis.

The living mountain is a reflection of the times whenever understanding of man's relationship with the natural world seems to be inadequate as the future of our planet is turning out to be bleak. Amitav Ghosh has penned a cautionary narrative to show how colonialism and men's greed can tilt the balance in nature. A book that is sending a very strong message of being aware of the future of mankind and mending our ways towards the environment. Amitav Ghosh has demolished the modern belief of the colonizers and established the faith in ancient ideas of the valley people. The work focuses on human mentality which denies acceptance of the supremacy of environment. But we observed the modern people exploit nature as a result they have to face deadly virus and viral diseases. The whole world faced the pandemic to understand the importance of environment protection. So it is a

need to follow ancient rituals regarding nature to protect Earth .Ancient peoples believed that in the environment everywhere is God so we do not disturb nature and protect nature but we people spoil them.

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THE IMPACT OF CLIMATE CHANGE ON INDIAN CINEMA: A PERSPECTIVE

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Abstract

This research investigates the profound influence of climate change on Indian cinema, examining how environmental shifts and ecological concerns have permeated the narrative and thematic elements of films. The study explores the ways in which Indian filmmakers engage with climate change issues, shaping not only storytelling and aesthetics but also contributing to environmental consciousness and advocacy. Through an interdisciplinary lens encompassing film studies, environmental science, and cultural analysis, this research aims to shed light on the evolving relationship between cinema and climate change in the Indian context.

Key words: climate change, Indian cinema, environmental issue, rainfall etc.

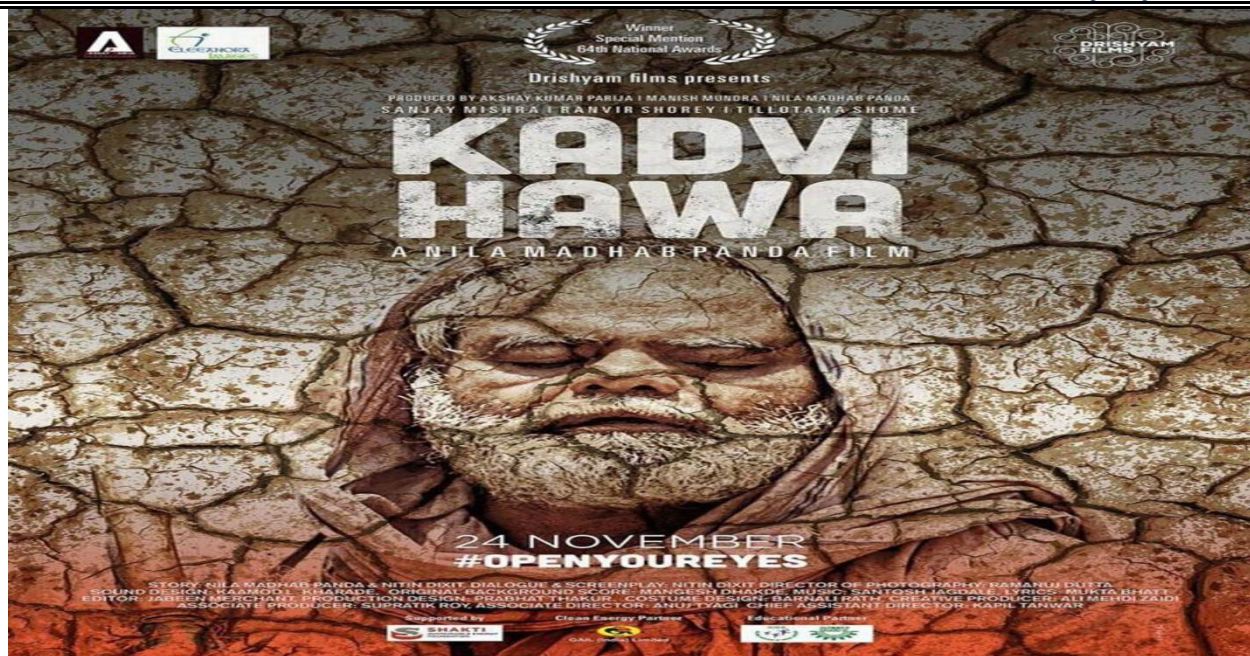
This research aims to provide insights into how Indian cinema navigates the complex terrain of climate change, influencing both the industry and the audience's perceptions of environmental issues. By examining the thematic, aesthetic, and advocacy dimensions, the study contributes to our understanding of the evolving role of cinema in addressing pressing global challenges.

From the scarcity of water to the crippling challenge of deforestation, many Indian films have dealt with the subject of climate change over the years in their own creative manner. From 'Kadvi Hawa' to 'Jal,' here are some of the Bollywood films that reiterate the damage caused by humanity to the environment.

Climate change is defined as a long-term shift in the average conditions of a region, such as temperature and rainfall. Climate change is a major problem that mankind is facing currently, and Bollywood in India has enormous potential to reach out to the public and raise awareness about the grave situation. It has the ability to sway people's behaviour and make a difference.

'Kadvi Hawa'

The Nila Madhab Panda directorial released in 2017, starring critically acclaimed actors Sanjay Mishra, Ranvir Shorey, and Tillotama Shome among others. This film throws light on the state of farmers and the consequences faced by them due to the climatic changes. 'Kadvi Haava' is inspired by true events from the drought-prone Bundelkhand region. In this film, the community of Mahua is affected by a lack of rainfall, barren soil, agricultural failure, and climate change. The film clearly depicts the difficulties farmers face as a consequence of climate change's wrath.



'Kaun Kitney Pani Mein'

This film addresses the topic of water scarcity. The story revolves around two villages— Upri and Bairi, which are on different sides of the river. Bairi people are of lower caste, work in labour, and are skillful. The residents of Upri are high caste, sluggish, and unskilled. Because of this, there is a water deficit in Upri village. Upri residents intend to obtain water from Bairi. This film explores how a lack of skills may lead to water scarcity and have an impact on people's lives. The film is directed by Nila Madhab Panda.

'Jal'

'Jal,' directed by Girish Malik, is a love drama set in the Rann of Kutch. Purab Kohli, Tannishtha Chatterjee, and Kirti Kulhari were the lead actors in this 2014 film. The film revolves around the literal meaning of Jal, which is water. The film depicts a complicated narrative of love, friendship, hostility, deception, and circumstances against the backdrop of water shortage, revealing the evil side of human character. The film also bagged many national awards.

'Irada'

Naseeruddin Shah, Arshad Warsi, Divya Dutta, Sharad Kelkar, and Sagarika Ghatge feature in Irada, a 2017 Indian thriller directed by Aparnaa Singh. Set in the backdrop of Bathinda and its thermal power plants and factories. The plot revolves around an ex-army officer's daughter, who is stricken with a life-threatening illness. Following the trail of evidence, it is discovered that this is due to chemical components in the groundwater. Many villagers are affected in the same way. The film depicts the consequences of selfish motives on the environment and people's health.

'Bhopal Express'

'Bhopal Express' is a biopic drama based on the 1984 Bhopal gas disaster. Kay Kay Menon, Nethra Raghuraman, and Zeenat Aman feature in the film. In the film, actor Naseeruddin Shah also had a vital role. The film's director, Mahesh Mathai, won a few international honours. The plot revolves around a newlywed couple whose lives are forever transformed by the 1984 Bhopal gas catastrophe. The film investigates large corporations' unethical practices and the consequences of their activities on local populations.

Kadwi Hawa to Kantara: How Indian Cinema Championed the Fight Against Climate Change

In the last few years, Indian cinema has shown us the perils of climate change in various ways, from Kantara and Sherdil to Kadvi Hawa and Kaadan. Here's a look at the films that championed nature and the urgent need to save the environment.

A few tourists are aboard a boat in the middle of the ocean, conversing about a famed yet bygone, underwater city. They discuss how this place was once where people arrived in planes, the nerve center of art and culture, and where the biggest names in the region resided. A passenger among the crowd recalls that though the city was thriving, people took advantage of what they believed were abundant resources, until one day when dark clouds shadowed the land, and it rained and rained and rained until there was no land left in sight.

Soon enough, it is revealed that this mystic underwater land was, once upon a time, the city of Mumbai, which was eventually submerged owing to a devastating rise in sea levels because of climate change. This five-minute ad film, released in 2017, was Kadvi Hawa Badlo "issued in the public interest" which in turn inspired the movie Kadvi Hawa, released the same year. It ended with alarming statistics about how 40 per cent of Mumbai could be submerged in a matter of years.

A still of sanjay mishra from Indian film **kadvi hawa**

Kadvi Hawa was India's first feature film on climate change "How often do we come across such mainstream forms of art, where nature takes the centre stage in story-telling?" Acclaimed writer Amitabh Ghosh spelt this concern in his non-fiction book *The Great Derangement*, published in 2016.

In the book, the writer depicts how climate change-based stories are often categorized in the 'science fiction' section, as though the content is fabricated. He further talks about how the capitalist agenda drives this absence of a realistic portrayal of environmental issues, making people insensitive to the urgency.

When we amalgamate the way Indian cinema has attempted to approach the topic of humans' impact on the environment, we may find the answer to Ghosh's question. Even as the topic misses mainstream cinema most times, there are a few moviemakers who are acknowledging that there's a pressing need to address the future of our planet.

The consequences of human atrocity: The Sanjay Mishra-starrer **Kadvi Hawa** dared to be India's first feature film on climate change. Director Nila Madhab Panda wonderfully portrayed how climate change posed a threat to the survival of marginalized communities, how the absence of monsoon became small talk during bedtime, and how a primary school student struggled to understand how his area experiences only two seasons, even though textbooks claim otherwise.

Furthermore, the movie seamlessly equates climate calamity with the daily struggles of distressed farmers and climate refugees.

In 2021, the OTT film **Boomika** portrayed this threat in the opposite way, by diving into the eco-horror genre. The protagonist here is uber-rich and planning to get even richer by clear-felling a verdant hill-pocket for a "green" property. Mother nature decides to take care of herself by "punishing" the assailants who have done her wrong.

While **Kadvi Hawa** was set in the desiccating land of Chambal, **Boomika** was set amid the rainforests of the Western Ghats. The starkest difference between the two movies is in **Boomika**'s treatment of the audience. Here, the makers don't leave the message to the viewers' discernment, almost spoon feeding them the agenda of the movie that human atrocity is killing mother earth.

The same year, Rana Daggubati starrer **Kaadan** was released, which took the easier route of following the promise of full-on action entertainment; but, chose a plot that relies on elephant conservation, where poor forest dependents take on crony capitalists.

Sherdil (2022), a recent low-budget OTT release, tried to send the message of greed versus need with simple storytelling. Keeping the human-animal conflict at its heart, it delves deeper into the struggle of an individual in a remote forest village amid apathetic administration and places it squarely that the unquenchable thirst for more and more is usurping nature. **Sherdil** successfully blurs the line between a profit-at-all-cost businessman and an ignorant consumer.

A still from Sherni movie

Sherni animates the debate around development without forgetting the people who live by the forests. It damned the forced narrative of pristine wilderness that denies rightful owners of their entitlements. In the same string, he garlanded the hypocrisy of denotifying protected areas for mining but restricting locals from collecting resources for their survival under the pretext that their occupation is killing the forest.

The movie depicts how honest, sensible efforts can sometimes be futile when the system is rotten. Based on true events, the movie ends on a dark note.

Moviegoers and critics also praised Masurkar for his 2017 film *Newton*, where, while puncturing the brouhaha of the largest democracy in the world, he subtly touched upon the utter absence of agency in tribal communities. Tribals are displaced and mines devour forests to satiate the purported model of growth.

The Forest Rights Act, 2016 acknowledges that tribal communities are the best keepers of the forest and instates them at the forefront of the forest conservation agenda. Along similar lines, a few movies attempted to explore the status of India's tribal communities, whose lives and fates are closely tied to the looming climate disaster.

This was seen most recently in *Kantara* (2022), where actor-director Rishab Shetty tells the story of how forest-dwelling communities fight back to reclaim their agency.

While weaving the narrative, he relies on folklore to champion their own beliefs, practices, and knowledge — known as the Indigenous or Traditional Knowledge System (IKS-TKS) — which have evolved over time through the experiential learnings of generations living close to nature, independent of modern science.

A still from kantara movie

Kantara tells the story of how forest-dwelling communities fight back to reclaim their agency. Saying “not killing that animal during its breeding season will bring us fortune” is not superstition, but rather a mechanism to protect or manage vital resources that these communities depend on. In *Kantara*, God appears to protect his people from exploitation — a cinematic expression of empowering the marginalised. The beauty of this movie, however, is that it has not only picked up environmental and forest issues so often ignored, but it set the tale in the backdrop

A still from Kedarnath

In the records of the Climate Change History, year 2013, has been calamitous for India especially for the State of Uttarakhand, where heavens poured devastation on the holy town of Kedarnath, eventually leading to the worst flood to hit India in a decade. 144 bridges collapsed, 400 villages were washed away, and 1636 roads were damaged, sweeping with them, over 15000 thousand villagers and pilgrims and 5000 animals (Das, 2013). While the data seems gruesome, what is more horrible is the fact that the disaster, though termed as a “natural calamity”, was actually brought upon the holy town through human induced catastrophe: Global Warming. There can be two reasons as to how Climate Change caused this destruction; 1) “A Warmer Climate means air can hold more water and more water vapour, so the monsoon winds carry more moisture” (Maslin, 2014, p. 77), causing sudden deathly outpour. 2) In a warmer Climate, there is a rapid expansion of the Glacial lakes, “and their sudden outbursts releases billions of cubic meters of water ending in catastrophe” (Das, 2013). Chorabari glacier, pitched over Kedarnath, destabilized by heavy downpour, released “flood water carrying huge load of sludge, debris and boulders” (Das, 2013) inflicting death and devastation.

Skillfully weaving this 2013 calamity with the narrative of two inter-faith Lovers-Mandakini aka Mukku (Sara Ali Khan), a Hindu Priest's daughter and Mansoor (Sushant Singh Rajput), a Muslim Human Porter-Abhishek Kapoor's Kedarnath, is a moving representation of human greed and mismanagement that wreaked havoc on the holy town in 2013. Centred on the disaster and human actions that led to it, Kedarnath belongs to the genre of Ecocinema.



Environmental issues are complex and multi-layered, and in many ways, cinema has helped break the social barrier of concerns that we often feel uncomfortable with, dragging problems — from the periphery where they are often ignored — to the centre stage. Mainstream movie-makers are braving their way forward to dive into this complexity and are attempting to skillfully narrate these important stories to drive the point home.

Stories may not cause a revolution, but they pass the message on. Cinema reminds us that story-telling is an art, and that good stories need to be told. Whether the masses listen, is what comes next.

Cinema's relationship with society is well documented yet the question of its influence and capacity to trigger behavioral change remains a matter of investigation. Can a film based on environmental issues set agenda for people to amend their ways of being? Do narratives engage people with reality and allow them to shape their personal responses? Such questions have been explored by many scholars, particularly in relation to Hollywood films where environmental issues drive the narrative (Beattie, Sale and McGuire 2011; Manzo 2017). These research studies demonstrate clear evidence of emotional and cognitive response in the audience to cinematic depictions of dire issues such as global warming. Whether this emotional impact of films translates into behavioral change is a matter of further research in various cultural contexts across the globe.

One of the most challenging parts of communicating environmental issues such as climate change and biodiversity is that they are real yet abstract, experiential yet predominantly situated in the domain of science and data. Hence, it is crucial yet a distant reality for most people. The first step towards mitigating circumstances is to have a clear understanding of the issues that matter and cinematic narratives help in creating that understanding by inviting the audience to engage and locate their own lived experience in relation to the filmic world. The cinematic depiction of specific events or collective action allows for interrogating particular contexts and processes that required people to engage as a community. This cinematic rendering of community engagement serves as a significant symbolic construction that asserts environment or climate as a lived cultural domain of collective relationship between human and non-human elements.

Where cinema essentially and significantly contributes by narrativizing or dramatizing human experience on screen lies in its capacity to bring environment or climate from the realm of statistics and science into the domain of life and lived space. The cinematic discourse on environmental issues and climate crisis offers a creative and affective framing of nuanced micro experiences that largely go unnoticed or remain incomprehensible due to the dominant framing of environment as a scientific issue that can only be dealt with by state policies and legal frameworks. In this article, I focus on how Indian cinema has dealt with environmental issues in the recent past and what role these cinematic narratives play in communicating about environmental issues.

By focusing on real-life events or stories related to common people, these films shift the locus of power from authoritative administrative or political figures and state actors to common people, communities and other non-state actors. This decentralization of climate communication through cinema whether in fictional entertainers or non-fictional intimate portrayals of people's engagement opens a more direct way of translating critical factual information into emotional and affective imagery capable of evoking further human action.

Whether produced in the form of fiction, non-fiction, popular or experimental, what is common in these narratives and binds them together is the desire to engage with the existential crisis facing humankind. In doing so, these films do not rely on inducing fear by reproducing tragic events or creating a spectacle out of the lived experience of loss or suffering. Rather these narratives aim at generating engagement through micro-narratives of relatable stories of human action, stories that can potentially shape people's perceptions about social realities triggering a personal response. By drawing on and from human acts of resistance and people's movements, these films connect various emotional, cultural and political dots for the audience. In this sense, the cinematic narratives exert their potential power in suggesting not just new ways of thinking about one's surroundings through a complex spatio-cultural lens but also the possibility of exercising human agency. In this regard, the argument put forth by Kate Manzo (2017) is significant here she discusses climate change films from the perspective of usefulness. Manzo argues that the question that we should ask about climate change films is not whether they are factually correct or scientifically accurate, we should focus on the function that those films perform and how the films are useful from an educative aspect. In my reading, with a wide variety of aesthetic approaches utilized to tell these stories of resilience and resistance, these films frame the human-nature relationship as a complex web of historic power relations while creating new figures of authority. These films contextualize environmental matters in relation to socio-cultural specificities allowing the audience to relate and interpret the narrative meanings for possible future action.

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IMPACT OF GLOBALIZATION IN ARVIND ADIGA'S "THE WHITE TIGER"

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Abstract

India has diverse culture, customs and traditions. Even though it is diverse, it always seeks the atmosphere of West. This tendency is due to the effects of Globalization. Globalization has become one of the most debated topics in the modern era and it became a subject of study and discussed by all sectors of people in a society. It evolves as a buzzword in books, articles and also discussed in different platforms. Understanding some of its key aspects, on the other hand, will be critical in comprehending the concepts or ideas discussed in this research. Since the beginning of the previous decade, challenging ideas of globalization have been found in literature.

Arvind Adiga, a promising postmodern writer of Indian-Australian dual citizenship from India, has envisioned the global force on the local heritage with the village and city social life as the backdrop. Arvind Adiga's novel 'The White Tiger' presents the live picture of this ugly face of globalization and urbanization which is sucking the blood of the deprived, downtrodden poverty stricken multitudes dwelling in the remote corners of the villages and obscured areas of cities of India.

Keywords: Indian Literature, Globalization, liberalism, Indian Culture, free exchange of technology, knowledge, ideas

Introduction

Arvind Adiga was born Chennai on 23 October 1974 to Dr. K. Madhava Adiga and Usha Adiga from Mangalore. Arvind Adiga began his career as a financial journalist, interning at the Financial Times. With pieces published in the Financial Times and Money, he covered the stock market and investment. The novel studies the contrast between India's rise as a modern global economy and the lead character, Balram, who comes from crushing rural poverty. (Source – Wikipedia) Arvind Adiga was born in Madras in 1974 and educated in Oxford University. Arvind Adiga's the debut novel *The White Tiger* won the 2008 Booker Prize in the same year. Arvind Adiga's contribution to literature not only includes novels but also short stories such as "The Sultans Battery," "Smack," "Last Christmas in Bandra" and "The Elephant." Arvind Adiga is one among the famous writers who dared to write about the major issues in Indian Society such as political, social, religious and cultural ideas.

Globalization has a pivotal role to play worldwide. It has left back the footprints upon every sphere of life. Indian Culture is rich with respect to its heritage and resource and more importantly the welcoming approach of its citizen. The term Globalization is often understood that it indicates about more trade, foreign companies and economic crisis. But it also reflected upon literature and language. Everyone knows that literature is a reflection of life. So it also reflects the socio-political and economic pressures.

It is very difficult to confine globalization to a single definition because the term or concept has come to refer to a range of interlocking variables and trends so much so that once the term is mentioned; it evokes a lot of passion and emotion. Globalization is dissolving the physical boundaries across the nations of the world paving way for openness, integration and flow of information, ideas, technologies, goods, services, capital, finance and people across the topographical borders.

In the introduction to their book *The Globalization of World Politics*, Steve Smith and John Baylis define globalization as the process of increasing interconnectedness between societies to the point where events in one part of the world increasingly affect people and societies in other parts of the world. A globalized world is one in which political, economic, cultural, and social events are becoming increasingly intertwined, as well as having a greater influence. In other words, cultures are increasingly influenced by the happenings of other societies, and the world appears to be smaller. After the roaring of this colonization, the era of globalization has gradually peeped into the

third world countries like India. Mostly the Indian novels marked the influence of globalization in various fields and aspects like culture, tradition, thoughts, ideas, opinions, technologies, food so on and so forth. Particularly, to understand its influence on literature, it is very important to analyze the characteristics of some contemporary novels which are different from earlier post-colonial novels appeared during the middle of twentieth century. Kiran Desai's "*The Inheritance of Loss*", Vikram Chandra's "*Red Earth and Pouring Rain*", Arvind Adiga's "*The White Tiger*", Amitav Ghosh's "*The Hungry Tide*" are some of the Indian novels which are embarked with striking effects of globalization on various aspects. Among these, this paper focuses on the globalization that much reflected on the plot and its characters in Arvind Adiga's "*The White Tiger*".

Globalization in "*The White Tiger*":

The protagonist in the novel as portrayed by Arvind Adiga is a poor boy called Balram Halwai. He writes a letter to the President of China Mr. Wen Jaibo. He also explains how Balram became a successful entrepreneur. Balram is the son of poor rickshaw puller and he belonged to Halwai caste. He was good in studies but he was forced to work in the tea-shop in order to pay the family debt. While he was working in the tea-shop he listened to the conversation of many customers and gained knowledge about the society. The incidents and the people around him turned him into a corrupted man and he involved in illegal activities. One day he plans to kill his master and his success in activating the plan made him to become the entrepreneur in Bangalore.

Though India is shown as an emerging entrepreneurial power in the world. Advancement in the field of science and technology, space, transportation, hotel industry, tourism, real estate, expansion of cities, mall culture, industries and outsourcing, etc., characterize the image of India.

This novel has a very simple plot. The whole story moves around Balram Halwai, who is the son of a father whose body description stands witness to his terrible life. The title of the novel *The White Tiger* refers to Balram, who was a smart student of his class, but belonged to a poor family. In order to return the loan which his family had borrowed, all his family members had to work and Balram is therefore pulled out of the school and started working at the tea shop. Because in this age of globalization, he had to be technical as well as tricky, he has to be the white tiger in order to outsmart others, if he wanted to be counted. The meaning of the novel itself gives a clear cut idea that it is an exhausting struggle for the low-class people to break out of their oppressive cultural background to seek success.

The novel clearly portrays how Indian Culture is affected by globalization by changing the marriage life of an individual and marriage values of two bonding souls, inequality between the rich and poor, people addicted towards modern technologies and changing a man to a murderer. In the novel *The White Tiger* Balram Halwai a poor Indian village boy turned Indian business culture and became a successful entrepreneur. These successful entrepreneurs have their own companies and run them successfully. In the globalized world, corruption plays a vital role, which automatically affects the Indian culture. The corruption is not only in city but also in village where landlords deeply involve themselves to earn more money. Poor people are affected by corruption and to the core they are ready to sell even their vote for money. Unemployment is another major problem due to globalization.

Ashok's wife Pinky Madam is an American and she is portrayed as a cruel mistress to Balram. After killing a young child in an accident, she wants to fly back to America. After Pinky Madam has left for America Ashok goes out to bars and clubs, hiring a prostitute one night and reconnecting with a former lover on another. All these incidents make Ashok to involve in illegal activities, which affect the marriage value of Indian Culture. Globalization has helped in the creation of an American atmosphere in India in terms of mall culture, pop culture and party culture influencing the life style, language and dressing of the Indians who mimic to merge with the sophisticated faction. In order to satisfy Pinky's desire for American life, Ashok takes her to Gurgaon, which is a replica of American locale, instead of back to America.

The protagonist Balram says "There is no water in our taps and what you people in Delhi give us? You give us Cell Phones. The Cell Phone is fascinating because it has always held up in India as a sign of progress" (256). The protagonist Balram epitomizes the transition of globalization. In the globalized world commodification is another aspect that is spreading very fast. It is clear that in some places women are portrayed as a commodity in working place.

Balram watches Indian people in Delhi wearing ethnic costumes and cultural codes mixed with American styles. People spend their time in mall and enjoy westernized food, talk in nokia cell phones, the nightclubs open where men and women go together for party. All these incidents in the novel can be viewed as how globalization has affected Indian Culture. Globalization can bring prosperity and wealth and it depends upon how one uses it to shape the society.

This novel is a depiction of the social and economic inequalities of contemporary India. It shows that Globalization did nothing to improve the life of poor people.

Conclusion

Globalization allows for capitalization and the construction of a life based on materialistic ideals. The novel as a form shows the impact of power and money, which has the ability to significantly affect people's lives. The current worldwide crises and societal issues, such as corruption, slum development, materialistic domination, and so on, are the result of the world's globalized setup. Cultural conflict is a broad phrase that refers to the mistreatment of individuals using authority and identifying them as socially disadvantaged. It destroys people's peaceful lives and voices, either directly or indirectly, by continuously repressing the dominant ones. The corporate world was formed to fulfill the expectations of the Western world. More than political hyperbole, this will help to create a deeper grasp of current cultural differences and political disputes.

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NATIONAL EDUCATION POLICY AND THE AATMANIRBHAR BHARAT

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Abstract

The synergy between the National Education Policy and the Aatmanirbhar Bharat Vision has several implications and benefits for the education sector. It creates a holistic learning environment that combines theoretical knowledge with practical application, fostering innovation and entrepreneurship. This leads to the development of a skilled and adaptable workforce that can drive economic growth. The NEP lays great emphasis on achieving foundational literacy and numeracy by grade 3 in all schools by 2025. Other major changes include curriculum upgrading, focus on experiential learning and critical thinking as opposed to rote learning, support for students with disabilities through special educators, and transparent teacher recruitment. It fosters a culture of innovation and entrepreneurship, encouraging students to think creatively and take risks, leading to the development of a skilled and adaptable workforce that can drive economic growth. However, implementing this synergy may face challenges, particularly in skill development and vocational training. Despite these challenges, there are successful case studies showcasing the implementation of this synergy, such as the establishment of incubation centers in educational institutions and the integration of vocational training into the mainstream education system. These successful models, like the Barefoot College in Rajasthan and vocational training initiatives in Kerala and Karnataka serve as inspiration for other institutions.

National Education Policy and the Aatmanirbhar Bharat Vision : The Synergy for unleashing potential

Introduction to the National Education Policy (NEP) and Aatmanirbhar Bharat Vision

The National Education Policy (NEP) and the Aatmanirbhar Bharat Vision are two crucial pillars of India's development strategy. Both initiatives aim to unlock the immense potential of the country by focusing on education and self-reliance. The NEP is a comprehensive framework that aims to transform the education system, while the Aatmanirbhar Bharat Vision seeks to make India an economically independent nation. In this article, we will explore the synergies between these two initiatives and examine how they can work together to drive India's growth.

Overview of the National Education Policy

The National Education Policy, approved by the Indian government in 2020, is a landmark reform that aims to revamp the entire education system in the country. It envisions a learner-centric approach and focuses on holistic development, critical thinking, and skill enhancement. The NEP emphasizes the importance of early childhood education, ensuring universal access to quality education, and promoting research and innovation. It also aims to bridge the gap between vocational and academic education, enabling students to develop practical skills alongside theoretical knowledge.

Key features and objectives of the National Education Policy

For school education, NEP 2020 implements a new 5+3+3+4 structure in place of the 10+2 system. This structure corresponds to ages 3-18 years and introduces 3 years of pre-primary education before the age of 6.

The policy lays great emphasis on achieving foundational literacy and numeracy by grade 3 in all schools by 2025. Other major changes include curriculum upgrading, focus on experiential learning and critical thinking as opposed to rote learning, support for students with disabilities through special educators, and transparent teacher recruitment.

In the area of higher education, NEP 2020 has set a target of increasing the gross enrollment ratio to 50% by 2035. It proposes flexible multidisciplinary undergraduate degrees with multiple entry and exit points that promote holistic education. The policy calls for setting up a Higher Education Commission of India (HECI) to regulate higher education institutions. Other aims include promoting quality teaching through improved capacity building of faculty, filling vacancies, providing incentives for innovative research and education delivery. There will also be greater incorporation of technology for online education.

The fundamental principles driving reforms under NEP 2020 are Quality, Affordability, Equality, Accessibility and Accountability. Initiatives to improve quality include learning outcome-focused pedagogy, capacity building of institutions and faculty. Affordability will be ensured through fee caps, scholarships and increased budgets.

Equality and inclusion will be promoted by providing support to disadvantaged groups. By leveraging online education, adult literacy programs and skill integration the government aims to improve access. Strict regulation by HECI along with public disclosure requirements will enhance accountability. If implemented effectively, NEP 2020 has the potential to transform Indian education and prepare students for a fast changing world.

The Aatmanirbhar Bharat Vision and its significance

The Aatmanirbhar Bharat Vision, introduced by the Indian government in 2020, envisions a self-reliant India across various sectors. It aims to promote local manufacturing, entrepreneurship, and innovation, reducing dependency on imports and foreign technologies. The vision is based on the principles of economic self-sufficiency, job creation, and sustainable development. By encouraging indigenous industries and promoting the use of local resources, the Aatmanirbhar Bharat Vision seeks to make India a global economic powerhouse.

Education plays a vital role in shaping the future of a nation. It empowers individuals, enhances their skills, and equips them to contribute to the growth and development of society. Self-reliance in education is an essential aspect that enables students to become independent learners and thinkers. It encourages them to take ownership of their learning journey and develop the necessary skills to adapt to an ever-changing world.

Self-reliant education focuses on nurturing critical thinking, problem-solving, and creativity among students. It encourages them to explore their interests, pursue innovative ideas, and develop a sense of entrepreneurship. By fostering self-reliance in education, we empower students to become lifelong learners who can navigate the challenges of the future with confidence and resilience.

How the National Education Policy supports the Aatmanirbhar Bharat Vision

The National Education Policy plays a crucial role in supporting the Aatmanirbhar Bharat Vision by nurturing a skilled workforce and fostering innovation. The policy's emphasis on multidisciplinary education and practical skills development aligns with the vision's goal of promoting entrepreneurship and self-employment. By equipping students with the necessary knowledge and skills, the NEP empowers them to contribute to the growth of indigenous industries and drive innovation in various sectors. Additionally, the policy's focus on research and development encourages students to explore new ideas and solutions, further supporting the Aatmanirbhar Bharat Vision.

Aatmanirbhar Bharat has brought about a significant impact on Indian students. It has instilled a sense of pride and confidence in their abilities to contribute to the nation's growth. The vision promotes indigenous knowledge and skills, encouraging students to explore and excel in fields that are aligned with India's strengths and resources.

One of the notable impacts of Aatmanirbhar Bharat on Indian students is the shift towards vocational and skill-based education. The vision recognizes the importance of practical skills and hands-on learning, which are essential for building a self-reliant workforce. It has led to the introduction of new courses and training programs that focus on developing industry-relevant skills, such as robotics, artificial intelligence, and renewable energy.

Synergies between the National Education Policy and the Aatmanirbhar Bharat Vision

The synergies between the National Education Policy and the Aatmanirbhar Bharat Vision are evident in their shared goals and complementary objectives. Both initiatives aim to build a strong foundation for India's development by focusing on education, innovation, and self-reliance. The NEP provides the necessary framework and tools to equip students with the skills and knowledge needed to contribute to the Aatmanirbhar Bharat Vision. The vision, in turn, provides real-world opportunities and platforms for students to apply their learning and contribute to the nation's growth. The synergy between these two initiatives can unleash the true potential of India's education system and drive sustainable economic development.

Implications and benefits of the synergy for the education sector

The synergy between the National Education Policy and the Aatmanirbhar Bharat Vision has several implications and benefits for the education sector. It creates a holistic learning environment that combines theoretical knowledge with practical application, preparing students for the demands of the real world. The synergy also fosters a culture of innovation and entrepreneurship, encouraging students to think creatively and take risks. This, in turn, leads to the development of a skilled and adaptable workforce that can drive economic growth. Additionally, the synergy promotes the use of indigenous resources and technologies, paving the way for sustainable development and reducing dependency on imports.

Challenges and potential roadblocks in implementing the synergy

Implementing the synergy between the National Education Policy and the Aatmanirbhar Bharat Vision may face several challenges and potential roadblocks. The National Education Policy 2020 introduces several revolutionary and progressive changes to transform India's education system. However, experts have identified massive challenges that must be addressed to enable successful nationwide implementation.

One major issue is around skill development, especially imparting effective vocational training. There are concerns about perpetuating historical associations of certain communities with traditional vocations rather than matching training to students' aptitudes. Policymakers need to transform mindsets around the perceived value of vocational education. Additionally, India remains far from achieving vocational education targets set decades ago, reflecting systemic inadequacies being addressed.

Another significant challenge is the dire need for teacher training, development, and enablement. The new policy requires teachers to act as facilitators and mentors, making learning collaborative, enjoyable, and tailored to diverse paces and local cultures. This demands a pool of inspiring teaching professionals supplementing educators lacking the required instructional skills, historical knowledge, or technical capabilities.

Furthermore, the policy necessitates major change management within a historically rigid education system. Everything from curriculum and textbooks to teaching methods and educational values need restructuring. New pedagogical innovations and disruptive cultural shifts are critical for adopting interdisciplinary learning, formative assessments, and integrative use of technology. Bureaucratic resistance to previous reform efforts raises concerns.

Additionally, legal clarifications are imperative regarding potential conflicts between the Right to Education Act and NEP directives on curriculum, testing, autonomy etc, especially relating to minimum school starting age rules. Such regulatory alignment issues could derail implementation timelines without proactive conflict resolution.

Finally infrastructure and accessibility challenges compound these issues. The COVID-19 crisis underscored gaps in digital access, connectivity and technological capabilities needing urgent redressal for e-learning models to work.

Remote schools lack funds or staff skills to adopt computer-based teaching and evaluations. Solving these systemic deficits in teacher quality, school resources, backwards caste/tribe access and infrastructure modernity remains the policy's biggest implementation hurdle.

Case studies showcasing successful implementation of the synergy

Several case studies highlight the successful implementation of the synergy between the National Education Policy and the Aatmanirbhar Bharat Vision. One such example is the establishment of incubation centers in educational institutions that provide students with the necessary support and resources to transform their ideas into viable businesses. These centers not only foster entrepreneurship but also promote innovation and research.

Another case study is the integration of vocational training and practical skills development into the mainstream education system. This enables students to acquire industry-relevant skills and enhances their employability. Such successful implementations serve as models for other institutions and provide valuable insights into the potential benefits of the synergy.

Despite the challenges, there are several successful self-reliant education models in India that can serve as inspiration. One such model is the Barefoot College in Rajasthan. This innovative institution empowers rural

communities by providing education and training in various skills, such as solar engineering, handicrafts, and water management. By focusing on practical skills and community development, the Barefoot College has transformed the lives of many individuals and created sustainable change.

Kerala: The state has integrated vocational training into the school curriculum from Grade 6 onwards, offering courses in carpentry, tailoring, and IT. This has led to a significant increase in student enrollment in vocational courses and improved employability rates.

Karnataka: The state has launched the "CMRISE" program, which provides vocational training to students in grades 9-12 in collaboration with industries. The program has resulted in increased industry placements for graduates and boosted entrepreneurship among students.

Jodhpur National University: The university has introduced a unique "Liberal Arts and Sciences" program that allows students to choose courses from across various disciplines. This has led to improved critical thinking skills, creativity, and problem-solving abilities among students.

Tamil Nadu: The state has made Tamil the mandatory language of instruction in government schools up to Grade 8. This has led to a resurgence of interest in the language and improved learning outcomes for Tamil-speaking students.

Another notable example is the Indian Institute of Technology (IIT) system. These premier engineering institutions have produced some of the brightest minds in the country who have contributed significantly to technological advancements and entrepreneurship. The IITs emphasize rigorous academic training coupled with hands-on projects and research, fostering self-reliance and innovation.

According to a recent survey, over 70% of schools have started implementing the NEP 2020 guidelines.

The number of students enrolled in vocational courses has increased by 20% since the implementation of the NEP.

The gross enrollment ratio for higher education has reached 27.1%, the highest ever in India.

India's ranking in the Global Innovation Index has improved by 30 places since 2015.

Recommendations for policymakers and stakeholders

To further strengthen the synergy between the National Education Policy and the Aatmanirbhar Bharat Vision, policymakers and stakeholders should consider the following recommendations:

- Increase investment in infrastructure development and technology integration in educational institutions.
- Foster partnerships between educational institutions and industries to ensure curriculum relevance and practical exposure.
- Promote research and development by establishing research centers and encouraging collaboration between academia and industry.
- Provide incentives and support for entrepreneurship and innovation through funding schemes and mentorship programs.
- Continuously assess and update the curriculum to align with the changing needs of industries and the evolving job market.

By implementing these recommendations, policymakers and stakeholders can create an ecosystem that nurtures talent, fosters innovation, and drives the growth of indigenous industries.

Conclusion: Harnessing the potential of the National Education Policy and the Aatmanirbhar Bharat Vision

The National Education Policy and the Aatmanirbhar Bharat Vision have the potential to transform India's education system and drive economic growth.

The synergies between these two initiatives create a powerful framework that combines education, innovation, and self-reliance.

By aligning the objectives of the NEP with the goals of the Aatmanirbhar Bharat Vision, India can unlock the immense potential of its education system and create a skilled and self-sufficient workforce. However, realizing this potential will require concerted efforts from policymakers, educational institutions, and industry stakeholders. By working together, we can unleash the true potential of the National Education Policy and the Aatmanirbhar Bharat Vision, paving the way for a prosperous and self-reliant India.

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THE INTERPLAY OF CULTURE & LANGUAGE: A COMPREHENSIVE EXPLORATION

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Abstract

Culture and language is a subject of profound significance. The evolution of language unfolds as a captivating saga deeply rooted in the annals of human history. The organization of thoughts and ideas within a sentence may reflect cultural priorities. Language serves as a profound reflection of culture, acting as a mirror that encapsulates the values, beliefs, social structures, and historical narratives of a community. Reforms may influence the adoption of certain linguistic norms in written and formal communication, impacting language use across various domains. Preserving cultural linguistic diversity faces a myriad of challenges in the contemporary globalized world. Language is a medium for transmitting cultural values, traditions, and historical narratives. The intricate relationship between culture and language unfolds as a captivating narrative, weaving through the tapestry of human history and societal evolution. Technology facilitates global connectivity and language accessibility, it also presents challenges related to misinformation and the manipulation of language in the digital sphere.

Introduction

The intricate relationship between culture and language is a subject of profound significance, transcending disciplinary boundaries and inviting exploration from various perspectives. My paper endeavors to unravel the nuanced interplay between these two fundamental aspects of human existence. Language, as a unique expression of thought and communication, has evolved over millennia, intricately woven into the fabric of cultural contexts. This exploration is not confined to the past; it extends to contemporary dynamics, including the challenges posed by globalization and technological advancements. The quest to comprehend the symbiotic relationship between culture and language is not merely an academic pursuit but a crucial endeavor for appreciating the richness of human diversity and fostering meaningful communication across societies.

Historical context of language development

The evolution of language unfolds as a captivating saga deeply rooted in the annals of human history. Journey commences with the primal origins of language, a prehistoric tapestry woven through grunts, gestures, and rudimentary symbols. Linguistic expression underwent transformative phases, adapting to the exigencies of survival and social cohesion.

Early hominids communicated through rudimentary vocalizations, laying the foundation for the intricate linguistic structures that would later develop. The Paleolithic era witnessed the gradual refinement of communication, paving the way for the birth of protolanguages within distinct communities. The advent of agriculture around 10,000 BCE spurred unprecedented societal shifts, catalyzing the development of more sophisticated languages. With settled communities and burgeoning cultures, languages diversified, reflecting the myriad experiences and environments of their speakers. Written language, an epochal innovation, emerged independently across different civilizations, propelling humanity into new realms of expression and documentation.

Ancient civilizations such as Mesopotamia, Egypt, and the Indus Valley cultivated written languages, facilitating the preservation of cultural and historical narratives. The classical era witnessed the crystallization of languages like Greek and Latin, influencing subsequent linguistic developments in the Western world. The medieval period brought forth a linguistic tapestry colored by the feudal system, religious influences, and cultural exchanges through trade and conquest. The 20th century witnessed the proliferation of global languages and the advent of mass media, fostering unprecedented linguistic interconnectedness.

Cultural Impact on language

Culture, as the crucible of shared beliefs, values, and practices within a community, exerts a profound influence on the evolution and expression of language. The symbiotic relationship between culture and language is evident in the subtle nuances of linguistic structures, lexicon, and communicative norms that vary across different societies. Idiomatic Expressions and Cultural Metaphors: Idiomatic expressions and metaphors provide linguistic snapshots of cultural experiences. They encapsulate shared values and historical references, serving as linguistic bridges that connect speakers within a cultural community. Unraveling these expressions unveils layers of cultural meaning embedded in everyday communication. The norms of politeness and respect vary across cultures, influencing language choices and communication styles. Some languages, like Japanese, have intricate systems of honorifics, reflecting the importance placed on social hierarchies. Understanding these linguistic nuances is crucial for effective cross-cultural communication. Cultural nuances also permeate the grammatical and syntactical structures of languages. The organization of thoughts and ideas within a sentence may reflect cultural priorities. For example, some languages emphasize the subject, while others prioritize the action or object, highlighting varied cultural orientations towards communication.

Pragmatics, the study of how context influences meaning in communication, is deeply intertwined with culture. Cultural norms dictate appropriate ways of expressing politeness, making requests, and conveying emotions. Failure to understand these cultural subtleties can lead to miscommunication, emphasizing the integral role of culture in shaping pragmatic aspects of language use.

Language as reflection of Culture

Language serves as a profound reflection of culture, acting as a mirror that encapsulates the values, beliefs, social structures, and historical narratives of a community. The intricate interplay between language and culture is evident in various facets, illustrating how linguistic expressions embody and transmit the essence of a particular society. In essence, language functions not merely as a tool for communication but as a living repository of a culture's identity. The study of language unveils the layers of meaning woven into the fabric of a society, providing insights into the collective consciousness and historical journey of a cultural community.

Social changes and language evolution

Social changes wield a profound influence on the evolution of language, as the dynamism of societies reshapes communication patterns, linguistic norms, and even the very structure of languages themselves. The advent of technology, from the printing press to the internet, has revolutionized communication. Technological changes introduce new vocabulary, alter writing conventions, and create novel forms of linguistic expression. The digital era, in particular, has given rise to abbreviations, emojis, and an unprecedented speed of information exchange. Urbanization often leads to increased interaction among diverse linguistic communities. This mingling of dialects and languages in urban centers can result in the emergence of new linguistic forms, dialectical shifts, and the evolution of urban vernaculars. Language becomes a powerful tool for social movements, reflecting the aspirations and demands of societal changes. New terminologies and slogans emerge, encapsulating the discourse and ideals of movements advocating for civil rights, gender equality, or environmental awareness. Globalization facilitates the exchange of ideas, cultures, and languages on an unprecedented scale. While this fosters linguistic diversity in some contexts, it also contributes to the homogenization of language, as certain languages become dominant in international communication. Demographic changes, such as migration and diaspora, introduce multilingualism to various societies. This linguistic diversity often results in the blending of languages, the creation of creoles, and the adaptation of linguistic elements from different cultural sources. Economic transformations influence language in the business realm. New industries introduce specialized terminology, and global economic trends impact the adoption of certain languages as lingua franca in international business communication. Changes in educational systems can lead to language standardization efforts. Reforms may influence the adoption of certain linguistic norms in written and formal communication, impacting language use across various domains. Each generation contributes to linguistic innovation, introducing slang, new expressions, and linguistic trends that reflect the evolving cultural landscape. The influence of youth culture, in particular, often shapes language evolution.

In short, social changes act as catalysts for language evolution, prompting linguistic systems to adapt to the evolving needs and dynamics of human societies.

Globalization and language dynamics

Globalization, the interconnectedness of societies on a global scale, exerts profound effects on language dynamics, reshaping communication patterns, linguistic diversity, and language status. As the world becomes more interconnected, languages navigate a complex landscape influenced by economic, technological, and cultural globalization. Globalization often leads to the rise of dominant languages as lingua franca in international communication. English, in particular, has become a global language of business, science, and diplomacy, impacting the linguistic landscape worldwide. Increased global interaction results in language contact, fostering the creation of hybrid languages and linguistic blends. Creole languages, for example, emerge as a result of cultural and linguistic amalgamation in regions shaped by historical trade and colonization. Economic globalization introduces standardized business practices and terminology, influencing the adoption of specific languages for international trade and commerce. Multinational corporations often adopt English as the primary language for internal communication. The internet and social media platforms play a pivotal role in disseminating linguistic trends globally. Slang, expressions, and linguistic innovations spread rapidly, contributing to a shared global online language culture.

Globalization facilitates cultural exchange, influencing language through the adoption of loanwords, phrases, and cultural references. This cross-pollination contributes to linguistic diversity while creating shared linguistic elements. While globalization connects societies, it also poses a threat to linguistic diversity. Smaller languages face the risk of endangerment and extinction as dominant languages overshadow them in various domains, leading to language shift. Globalization influences language choices in education. English-language education becomes highly sought after, impacting the linguistic preferences of students and creating a global demand for proficiency in certain languages. Migration patterns in a globalized world create multilingual urban spaces. Cities become hubs of linguistic diversity, with inhabitants bringing their native languages and contributing to the linguistic richness of the urban environment. Global challenges such as climate change, healthcare, and technology necessitate the development of specialized terminology. International cooperation leads to the creation of shared linguistic frameworks for addressing these global issues.

The impact of globalization on language dynamics is multifaceted, fostering both interconnectedness and challenges to linguistic diversity. Understanding these dynamics is crucial for navigating the linguistic landscape of a world characterized by increasing global interdependence.

Challenges in preserving Cultural Linguistic diversity

Preserving cultural linguistic diversity faces a myriad of challenges in the contemporary globalized world. These challenges range from socio-economic factors to the influence of dominant languages and technological advancements. Addressing these issues is crucial for maintaining the richness of human languages and safeguarding cultural heritage. Smaller languages are particularly vulnerable, facing the risk of endangerment and extinction. Economic pressures, migration, and globalization contribute to the decline of indigenous languages as speakers shift to more widely used languages for practical reasons. The dominance of a few global languages, such as English, in various domains like business, technology, and academia marginalizes other languages. This linguistic hegemony can lead to the erosion of linguistic diversity as dominant languages overshadow smaller ones. Educational systems often prioritize teaching in dominant languages, sidelining native languages. Policies favoring linguistic assimilation in education contribute to language shift, especially among younger generations. Global media, predominantly in dominant languages, shapes cultural narratives and influences linguistic preferences. The pervasive influence of media can lead to linguistic homogenization, overshadowing the diverse linguistic expressions present in different cultures.

Economic considerations drive language choices, with individuals and communities often opting for languages perceived as economically advantageous. This can result in the neglect or abandonment of native languages in favor of those seen as more globally useful. The digital era introduces new challenges as dominant languages dominate online spaces. The availability of digital content in a limited number of languages can contribute to language shift, particularly among younger generations who engage more with online platforms. Many languages lack comprehensive documentation, making it challenging to preserve and pass on linguistic knowledge. The absence of written records exacerbates the difficulties in revitalizing or reconstructing languages facing

endangerment. Indigenous communities, often on the fringes of globalization, face challenges in preserving their languages. Displacement, cultural assimilation, and loss of traditional practices contribute to the erosion of linguistic diversity within these communities. Initiatives for language preservation often face resource constraints. Funding for documentation, revitalization efforts, and educational programs may be limited, hindering comprehensive strategies for maintaining linguistic diversity.

Addressing these challenges requires a concerted effort involving linguistic communities, policymakers, and global institutions. Recognizing the intrinsic value of linguistic diversity is essential for fostering an inclusive and culturally rich global society.

Language and Cultural Identity

Language plays a pivotal role in the formation and preservation of cultural identity, serving as a dynamic vessel through which communities express their heritage, values, and collective consciousness. The intricate relationship between language and cultural identity is evident in various dimensions. Language is a medium for transmitting cultural values, traditions, and historical narratives. Folklore, myths, and rituals encoded in language contribute to the intergenerational transmission of cultural identity. Unique linguistic features, including pronunciation, vocabulary, and syntax, act as distinctive markers of cultural identity. These features create a sense of belonging and differentiate one cultural group from another. Language reinforces a sense of identity by providing a shared means of communication within a cultural group. Speaking a common language fosters a sense of community, promoting mutual understanding and solidarity.

Cultural idioms and expressions encapsulate shared experiences and cultural nuances. Understanding and using these linguistic elements becomes a way for individuals to signal their affiliation with a specific cultural identity. Language can serve as a tool for cultural resistance against external pressures. Preserving and revitalizing native languages in the face of dominant linguistic forces becomes a form of resistance, asserting the distinctiveness of a cultural identity. Naming conventions within a language often carry deep cultural significance. Personal names, place names, and titles reflect cultural values, historical events, or spiritual beliefs, contributing to the preservation of cultural identity. Bilingual individuals often navigate multiple cultural identities. The ability to switch between languages reflects a complex interplay of cultural influences, allowing for a nuanced expression of multicultural identities. Cultural identity finds expression in artistic forms such as literature, music, and poetry. Language becomes a canvas for creative endeavors, reflecting the unique perspectives and cultural narratives of a community. The diversity of languages across the globe is a testament to the rich tapestry of human cultures. Each language represents a unique cultural heritage, contributing to the global mosaic of identities. In essence, language serves as both a repository and a living expression of cultural identity. The preservation and revitalization of languages become essential not only for linguistic diversity but also for safeguarding the diverse cultural landscapes that contribute to the global human experience. Technological Influences- Technological advancements exert significant influences on language use, communication patterns, and linguistic evolution. The intersection of technology and language introduces both opportunities and challenges, shaping the way individuals and communities interact in the digital age.

Digital platforms, including social media, messaging apps, and online forums, have transformed communication. Informal language, abbreviations, and emojis have become prevalent, shaping new modes of expression and communication norms. Technology facilitates global connectivity, enabling linguistic exchange on an unprecedented scale. Online communication platforms break down geographical barriers, fostering cross-cultural interactions and language learning. Automated translation tools enhance language accessibility, allowing users to communicate across language barriers. This technology promotes multilingualism and facilitates collaboration in diverse linguistic environments. The digital era gives rise to new slang, expressions, and neologisms. Online communities often create their own linguistic codes, reflecting shared experiences, internet culture, and evolving social dynamics.

Online gaming communities foster unique linguistic subcultures. Gamers develop specialized terminology, expressions, and acronyms, contributing to the creation of a distinct gaming vernacular. Voice-activated technologies, such as virtual assistants, influence speech interaction. Users adapt their language patterns when communicating with voice-based systems, shaping conversational norms. Digital literacy is intertwined with

language skills in the digital age. Proficiency in navigating online platforms, understanding digital content, and effectively using digital tools becomes integral to effective communication. Online writing conventions, including the use of hyperlinks, hash tags, and multimedia elements, influence how information is presented. The digital medium introduces new ways of structuring written communication. The rapid dissemination of information online presents challenges related to misinformation and language manipulation. Understanding the nuances of digital rhetoric becomes essential for critical language use in the online sphere.

In summary, technology intertwines with language in multifaceted ways, transforming communication dynamics and shaping linguistic landscapes. Navigating the digital linguistic landscape requires an awareness of evolving norms, the impact of technology on language, and the interplay between digital communication and cultural expression.

Conclusion

The intricate relationship between culture and language unfolds as a captivating narrative, weaving through the tapestry of human history and societal evolution. From the primal origins of language to the contemporary challenges posed by globalization and technology, every linguistic nuance reflects the dynamic interplay between cultural forces and the evolution of human communication. As we journeyed through the historical context of language development, the impact of culture on linguistic expressions became evident. Lexical diversity, idiomatic expressions, and grammatical structures all bear the indelible marks of cultural influences, serving as linguistic mirrors that reflect the values, traditions, and worldview of diverse communities. The challenges in preserving cultural linguistic diversity underscore the need for concerted efforts to safeguard the multitude of languages facing endangerment. Globalization, while fostering connectivity, poses threats to linguistic diversity through language homogenization, economic pressures, and the dominance of certain languages. Recognizing the intrinsic value of linguistic diversity and addressing these challenges is vital for maintaining the cultural richness embedded in languages across the globe.

Technological influences emerged as a transformative force, shaping new modes of communication, introducing digital slang, and influencing writing conventions. While technology facilitates global connectivity and language accessibility, it also presents challenges related to misinformation and the manipulation of language in the digital sphere. In navigating the complex terrain of language and culture, one must recognize the dual roles of language as both a reflection and a shaper of cultural identity. As we move forward, fostering linguistic diversity, embracing the opportunities presented by technology, and acknowledging the intrinsic value of each language is essential for building a global society that celebrates the richness of human expression in all its linguistic diversity.

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CLIMATE CHANGE AND ECOCRITICISM

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Abstract

The peculiar composite that is climate change as a meteorological, ecological and cultural phenomenon demands in its turn, a new literary and critical climate. The complexity of climate change and the corresponding formal innovations of climate change fiction will, we hope, provoke more debate about the methodological practices of literary criticism particularly in the areas of ecocriticism.

Keywords:- Ecocriticism, Environmental Criticism, Ecological, Transcendentalist, Global warming, Climate Change etc.

Eco criticism is the study of literature and environment from an interdisciplinary point of view where all science is come together to analyze the environment and brainstorm possible solutions for the correction of the contemporary environmental situation. Robert MacFarlane bemoaned the death of creative response to climate change, asking, 'where are the novels, the plays, the poems, the songs the libretti of this massive contemporary anxiety?'

Now, it seems apparent that climate change and its effects are being articulated in a range of literary and critical works. Fiction that represents the issue of climate change as it came to be understood in scientific exchange and the broader public consciousness from the 1970's onwards. The past two decades have seen an increasing amount of fiction dealing with this issue and a particular explosion in the numbers of such novels in the past ten years.

The majority of research and meteorological discussion about climate change literature has been under the broad grouping of ecocriticism. Ecocriticism or environmental criticism is a hybrid discipline loosely composed of researchers investigating questions to do with literature and the environment. Although a few critics had been calling themselves "ecocritics" for longer the grouping began to gain momentum in the 1990s, as witnessed by inauguration of the Association for the Study of Literature and the Environment (ASLE) in the United States in 1992, and the subsequent establishment of affiliate organizations in the United Kingdom and Ireland, continental Europe, Australia, Canada, India and East Asia.

One of the most important influences on ecocriticism was the prior success of other sub disciplines including feminist and gender studies, race based studies and post colonialism. All of these areas are political in their attempts to change dominant ideologies. Advocates of ecocriticism have hoped to do the same, using literary critique to show the shortcomings of our current environmental ideas, to draw attention to environmental issues, to develop new ways of thinking about the environment, and to energize environmental activism.

"Simply define; eco criticism is the study of the relationship between literature and the physical environment."- Cheryll Glotfelty

Eco criticism/ Environmental studies/ Green studies this critical approach which began in the USA in the late 1980s and in UK in the early 1990s from that it is still an 'emergent' movement. Eco criticism as a concept first arose in the late 1970's at meetings of the WLA (the Western Literature Association). Michael P. Branch traces the word ecocriticism back to William Rueckert's 1978 essay 'Literature and Ecology: An Experiment in ecocriticism.'

Ecocriticism takes its literary bearings from three major 19th century American writers whose work celebrates nature, the life force and the wilderness as manifested ecocriticism traces ideas of nature in literature in America, these being Ralph Waldo Emerson (1803-1882), Margaret Fuller (1810-1850) and Henry David Thoreau (1817-1862). Emerson's *Nature*, Fuller's *Summer on the Lakes, During 1843* and Thoreau's *Walden* are seen as the fundamental works of American ecocentred writing.

The ecocritics re-read major literary works from an eco-centric perspective with particular attention to the representation of the natural world. They extend a range of eco-centric concepts using them of things other than the natural world.

Eco criticism has advocated interdisciplinary studies, exploring ties between literature and ecology, human and physical geography, biology and evolutionary sciences. Studies in this direction- of which Meeker is an early example- have ranged from investigations of how evolutionary ideas influence and author to full scale attempts to theorize literature through ecological or evolutionary ideas. Ecocritics have been primarily focused on life sciences and there has been very little eco critical work connecting climatology and literature.

Ecocriticism traces ideas of nature in literature. To some extent, this is historical, in so far as it seeks to recover ideal formulations of nature in past text. Throughout history, literary texts have made spiritual promises to give access to a deeper relationship between the reader and the natural world 'as it really is', and ecocritics have variously examined and endorsed these promises in their work. Many eco critics trace their worldview to English romantic poets such as Wordsworth and Shelley, American transcendentalists like Thoreau and Emerson, and subsequent writers working in the Romantic and transcendentalist traditions.

The ecocritical emphasis on nature as it is imagined by 18th and 19th century writers has deflected attention away from the very contemporary discussion of anthropogenic climate change. Similarly, the anti-technological and spiritual dispositions of some ecocritics have not always encouraged the encounter of scientific data. Finally, the focus on nature and place has been mimical to the development of a critical method for understanding both the complexity of climate change and the formal innovations of literature as it represents this complexity. A number of leading ecocritics have begun to turn their attention to climate change as a problem.

The most significant step taken by eco criticism in addressing climate change has been a reconciliation of the values at its very heart – nature and place. Ecocriticism's dependence on literature from the romantic period and the concept of nature itself has been getting in the way of properly ecological forms of culture, philosophy, politics and art.

Morton says an over dependence on the idea of nature as an historical phenomenon makes it impossible to think about climate change: not only is there no climate outside of temporal change but also there is 'no nature outside the problem of global warming that will come and feel us in on how to vote'. These insights led Morton to investigate very different aesthetic forms than have previously been of interest to ecocritics.

Heise emphasizes the importance of the global alongside the local as cultural frames with which to understand environmental problems. In her brief epilogue, Heise specifically discusses climate change and flags up further directions for research. Exploring a number of fictional text about climate change that the difficulty of understanding the problem and 'conveying essence of the quite divergent impacts it might have on communities around the globe is a task of such magnitude that relatively few writers and filmmakers have attempted it so far, and those who have - with a few exceptions - have done so with limited success'.

Other key figures in ecocriticism have begun to engage with the question. Slocic, the founding president of ASLE, has explored how the field might approach climate change, emphasizing the role of language- and especially literature- in shaping and communicating personal values and 'communicating scientific ideas' on global warming.

Kerridge, the founding president of ASLE in the United Kingdom, has interrogated the relationship between ecocriticism and climate change more rigorously. Like Heise, emphasizes the status of climate change as a global phenomenon, suggesting that the fictional narratives of climate change must offer 'mediation between embodied sensuous perception and wider perspectives'.

Such acknowledgement in ecocriticism of the importance of climate change as an object of study is paralleled by moves in literary critical theory more broadly. Generally speaking, critical theory refers to the study of critical methodology and technology in literary studies, rather than the more conventional study of literary texts – it is, as it were, the study of literary study. An ecocritical reading of a literary text is simply one which in some way incorporates a consideration of the kind of issues and concerns. There is no universally accepted model that we have merely to learn and apply.

Also promising is the recent ecocritical collection 'Local Natures, Global Responsibilities', which offers a number of different directions for researching literature and climate change and particularly encourages anything of configuration of the local and the global.

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SUSTAINABLE DEVELOPMENT THROUGH ORGANIC FARMING

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Abstract

In the age of globalization, every field is haunted by the modernization and technology. Farming, though a traditional business of India is no longer an exception to the rule. Many attempts have been made to increase quantity of farm productions by extensive use of chemical fertilizers, pesticides and insecticides. The use of fertilizers and pesticides and insecticides have resulted in the increase of quantity in farm production. Even, Indian researchers are experimenting with automation in farming. At the same time, very modernization is causing adverse effects on the elements of the farming. The success of "Green Revolution" has reached to the point form where it is being falling down constantly. The demands of the increasing population will not be fulfilled by following the same things again. To fulfil the demand of increasing population, it is compulsory for us not only to stabilize the agricultural production but also to increase it further in sustainable manner. Maintaining the natural balance at all cost for the existence of life and property is an urgent need of time. The organic farming would be a natural choice for the sustainable development.

Key Words : organic farming, natural balance, modernization, population

Introduction

Sustaining the productivity and health of the earth's natural resources is the most important issue under discussion in the 21st century. It is an urgent need to develop the soil health and encourage the more land use systems which will be able to fulfill the requirements of food fodder, fiber and fuel of the upcoming generations. Sustainable agriculture is recent concept applied to a range of strategies for addressing many problems that have been affecting the agriculture worldwide.

India has been cherishing the identity as an agricultural country. Almost 68% population of the country relies on agriculture for earning living. The dream of India of becoming a third world power, therefore, is not going to be fulfilled unless the agriculture as an occupation is strengthened and developed in a more sustainable way. At the very outset it is important to know what organic farming is.

"Organic farming works in harmony with nature rather than against it. This involves using techniques to achieve good crop yields without harming the natural environment or the people who live and work in it."(HDRA)

Organic farming does not mean going 'back' to traditional methods. Organic farming has been in practice in India since the ancient times. The modern techniques of organic farming are nothing but the combination of modern scientific techniques with traditional ways of farming already in practice.

Methods of Organic Farming

FAO (The Food and Agriculture Organization of the United Nations) suggested that "Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs".

Vermicomposting

Compost is organic matter (plant and animal residues) which has been rotted down by the action of bacteria and other organisms, over a period of time. Materials such as leaves, fruit skins and animal manures can be used to make compost. Compost is cheap, easy to make and is a very effective material that can be added to the soil, to improve soil and crop quality. The vermicomposting maintains the environmental and agricultural sustainability without reducing the productivity of soil. The tremendous increase in human population there is an increase in production of various types of wastes, ranging from agriculture a domestic, municipal sewages, and various types of industrial waste.

These wastes if not processed creates various types of pollution leading to health hazards resulting in the tremendous stress on the economic and natural resources. These wastes rotted by the deliberate action of the bacteria and other organisms becomes very useful organic matter. It can be used as a fertilizer in the farm. The waste of the farm if composted would provide very cheap and natural fertilizer resulting in the reduced cost of inputs to the farming. Compost improves the structure of the soil. This allows more air into the soil, improves drain- age and reduces erosion.

- 1) Compost improves soil fertility by adding nutrients and by making it easier for plants to take up the nutrients already in the soil. This produces better yields.
- 2) Compost improves the soil's ability to hold water. This stops the soil from drying out in times of drought.
- 3) Compost can reduce pests and diseases in the soil and on the crop.

Crop nutrition:

In order to increase the productivity proper crop nutrition is necessary. The Artificial chemical nutrients have been constantly used by the farmers all over the country. However, the extensive use of these chemical nutrients has caused the problems such as soil erosion, less productivity, and so on. Artificial crop nutrients have a very short term effect on the crop. Choice of crops:

To maintain the good yield of the crops the choice of crop is very important. Each crop and crop variety has its own specific needs. In some places it will grow well and others it will not. The crop growth is affected by Soil type, rain- fall, altitude, temperature, the type and amount of nutrients required, and the amount of water needed.

Crop Rotations:

Planting the same crop in the same farm year after year causes the emergence of pests and diseases and consequently reduces the soil fertility. Therefore, it is necessary to plant different crops in the different areas of the farm each year. Crop rotation means having times where the fertility of the soil is being built up and times where crops are grown which remove nutrients. The crop rotation helps to maintain the biodiversity of the farm by providing different habitats and various sources of food.

Mulching:

In order to protect the soil from pollution and built its capacity to hold water mulching is used as one of the methods of organic farming. Mulching means covering the ground with a layer of material such as compost manure, straw, dry grass, leaves or crop residues. In Ahmednagar district of Maharashtra many sugarcane farmer have started to use mulching to protect the soil and promote composting in the farm by using sugarcane leaves.

Green manures:

Green manures are the plants which are grown to improve the health of the soil; its organic matter content and nutrient content of the soil. These green manures are a cheap alternative to artificial fertilizers and can be used to complement animal manures. Green manures provide soil cover.

Animal Husbandry:

The integration of animal husbandry with the crop production is one of the most important method of organic farming. Animal husbandry helps for both the nutrient recycling and energy suppliers. The food for the animal is a sewages of the farm such as grass, straw leaves, etc. and kitchen waste of the farmers. These non-useful products are converted into a great organic matter by the animals. Many farm animals have multi-functional role to play in the organic farming. The dung of the animals is very important organic matter which increases the soil fertility. Animals also yield products such as milk, eggs or meat for sale which provides a supplementary income to the farmers.

Benefits of Organic Farming:

Organic farming provides long-term benefits to people and the environment. The benefits of the organic farming are as follows:

1. Increase long-term soil fertility leading to increase in the productivity
2. Helps to maintain the natural balance.
3. Makes farming more beneficial and lucrative business
4. Recharging water resources and maintain water health
5. Produce the organic food items, which will help humans to maintain their health.
6. Organic farming will be a job avenue for the young and educated farmers
7. Organic farming will lead to the different sources of income to the farmers such as agro tourism.
8. It will help to improve the economy of farmers and change the pathetic condition of them.

Conclusion

The various methods of organic farming would help to maintain soil health and persist the productivity of soil. In an age of globalization and modernization, the intensive farming is practiced to great extent. It has been causing the natural imbalance leading to serious environmental issues. Organic Farming, on this backdrop is the very useful solution to maintain the natural balance; it will enable us to handover natural and green environment to the next generations.

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A STUDY OF WATERSHED DEVELOPMENT IN AHMEDNAGAR DISTRICT OF MAHARASHTRA

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Abstract

Water management is a very important need of the time. The water that get through rain and back to the sea in some way or other, it is of no use to any human being, so this water should be intercepted in the soil, but it should also be talked about, socio-economic activity can be mostly developed. This paper is based on the secondary data, these data are taken from the Statistical Department of Ahmednagar District 2013-14 (Page Number 114). This research paper studies how many schemes have been implemented in the total tehsils of Ahmednagar district and how many areas have been irrigated.

Key words: Watershed, Valley, ecological.

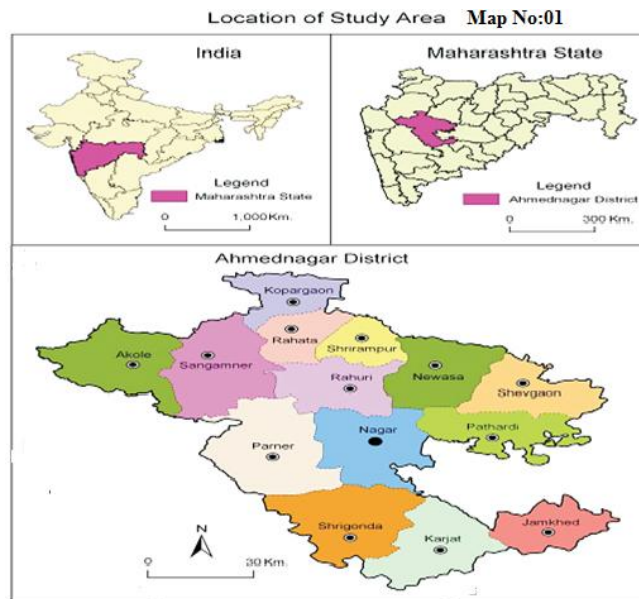
Introduction

The most important factor behind water retention is the topographical structure of the geographical area, along with which the river system is useful, we can do large-scale water management in those areas. Due to this watershed management, the underground water level increases, water sources are also available to wells and aquifers, thus, agriculture is developed, and the socio-economic status of humans is felt, while ecological balance is maintained. Watershed approach was put to practice for the first time in the country in 1949 by the Damodar Valley Corporation. Major multipurpose Irrigation projects launched in India aimed at improvement of mega watersheds. The Importance of micro watershed development was recognized and practiced in the country since 1973 due to their commendation of the Task Force on Integrated Development of Drought Prone Areas. From 1979-80, watershed development was transferred to the state Governments as per the recommendations of the National Development Council. To inquire into these constraints and to suggest suitable remedies, a committee was appointed in 1993 under the leadership of Prof. C.H. Hanumantha Rao. On the basis of the recommendations of this committee, the Technical Committee on Drought prone area programme and Desert development programme (1996), the Ministry of Rural Development, Government of India brought in a new set of guidelines for the Watershed Development Programs in the Country. Lingade V. B and Garge R. R (2019) Watershed management involves soil and water management. This can lead to growth in agricultural production as well as increase the use of agricultural land. In short, there is a correlation between watershed development program and agricultural land use. Snehal S. Patil et.al, (2019) Watershed is land surface bounded by a divide which contributes runoff to a common point. Watershed management involves land and plant management. This focuses on the conservation and use of watersheds in the catchment area and how it can benefit the farming community in the long run and protect the soil. Watershed management means proper utilization of soil and water resources and provision of clean uniform water for beneficial use. Watershed management is considered to be very important from the point of view of the environment as well as being beneficial to humans as it maintains the balance of the environment and greatly promotes human development. It develops various agricultural business like agriculture development, war related business.

Study area

The present study Ahmednagar district has been selected as a study area. It extends between 18° 20' and 19° 59' north latitudes and 73° 40' to 75° 43' east longitudes (Map.1) located in part in the upper Godavari basin. The district is very dense in shape and length of 200 km. a width of 210 km. Ahmednagar district occupies 17,048 square km geographical area. The administratively there are divided into 14 tehsils. The average annual rainfalls is 578.8 mm. (22.79") In study region 71.10 percent area under cultivation area out of them 32.40 percent is irrigated

and 67.60 percent rain fed or rain shadow area. According to 2011 census population is 45, 43,083 and density of population was 266 persons per square kilometers.



Aims and Objective:

The main objective of this research paper is to study the development of watershed area in Ahmednagar district. At the same time, these research papers have been prepared keeping in view some of the objectives as follows.

1. To study the number of villages in which watershed development program has been implemented according to the tehsils in Ahmednagar district.
2. To study how many watershed development programs have been implemented in Ahmednagar district by tehsils wise.
3. To study how much area has been under irrigated due to watershed development.

Methodology:

This research paper is based on the secondary data. This data or information is taken from Statistical Department of Ahmednagar District 2013-14. The cartography techniques have been used to convert Watershed Development's statistical data into a qualitative data. For this, maps have been created using GIS and bar graphs have been created. This statistical information is processed and converted into percentages to determine the level of Watershed development. Linear Regression Relation methods have been used to study the relationship between the total numbers of villages in the taluka where the Watershed Development Programme was implemented. There are four Level of Watershed Development based on percentage, mainly in the form of less than 5, 5.1 to 10.1 to 15 and more than 15.1.

Result and Discussion:

Considering the entire Ahmednagar district, the highest watershed development program by tehsils is in Sangamner tehsil (30), followed by Jamkhed (20), Nagar (17) Karjat (15), Shevgaon (13) and Akole tehsil (12) with watershed development program in more than 10 villages. This means that the topography in this tehsil is suitable for Watershed Development Program. The lowest watershed programs have been implemented in Shrirampur tehsil, followed by Shrigonda, Nevasa, Kopergaon and Rahata tehsils, less than ten villages have been selected in this tehsil. This shows that there is no proper topography for implementation of Watershed program in this tehsil. The fact that mountains range or hilly region needs to go to the most important part of the watershed development program shows that in the tehsils where less watershed programs have been implemented, the mountainous areas

are less, whereas in the tehsils where more watershed programs have been implemented, the hilly region is more. Table no. 1 also shows how many watershed development programs have been implemented in Ahmednagar district by tehsils wise. From this it is clear that most of the Watershed Development programs have been implemented in Sanganner tehsil (33) followed by Jamkhed tehsil (20) Nagar (17), Karjat (15) Shevgaon (13), Rahuri (12), Akole (12) and Parner (11) tehsils with more than 10 watershed programs. In contrast, the lowest watershed development programs have been implemented in Shirampur tehsil Pathardi, Nevasa and Shrigonda tehsil.

Table no 01: Watershed Development Programme Implemented and Area

Sr.no	Name of Tehsil	Number of villages	Number of watershed development	Area under watershed development in Hectors.	watershed development In Percentage
	Akole	12	13	8040.25	5.28
	Sanganner	30	33	37770.71	24.80
	Kopargoan	06	06	4492.76	2.95
	Rahata	08	11	9114.38	5.98
	Shrirampur	01	01	805.31	0.53
	Newasa	05	05	2832.95	1.86
	Shevgaoan	13	16	12279.76	8.06
	Pathardi	09	09	7645.96	5.02
	Nagar	17	17	11751.22	7.71
	Rahuri	12	15	13788.14	9.05
	Paraner	11	11	8427.94	5.53
	Shrigonda	04	04	3783.82	2.48
	Karjat	15	19	17115.99	11.24
	Jamkhed	20	20	14474.94	9.50
Total		163	180	152324.13	100

Source: Statistical Department of Ahmednagar District 2013-14 (Page Number 114)

Graph no 01 shows that out of the total villages, watershed development programs have been implemented more, mainly in Sanganner tehsil, Akole, Shevgaon, Rahuri, Karjat tehsils, watershed development programs have been implemented more than the total villages. The lowest number of watershed development programs and villages have been selected in Shrigonda, Kopargaon, Nevasa followed by watershed development programs in Shrampur tehsil. Graph number 02 shows that Linear Regression Relation between Number of villages and number of Watershed Development Programme. From this it is clear that the linear regression relation is a positive factor between the watershed development programs implemented in all the villages as per the tehsil and the correlation is positive between the two components of the Watershed Development Program implemented in those villages are selected. Which means that these two components are interdependent. In short, the Linear Regression Relation between of these two factors is 0.9694.

Graph: 01: The village level Watershed development Programme implemented in the tehsils of Ahmednagar District

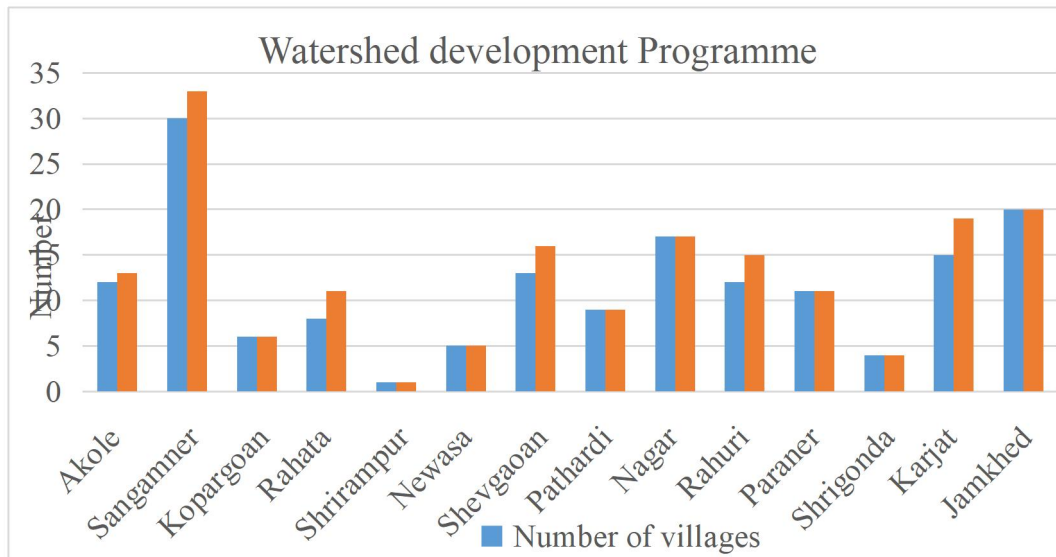


Table no 02: Level of Watershed Development Programme

Sr. No	Index value in Percentage	Number of Tehsils	Name of the Tehsils
01	Less Than 5	04	Kopargoan, Shrigonda, Shrirampur, Newasa,
02	5.1 to 10	08	Akole, Rahata, Shevgaoan, Pathardi, Nagar, Rahuri, Paraner, Jamkhed.
03	10.1to 15	01	Karjat
04	< 15.1	01	Sangamner

Source: Calculated by Researchers

Very Low development: Table and Map number 2 showing the Level of Watershed Development Programme in study area. This shows that less than less than 5 percent area under Watershed Development Programme mainly under the scheme in Kopargaon, Shrigonda, Shrirampur and Newasa tehsils. Out of the total geographical area in this tehsil, less than 5% area is covered under this scheme or under irrigated area. This means that there may not be suitable geographical area for Watershed Development Programme in this tehsil or there may not be much mountainous area. Considering this intake value, it is evident that out of the total geographical area in this tehsil, very few areas have been added to irrigate through this scheme. Considering the geographical area in this tehsil, it is necessary to implement schemes of maximum watershed development program so that maximum area can be irrigation

Low Development:

Low Development Index Value is 5.1 to 10 %, there are eight tehsils under in the watershed development program. There are mainly eight tehsils in this level, those tehsils area Akole, Rahata, Shevgaoan, Pathardi, Nagar, Rahuri, Paraner, Jamkhed. From this it is clear that out of the total geographical area, very little land in this tehsil has come under irrigated area under this scheme. Considering the geographical area in this tehsil, it is necessary to implement schemes of maximum watershed development program so that maximum area will come under irrigation.

Moderated Development:

The moderate watershed development has generally affected 15 percent of the irrigated area by this scheme, mainly in Karjat tehsil. This tehsil has a lot of capacity for this side so it is necessary to keep maximum schema and raise

the ground water level in this area. As a result, more land in this tehsil will come under irrigation, which can lead to socio-economic development of the people. It will also help in minimizing soil erosion.

Progressive Development:

This level includes Sangamner tehsil, it is seen that more than fifteen percent area has been come under irrigation area in this tehsil through this scheme. In this tehsil, it is necessary to focus as much as possible on the implementation of this scheme.

Conclusion

The Watershed Development Programme raises groundwater levels and contributes to human socio-economic development as it contributes to agricultural development. In short, the availability of water for agriculture through these scheme helps in the socio-economic development of human beings. From the above discussion it can be seen that most of the watershed programs have been implemented in Sangamner tehsil which has got maximum area irrigated out of total geographical area. In contrast, the lowest number of scheme have been implemented in Shrirampur tehsil. Watershed management is considered to be very important from the point of view of the environment as well as being beneficial to humans as it maintains the balance of the environment and greatly promotes human development. It develops various agricultural business like agriculture development, war related business.

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IMPACT OF POPULATION GROWTH ON ENVIRONMENTAL DEGRADATION IN AHMEDNAGAR DISTRICT

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Abstract

The present paper examines the relation between population, the environment. The degradation of the environment is primarily due to a growing population, poverty, urbanization, population change and its impacts on land, forest, water and energy resources. There is urgent need to stabilize increasing size of population. Size of population, density of population, sex ratio and literacy is the major characteristics of population to understand the socio-economic development of an area as well as future planning. Overpopulation is a basic problem in South Asian countries including India. It leads to shortage of food, unemployment, poor health, poor public services and degradation of environment. Ahmednagar's rapid population growth is threatening the environment through uncontrolled urbanization and industrialization, along with destruction of natural habitats due to expansion and intensification of agriculture. Rapid population growth plays an important role in declining per capita agricultural land, forest and water resources. In accordance with the analysis, the outcomes of high population growth rates are the increase in the number of people living below the poverty line as well as the density of the population. Land degradation and soil erosion are two effects of population pressure on the economy. In Ahmednagar, energy production and consumption has increased rapidly as a result of the growing population and increasing affluence. Due to increasing consumption levels, the effects of increasing consumption on the environment are becoming increasingly more serious. These effects include ground water and surface water contamination, air pollution, and global warming. The paper concludes with some policy reflections and emphasizes the potential importance of natural resources.

Key words: Population, Growth, Environment, Degradation.

1. Introduction

The world has changed greatly since the 1960s and 1970s, when there existed a virtual consensus among Western experts that rapid population growth in the developing world represented a serious global crisis. One of the primary causes of environmental degradation in Ahmednagar district could be attributed to rapid growth of population, which adversely affects the natural resources and environment. The uprising population and the environmental deterioration face the challenge of sustainable development. The existence or the absence of favourable natural resources can facilitate or retard the process of socio-economic development. The three basic demographic factors of births (natality), deaths (mortality) and human migration (migration) and immigration (population moving into a country produces higher population) produce changes in population size, composition, distribution and these changes raise a number of important issues of cause and effect. Population growth and economic development are contributing to many serious environmental calamities in India. These include heavy pressure on land, land degradation, forests, habitat destruction and loss of biodiversity. Changing consumption pattern has led to rising demand for energy. The final outcomes of this are air pollution, global warming, climate change, water scarcity and water pollution.

The rapid growing population and economic development is leading to a number of environmental issues in Ahmednagar district because of the uncontrolled growth of urbanization and industrialization, expansion and massive intensification of agriculture, and the destruction of forests. Major environmental issues are forest and agricultural degradation of land, resource depletion (water, mineral, forest, sand, rocks etc.), environmental degradation, public health, loss of biodiversity, loss of resilience in ecosystems, livelihood security for the poor.

The increase of population has been tending towards an alarming situation. The 2011 Census data reveals that Ahmednagar District in Maharashtra, India had a population of 4,543,159. Out of this, 2,342,825 were male and

2,200,334 were female. The average sex ratio in the district was 939 females per 1000 males. The literacy rate in Ahmednagar District was 79.05%, with male literacy at 86.82% and female literacy at 70.89%. The district covers an area of approximately 17,048 sq. km. By 2023, the estimated population of Ahmednagar District is expected to reach 5,100,000. Water shortage, soil exhaustion and erosion, deforestation, air and water pollution afflict many areas. If the world population continues to multiply, the impact on environment could be devastating.

The rapid population growth in a developing district like Ahmednagar is frightening the environment through the expansion and intensification of agriculture, the uncontrolled growth of urbanization and industrialization and the destruction of natural habitats. The pressures on the environment intensify every day as the population grows. The growing trends of population and consequent demand for food, energy, and housing have considerably altered land-use practices and severely degraded Ahmednagar's forest vis-à-vis environment also. The growing population put immense pressure on land intensification at cost of forests and grazing lands because the demand of food could not increase substantially to population. Thus, horizontal extension of land has fewer scopes and relies mostly on vertical improvement that is supported by technical development in the field of agriculture i.e. HYV seeds, Fertilizers, Pesticides, Herbicides, and agricultural implements. All these practices causing degradation and depletion of environment with multiplying ratio. Poverty is amongst the consequences of population growth and its life style play major role in depleting the environment either its fuel demands for cooking or for earning livelihood for their survival. The unequal distribution of resources and limited opportunities cause push and pull factor for people living below poverty line that in turn overburdened the population density and environment get manipulated by manifolds.

1.1. Population Growth and Environmental Degradation:

Population is an important source of development, yet it is a major source of environmental degradation when it exceeds the threshold limits of the support systems. Unless the relationship between the multiplying population and the life support system can be stabilized, development programs, howsoever, innovative are not likely to yield desired results. Population impacts on the environment primarily through the use of natural resources and production of wastes and is associated with environmental stresses like loss of biodiversity, air and water pollution and increased pressure on arable land. Human population issues are extremely important when it comes to the way of life and future of mankind on this planet.

Poverty is said to be both cause and effect of environmental degradation. The circular link between poverty and environment is an extremely complex phenomenon. Inequality may foster unsustainability because the poor, who rely on natural resources more than the rich, deplete natural resources faster as they have no real prospects of gaining access to other types of resources. Moreover, degraded environment can accelerate the process of impoverishment, again because the poor depend directly on natural assets.

Lack of opportunities for gainful employment in villages and the ecological stresses are leading to an ever-increasing movement of poor families to towns. Mega cities are emerging and urban slums are expanding. Such rapid and unplanned expansion of cities has resulted in degradation of urban environment. It has widened the gap between demand and supply of infrastructural services such as energy, housing, transport, communication, education, water supply and sewerage and recreational amenities, thus depleting the precious environmental resource base of the cities. The result is the growing trend in deterioration of air and water quality, generation of wastes, the proliferation of slums and undesirable land use changes, all of which contribute to urban poverty.

Direct impacts of agricultural development on the environment arise from farming activities which contribute to soil erosion, land salination and loss of nutrients. The spread of green revolution has been accompanied by over exploitation of land and water resources, and use of fertilizers and pesticides have increased many folds. Shifting cultivation has also been an important cause of land degradation. Leaching from extensive use of pesticides and fertilizers is an important source of contamination of water bodies. Intensive agriculture and irrigation contribute to land degradation particularly salination, alkalization and water logging. Environmental degradation is a result of the dynamic inter-play of socio-economic, institutional and technological activities. Environmental changes may be driven by many factors including economic growth, population growth, urbanization, intensification of agriculture, rising energy use and transportation. Poverty, still remains a problem at the root of several environmental problems.

2. Aim & Objective:

The aim of this paper is to examine impact of population growth on various facets of environment degradation in Ahmednagar District.

3. Discussion:

Population growth and economic development are causing several serious environmental problems in Ahmednagar. These include pressure on land, deforestation and water scarcity and water pollution.

3.1. Households with available and safe drinking water

Access to safe drinking water and proper sanitation is both a right and a basic need. Access to safe drinking water in many households is non-existent or inadequate and remains an urgent need. The percentage distribution of households having safe drinking water facilities is presented briefly. In Ahmednagar, almost all surface water resources are contaminated and unfit for human consumption. The impact of drinking water pollution is more severe on the poor. The non-availability of safe drinking water is a pressing global issue with multifaceted causes. Many regions suffer from collapsed water infrastructure and inadequate distribution systems. Inefficient management of water resources exacerbate the problem, leading to unreliable access to safe water. Climate change disrupts rainfall patterns, causing low levels of precipitation and higher temperatures. These conditions lead to water deficits, affecting water availability for communities. The type of rocks beneath the ground influences water availability. Some rocks are permeable, allowing water to flow more freely, while others hinder water movement. In certain areas, water sources may be abundant, but pollution renders them unsafe for consumption. Untreated sewage, industrial waste, and chemical runoff contaminate water supplies. Excessive extraction of groundwater leads to depletion of aquifers. Over-pumping reduces water availability, especially in regions heavily reliant on groundwater. Poverty often correlates with inadequate water infrastructure and limited resources for water management. While progress has been made, inequalities persist in the quality and availability of water services. Rural areas face greater challenges, and wealth disparities impact access among different socioeconomic groups. Contaminated water and poor sanitation contribute to the transmission of diseases such as cholera, diarrhoea, and typhoid. Lack of safe water jeopardizes public health and well-being. Efforts to address these causes require investment, sustainable planning, and a commitment to ensuring safe water for all. Governments, communities, and organizations must collaborate to bridge these gaps and uphold the essential human right to clean water and sanitation.

In the drought-prone Ahmednagar district of Maharashtra, there lies a village that defies the odds and stands as a beacon of hope: Hiware Bazar. With approximately 1300 residents, Hiware Bazar has not only coped with severe droughts but has also transformed from a once impoverished village to a prosperous one.

3.2. Trends in poverty and its environmental effects in Ahmednagar District

Most of Ahmednagar's poor live in rural areas and are engaged in agriculture. Ahmednagar, with a high density of population relative to resources, faces developmental challenges in alleviating massive poverty and deprivation, and in raising the quality of life of poor people. The growth performance of tahsils has crucial implications in poverty reduction, which is an important objective of the economic policy. Ahmednagar's poverty reductions through the anti-poverty and employment generation programmes along with overall economic growth-planning efforts have helped to reduce the poverty ratio in the district. Poverty is said to be both cause and effect of environment degradation. The poverty and rapid population growth are found to coexist and thus seems to reinforcing each other. The poor people, who rely on natural resources more than the rich, deplete natural resources faster as they have no real prospects of gaining access to other types of resources. Poorer people, who cannot meet their subsistence needs through purchase, are forced to use common property resources such as forests for food and fuel, pastures for fodder, and ponds and rivers for water. Moreover, degraded environment can accelerate the process of impoverishment, again because the poor depend directly on natural assets. It also contributes to environmental degradation through over exploitation of natural resources like land and water. The deterioration of natural resources and unsafe living conditions affects the environment and health of the poor people.

Ahmednagar District, situated in the heart of western Maharashtra, grapples with both poverty and environmental challenges. Ahmednagar district covers approximately 17,048 square kilometers and is home to a diverse population. Population Density: With a population density of 266 per square kilometer, the district faces the complexities of balancing resources and needs. The literacy rate stands at 79.05%. While some areas have witnessed economic growth, others continue to struggle with poverty. Agriculture remains a significant livelihood, but water scarcity and climate fluctuations affect crop yields. Urban areas face infrastructural challenges due to rapid urbanization and population expansion. The district experiences water scarcity due to low rainfall (average 382 mm) and increasing demand.

Hiware Bazar and Ralegansiddhi serve as inspiring examples of overcoming water shortages through proper management and community-driven approaches. Urban centers generate substantial solid waste (315.53 MTD). Proper waste management, including recycling and treatment, is crucial for environmental sustainability. Ahmednagar explores automation tools (such as PLC and SCADA) to optimize water usage. Small steps, like those taken in Hiware Bazar, can make a significant difference in water conservation. Balancing economic growth with environmental protection is essential. Policies and procedures must align with sustainable water management and resource conservation. This involves addressing poverty, water scarcity, and environmental resilience.

3.3. Huge stress on land

In Ahmednagar District, Maharashtra, the interplay of population growth, land use, and environmental stress is evident. Ahmednagar district, covering approximately 17,048 square km., faces the challenge of balancing resources with a population density of 266 people per square km. Rapid urbanization strains land resources, especially near cities and towns. Agriculture remains a significant livelihood, but water scarcity and climate fluctuations impact crop yields. Due to rapid population growth, land use has transformed significantly. Urban areas encroach upon agricultural land, affecting the man-land ratio. Despite being the largest district in Maharashtra in terms of area, Ahmednagar faces a stark reality: as of the 2011 census, the man-land ratio was only 0.37 square km. per person. High population density has exerted pressure on the land, leading to this imbalance.

3.4. Degradation of Land/Soil

Ahmednagar district in Maharashtra, India, faces significant challenges related to land and soil degradation. Here are some key points:

1. Agro-Climatic Zone:

Ahmednagar falls within the Deccan Plateau, Hot Semi-Arid Eco-Region. It is part of the Western Plateau and Hills Region. The district is also categorized under the Western Maharashtra Scarcity Zone.

2. Rainfall Patterns:

The district experiences the following average rainfall patterns:

- ❖ Southwest Monsoon (June-Sep): 419.0 mm, with an onset in the second week of June and cessation in the third week of October.
- ❖ Northeast Monsoon (Oct-Dec): 111.7 mm.
- ❖ Winter (Jan-Feb): 8.1 mm.
- ❖ Summer (March-May): 22.8 mm.
- ❖ Annual: 561.6 mm.

3. Land Use and Soil Types:

The district covers an area of 1702.0 thousand hectares. Major soil types include shallow grey soils, medium-deep black soils, and deep black soils. Land use breakdown:

- ❖ Cultivable area: 1146.3 thousand hectares.

- ❖ Forest area: 163.4 thousand hectares.
- ❖ Land under non-agricultural use: 13.9 thousand hectares.
- ❖ Permanent pastures: 41.7 thousand hectares.
- ❖ Cultivable wasteland: 19.1 thousand hectares.
- ❖ Land under miscellaneous tree crops and groves: 3.4 thousand hectares.
- ❖ Barren and uncultivable land: 131.0 thousand hectares.
- ❖ Current fallows: 89.4 thousand hectares.
- ❖ Other fallows: 93.8 thousand hectares.

4. Desertification and Land Degradation:

Approximately 64.2% of the district's area is affected by desertification or land degradation.

5. Agricultural Land Use:

Net sworn area: 389.4 thousand hectares. Cropping intensity: 142.7 %.

Ahmednagar faces soil degradation challenges due to its agro-climatic conditions, water availability, and land use patterns. Efforts toward sustainable land management and conservation are crucial for maintaining agricultural productivity and ecological balance in the region. Leaching from extensive use of pesticides and fertilizers is an important source of contamination of water bodies. Intensive agriculture and irrigation contribute to land degradation particularly salination, alkalization and water logging. Soil erosion results in huge loss of nutrients in suspension or solution, which are removed away from one place to another, thus causing depletion or enrichment of nutrients. Besides the loss of nutrients from top soil, there is also degradation through the creation of gullies and ravines, which make the land unsuitable for agricultural production

Several proactive measures to prevent land degradation:

1. Soil Conservation Practices:

- ❖ **Terracing:** Construct terraces on slopes to reduce soil erosion caused by water runoff.
- ❖ **Contour Farming:** Plant crops along the contours of the land to minimize soil erosion.
- ❖ **Mulching:** Apply organic or inorganic mulch to protect the soil from direct sunlight, reduce evaporation, and prevent erosion.
- ❖ **Afforestation:** Plant trees and shrubs to stabilize soil, enhance fertility, and prevent wind erosion.

2. Water Management:

- ❖ **Rainwater Harvesting:** Collect rainwater for irrigation and recharge groundwater.
- ❖ **Drip Irrigation:** Use efficient irrigation methods to minimize water wastage.
- ❖ **Check Dams and Bunds:** Construct check dams and bunds to retain water and prevent soil erosion.

3. Crop Rotation and Agroforestry:

- ❖ **Crop Rotation:** Rotate crops to maintain soil health, prevent nutrient depletion, and control pests.
- ❖ **Agroforestry:** Integrate trees with crops to improve soil structure and enhance biodiversity.

4. Soil Health Improvement:

- ❖ **Organic Farming:** Avoid chemical fertilizers and pesticides; focus on organic practices.
- ❖ **Composting:** Use organic waste to create nutrient-rich compost for soil enrichment.

❖ **Soil Testing:** Regularly test soil to assess nutrient levels and adjust fertilization accordingly.

5. Awareness and Education:

❖ **Farmers' Training:** Educate farmers about sustainable practices, soil conservation, and land management.

❖ **Community Participation:** Involve local communities in conservation efforts.

6. Legislation and Policies:

❖ **Land Use Regulations:** Implement and enforce regulations on land use, deforestation, and mining.

❖ **Afforestation Programs:** Support government initiatives for afforestation and reforestation.

Collective efforts by farmers, policymakers, and communities are essential to combat land degradation and ensure a sustainable future for Ahmednagar.

3.5. Continuous diminution of per capita forest land and agricultural land

The growth of population is expected to be faster than hoped for improvements in forest cover as well as quality. The total forest area in Ahmednagar district is 132 thousand hectares, which constitutes 9.85% of the total geographical area. Forest produce includes items such as Hirda, Custard apple, fuel wood, grass, gum, and tendu leaves. Ahmednagar district in Maharashtra, India, faces challenges related to the diminution of per capita forest land and agricultural land.

1. Agricultural Land Use:

In Ahmednagar district, the net sown area constitutes a significant portion of land under cultivation. During the Kharif season, approximately 62% of the net sown area is under plough, while during the Rabi season, it decreases to 38%. Crops cultivated in the district include Jawar, Bajra, Sugarcane, Pulses, Wheat, Cotton, Vegetables, Fruits, and more. Over time, the percentage area under certain crops has changed.

Decreased: Bajra, oilseeds, Jawar, pulses, wheat, and rice.

Increased: Vegetables, fodder and sugarcane.

2. Land Use Planning and Conservation:

Spatial analysis of agricultural land use is crucial for effective planning and development. Accurate information on crop classification helps in optimizing land use. Conservation efforts are essential to maintain ecological balance and sustainable land utilization.

3. Challenges and Solutions:

Addressing the diminution of per capita forest and agricultural land requires:

❖ **Awareness:** Educating farmers and communities about sustainable practices.

❖ **Policy Measures:** Implementing regulations to protect forest land.

❖ **Crop Diversification:** Encouraging diverse cropping patterns.

❖ **Afforestation:** Planting more trees to restore forest cover.

Efforts toward land stewardship, afforestation, and sustainable agriculture are crucial for preserving Ahmednagar's natural resources and ensuring a balanced ecosystem.

3.6. Altered consumption patterns

The consumption patterns in Ahmednagar district have undergone changes over time. The agricultural sector plays a significant role in Ahmednagar's economy. Consumption patterns in this sector include crop production, livestock, and agricultural inputs. Factors influencing agricultural consumption include weather conditions, crop choices, and technology adoption. Balancing traditional practices with modern trends is essential. Promoting sustainable consumption and local products can benefit both rural and urban areas. Ahmednagar's consumption patterns reflect

a blend of tradition, modernity, and adaptability. The economic and industrial development is inevitably accompanied by changing patterns of consumption. The number of registered motor vehicles in Ahmednagar provides one useful indicator of expanding consumption and economic growth. The increasing vehicles in district, producing more air pollution, fuel consumption, traffic jams and demands for road construction-often at the cost of agricultural land. The growth of registered vehicles reflects the rising demand for road transport and the need for sustainable management of road networks. An increase in vehicular pollution is associated with a number of environmental problems like air pollution and global warming.

3.7. Gradually intensifying demand for energy

The energy demand in Ahmednagar district, Maharashtra, India, has been steadily increasing due to factors such as population growth, rapid urbanization, and economic progress. As the region faces challenges related to energy supply, it's crucial to explore alternative and sustainable energy sources. Ahmednagar receives abundant sunlight due to its geographical location. Solar energy is a non-polluting and inexhaustible primary energy source. Ahmednagar's geographical conditions make it conducive for wind power generation. The leeward slopes of sub-ranges in the district are favourable for wind energy. Wind power density varies from 119 to 131 Watts per sq. m. Currently, 413 windmills in Ahmednagar produce 386.80 MW of electricity. Shrigonda experiences high wind velocity from May to September, peaking at 9 m/s in July. Ahmednagar is set to receive its first solar agri-feeder. This feeder generates power connected to the grid, providing daytime electricity for agricultural applications. Balancing energy demand with sustainable sources is crucial. Continued investment in solar and wind infrastructure can address the rising energy needs. Ahmednagar's transition toward renewable energy is essential for a greener and more resilient future. The environmental effects due to increasing consumption levels of fuels like coal; lignite, oil and nuclear etc. are of growing concern to various researchers. The combustion of these fuels in industries has been a major source of pollution. The bulk of commercial energy comes from the burning of fossil fuels viz. coal and lignite in solid form, petroleum in liquid form and gas in gaseous form. In addition to emission of greenhouse gases, the burning of fossil fuels has led to several ecological problems and associated with health problems like cancer risk, respiratory diseases and other health problems. Burning of traditional fuel adds a large amount of carbon-di-oxide into atmosphere and increases air pollution.

3.8. Ground water resources, water scarcity and water pollution

Ahmednagar district faces challenges related to groundwater availability. Due to population growth, there has been a significant scarcity of water observed in the region. The hydrological cycle, which involves the movement of water on, above, and below the Earth's surface, plays a crucial role. Groundwater is extracted artificially from wells. Notably, areas like Hiware Bazar and Ralegansiddhi have successfully overcome water shortages by implementing proper approaches. These examples demonstrate how small steps can make a significant difference. Automation has been explored as a tool in water management systems to minimize water deficiency. Ahmednagar district has faced water scarcity, leading to serious concerns. The Pavana River, a chief water source for the region, has barely enough water to sustain citizens until June. Groundwater levels have rapidly depleted, exacerbating the situation. The population growth (expected to reach 9 billion by 2050) and rising water consumption contribute to the scarcity. Urgent measures are necessary to address this challenge. Addressing water pollution is crucial for sustainable water management. Pollution affects both surface water and groundwater, impacting agriculture, human health, and the environment. Ahmednagar district faces a complex interplay of groundwater resources, water scarcity, and pollution. Sustainable management practices, community involvement, and technological innovations are essential to mitigate these challenges and ensure water security for the future. The amount of water available per person has declined in recent decades primarily because of population growth and water scarcity is projected to worsen in the future. The water pollution in Ahmednagar comes from three main sources: domestic sewage, industrial effluents and run off from activities such as agriculture. The increasing river water pollution is the biggest threat to public health. The diseases commonly caused due to polluted water are cholera, diarrhea, hepatitis, typhoid amoebic and bacillary, dysentery, guinea worm, whereas scabies, leprosy, trachoma and concavities are some of the diseases associated with water scarcity. All these could be attributed to the rapidly increasing population and lack of water resources. Inadequate access to safe drinking water and sanitation facilities leads to higher infant mortality and intestinal diseases.

3.9. Global warming resulting climate change

A study conducted in Ahmednagar district from 1996 to 2016 examined the depth to water below ground level (bgl). Using GIS modelling, they classified groundwater depth as shallow, normal, deep, and moderate. The long-term fluctuation in groundwater levels indicates a drastic decline in major parts of the study area. The depth to groundwater typically ranges between 6 and 15 meters, except in Parner and Shrirampur blocks. Notably, during the drought year 2004, Sangamner block experienced a depth to water level greater than 15 meters. Groundwater depletion is evident due to decreased recharge and factors like increased temperature and urbanization. The study highlights the importance of sustainable groundwater management. According to analysis, the frequency and intensity of extreme droughts in Ahmednagar district have increased fourfold since 1970. Farmers in the region are adapting through watershed management and efficient cropping techniques with grassroots-level organizations. Climate change affects precipitation patterns over India. Heavy precipitation events cause floods, while reduced low and moderate precipitation leads to droughts. The groundwater recharge is impacted by climate change. Decreased precipitation and rising temperatures contribute to groundwater depletion. Ahmednagar district faces challenges due to climate-induced changes in groundwater availability, drought frequency, and sustainable water management. Adaptation strategies are crucial to mitigate the impact of global warming and ensure water security for the region. The district's large population resulting fast increasing energy use plays an important and growing role in global warming. Global warming has major physical, environmental and socio-economic consequences, which can be both positive and negative. The estimation of these impacts is complex and marked with uncertainties. Climate change caused changes in 14 precipitation patterns, ocean circulation and marine systems, soil moisture, water availability, and sea level rise. These would make an impact on agriculture, forestry and natural eco-systems like wetlands and fisheries. Also, with rising temperatures, and subsequent increasing heat stress and alternation in patterns of vector-borne diseases, the global population would be more vulnerable to health problems, causing disruptions in settlement patterns and large-scale migration. All these have significant socio-economic consequences (Compendium of environment statistics, 2000).

4. Conclusions

Population growth has significant implications for environment. Survey of Nobel laureates revealed that “population rise / environmental degradation” as the biggest threat to humanity. High-income and upper-middle-income countries, despite containing only around 50% of the global population, contribute 85% of global carbon dioxide emissions. Limiting future population growth could potentially contribute to mitigating climate change, but it’s a complex challenge. The human population has tripled since 1950, reaching almost 7.8 billion in 2020. This growth results from improved public health, nutrition, and medicine, as well as persistent high fertility rates in some countries. However, the data suggest that population growth alone is not solely responsible for our planet’s environmental challenges. The Intergovernmental Panel on Climate Change (IPCC) emphasizes the need for rapid changes to achieve net-zero emissions by 2050. While global population growth is slowing down due to smaller family sizes associated with development, its intrinsic momentum still influences future trajectories. Balancing population dynamics with sustainable practices remains crucial for environmental well-being.

In summary, addressing environmental degradation requires holistic approaches that consider population growth, socioeconomic development, and climate change mitigation. It’s a delicate balance for a sustainable future.

The result of high population growth rates is increasing population density, increasing number of people below poverty line and pressure on natural resources which contributes to environmental degradation through over exploitation of natural resources. The rapid population growth continues to be a matter of concern for the district as it has manifold effects, most important being land degradation and soil erosion, deforestation and declining per capita land, forest and water resources. From the various effects of human beings on environmental degradation, it appears that if human beings want to exist on earth, there is time to give top priority to protect natural resources and environment. Moreover, the environment protection should not be a responsibility of government alone but local people is dedicated efforts to eradicate the environmental problems.

Special efforts should be made for informing and educating the people and local leaders about the adverse effects of large population through specially designed Information, Education and Communication (IEC) activities. In order to increase green cover and to preserve the existing forests, afforestation and social forestry programmes should be

implemented at the local level. There is a need for preventive and curative measures to control water pollution due to chemical fertilizers, pesticides and other wastes. More emphasis should be laid on compulsory environmental education at the school level in order to make people aware of the environment protection.

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IRRIGATION TECHNOLOGY IN AGRICULTURE

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Introduction

India has taken up an ambitious goal to double the average incomes of agricultural households by the year 2022, the 75th year of her Independence. This mammoth task requiring a sharp accelerated annual growth of 10.41 per cent will need strong measures to harness all possible sources of growth in farmers' income within as well as outside agriculture sector. Apart from other concerned Ministries/Departments, Ministry of Water Resources, River Development and Ganga Rejuvenation (MOWR, RD&GR) has also taken multi-pronged measures to meet the challenges in respect of development and management of water resources to contribute to goal of doubling the farmers' income. This includes fast track completion of a large number of major and medium irrigation projects in the country, surface minor irrigation (MI) schemes and repair, renovation & restoration (RRR) of water bodies through the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). This scheme has been launched with the aim of bringing concerned institutions under a common platform, so that a comprehensive and holistic view of the entire "water cycle" is taken into account and proper water budgeting is done for all sectors. Irrigation is the supply of water to crops by artificial means. It is designed to permit the desired plant growth in arid regions and to offset drought in semiarid regions or sub humid regions. Even in areas where average seasonal precipitation may seem ample, rains are frequently unevenly distributed, or soils have low water holding capacities so that traditional rain fed agriculture is a high-risk enterprise. Irrigation provides a means for stable food production. In some areas, irrigation prolongs the effective growing season. With the security provided by irrigation, additional inputs like higher producing varieties, additional fertilizer, better pest control, and improved tillage, become economically feasible. Irrigation reduces the risk of these expensive inputs being wasted by drought.

Irrigation is extremely important in the production of food, other agricultural products, ornamentals, and turf. One-third of the world's food is produced on the 21% of the world's cultivated area that is irrigated. In the U.S., about 50% of the total value of all crop sales comes from the 28% of the cropland that is irrigated. Thus, the understanding of irrigation and its management are critical to all of us. Here, the basic concepts to understand are that water is applied, distributed in the soil, and stored for plant use. Various irrigation systems and their operation and management are then presented in the context of each system's advantages and disadvantages. Procedures for detrainning when and how much irrigation water to apply are discussed in detail throughout this text to assist the reader in being as efficient as possible when utilizing this precious resource, water.

Objectives

To understand the role of irrigation

To study the role of water in agricultural development

To enhance agricultural growth.

To provide human resources, skills and technology required for sustainable development of agriculture,

Irrigation Development

For thousands of years, irrigation has contributed substantially to world food production. Historians note that irrigation was one of the first modifications of the natural environment undertaken by early civilizations. Several millennia ago, irrigation permitted nomadic tribes to settle in more stable communities with assurance of annual crop productivity. Initial attempts at irrigation were rudimentary, consisting of ponding water in basins enclosed by low earthen dikes. The earliest societies to rely successfully on irrigation were located in four major river basins: the Nile in Egypt around 6,000 B.C.E., the Tigris and Euphrates in Mesopotamia about 4,000 B.C.E., the Yellow River in China around 3,000 B.C.E, and the Indus in India approximately 2,500 B.C.E. In Mexico and South America, irrigation was practiced by the Maya and Inca civilizations more than 2,000 years ago. In Iran, ganats,

3,000 year-old tunnels to bring water from the mountains to the valley, are used to this day (Kuros, 1984). Earthen dams to store surface water were first constructed in the second and third centuries in Japan to irrigate rice. In Central Europe, irrigation was documented as early as the third century C.E. (Chekov and Hayed, 2004). In North America, irrigation is known to have existed among Native Americans of the southwest as early as 1200 B.C.E. Early Spanish explorers found evidence of irrigation canals and diversion points along rivers. The Spaniards introduced new irrigation methods and irrigated crops such as grapes, fruits, vegetables, olives, wheat, and barley.

OVERVIEW OF IRRIGATION SECTOR IN INDIA

The Ultimate Irrigation Potential (UIP) in India has been assessed as 140 MH (CWC, 2013). As per National Perspective Plan of the Ministry, implementation of Inter Basin Water Transfer (IBWT) proposals may create additional potential of 35 Mha taking UIP to 175 Mha. Against this, the irrigation potential created (IPC) in the country is 112 Mha and the gross irrigated area is merely 93 Mha. This 19 Mha (16%) gap between IPC and irrigation potential utilised (IPU) needs to be plugged. (MoA&FW, 2016) Out of this 19 Mha gap, about 13 Mha gap between IPC and IPU has been estimated through major and medium irrigation projects. The major causes of such gap are poor maintenance of canals system, lack of participatory management, changing land use pattern, deviation from originally envisaged cropping pattern, no/inadequate command area development, absence of field channels for last mile connectivity etc. Moreover, the efficiency of irrigation for surface and ground water presently stands at about 30-40% and 55-60% respectively. India can make significant gains in water availability by increasing efficiency across the board on irrigation measures. Various measures are required to be taken to address the above challenges. Challenges of supply side solutions comprise creation of new channels for enhancing supply, achieving equitable distribution, meeting the needs of sustainable development etc. The challenges of demand side solution comprise creation of new technologies for reducing water demand, change in societal mind set about water use, initiating and enforcing water related structural reforms etc. Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD & GR) has taken multipronged measures to meet the challenges in respect of development and management of water resources. These measures are categorised as short term, medium term and long term targeted to be completed by the year 2020, 2025 and 2035 respectively. Short term measures are being taken under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) which is an umbrella scheme with the aim to serve as a platform for convergence of investments in irrigation through comprehensive District and State irrigation plans. It envisages end-to-end solution in irrigation supply chain viz. water resources, distribution, and efficient application and extension services. The focus is on creation of additional irrigation potential, improving water use efficiency at farm level and bridging the gap between IPC and IPU through various schemes.

Role of Irrigation

The irrigation process consists of introducing water to the soil profile where plants can extract it to meet their needs, mainly evapotranspiration. An important goal of irrigators is to design and manage their irrigation system to optimize placement and timing of applications to promote growth and yield while protecting against soil erosion, salinization, water quality degradation, or other detrimental environmental impacts. Since physical circumstances and socioeconomic conditions are site specific, there is no single answer to designing, developing, and managing an irrigation system. In all circumstances, however, the factors and principals involved are universal. The practice of irrigation has evolved gradually toward improved control over plant, soil, and even weather variables. The degree of control possible today is still only partial because of unpredictable extremes in the weather. Modern irrigation is a sophisticated operation, involving the monitoring and manipulation of numerous factors impacting crop production. With the continuing loss of suitable land and water and the rising demand for agricultural products, the search for new knowledge on how to improve irrigation and the need to apply this new knowledge have become increasingly urgent.

Types of Irrigation Systems in India

Irrigation systems in India are carried on, in the following ways: 1. Tanks (a) Sindhni (b) Donga 2. Well (a) Dug Well (b) Tube Well – (i) Shallow. (ii) Deep.

1. Well Water Irrigation system: In India, there are various types of wells—shallow wells, deep wells, tube wells, artesian wells etc. In the shallow wells, water is not always available as the level of water goes down during the dry months. Deep wells are more suitable for the purpose of irrigation as water from them is available throughout the

year. Tube wells are also used for irrigation purposes. A deep tube well worked by electricity, can irrigate a much larger area (about 400 hectares) than a surface well (1/2 hectares). Tube wells are mostly used in U.P., Hariyana, Punjab, Bihar and Gujarat. In Rajasthan and Maharashtra, artesian wells are now supplying water to agricultural lands.

2. Tank Water Irrigation system: In the Deccan, reservoirs are made by constructing dams. This system is greatly adopted in the States of Tamil Nadu, Andhra Pradesh, and Karnataka etc. In Northern India also, tanks are constructed for storing water. From all these tanks, water is carried to the fields through canals. 3. Canal Irrigation System in India Canal irrigation is the most important form of irrigation in India. It is cheaper. It is of greatest advantage in the river valley regions. In canal irrigation, U.P. stands first in India, followed by Punjab and Haryana. Canal irrigation is of much use in the deltas of rivers, the Godavari, the Krishna, the Kaveri and the Mahanadi and the Ganga, and in the coastal plains of Kerala. The role of Canal irrigation for modernization of irrigation in India is great. Modern Canal irrigation is now conducted, controlled and administered as a part and parcel of river valley projects. They are planned to serve dual purpose effectively. They provide irrigation facilities and control flood. Many of these river valley projects are called multipurpose projects as they serve manifold benefits such as flood control, irrigation and generation of power, etc. The canal irrigation is of two types, namely: Inundation Canal and Perennial Canal. A. Inundation Canals Canal irrigation is playing a vital role in Indian agriculture. It canal near about 42% of total irrigated land. In many places during the rainy season, there is flood in the rivers. The flood water is carried to the field through canals. These canals are found in W.B., Bihar, Odisha, etc. They supply water only when there is flood in the rivers, and therefore, are of no use during the dry season when water is required most. Inundation canals are taken out from the rivers. These canals do not have any kind of weir at their head to regulate the flow of water from the river. During rainy season, the river gets flooded and the flood water overflows into these canals. Many canals of these types are found on the Sutlej-Ganga plains and Brahmaputra valley. These canals constitute simple flood water drainage system. The supply of irrigation water through the inundation canal is dependent on the rainfall. Besides, irrigation is restricted to the land lying on a level lower than the river valleys. Moreover, during winter these canals are practically of no use. In modern India, attempts are being made to convert them into perennial canals with the help of river valley projects. B. Perennial Canals Perennial canals are those canals, which maintain its flow of water throughout the year even during winter season. These canals draw their water either from rivers or from reservoir of the river projects. A weir is built below the intake of the canal, the intake itself being regulated by sluice gates. In order to supply water throughout the year, reservoirs are constructed for storing water. From these reservoirs, water can be supplied to the fields whenever there is demand for it. So this system of irrigation ensures supply of water in all season. This type of perennial canal is found mostly in Punjab, U.P., and Tamil Nadu. In Punjab, the upper Bari Doab canal connecting the Ravi and the Beas and Sirhind (from the Sutlej) canal is famous. In U.P., the Upper Ganga and the Lower Ganga canals, Agra and Sarda canals, etc. are important. In Tamil Nadu, most important are the Buckingham canal and the Periyar canal.

3. Multi Purpose River Valley Projects: In recent years, multi-purpose river valley projects are helping agriculture. The most important are

- The Damodar Project and the Mor Project in West Bengal,
- The Mahanadi (Hirakud) Project in Odisha,
- The Kosi Project in Bihar, and
- The BhakraNangal Project in Punjab.

These projects offer facilities for irrigation, flood control, soil conservation etc. Irrigation Projects in India are classified into three categories viz. Major, Medium and Minor Irrigation. Projects which have a Cultivable Command Area (CCA) of more than 10,000 hector are termed as Major Projects, those Irrigation Projects which have a CCA of less than 10,000hector but more than 2,000 hector are termed as Medium projects and those Irrigation Projects which have a CCA of 2,000 hector or less are known as Minor projects. Minor irrigation projects have both surface and ground water as their source, while Major and Medium projects mostly exploit surface water resources.

Type of Irrigation Technique: - Various types of irrigation techniques differ in how the water obtained from the source is distributed within the field. In general, the goal is to supply the entire field uniformly with water, so that each plant has the amount of water it needs, neither too much nor too little. The various irrigation techniques are as under: Surface Irrigation: In surface irrigation systems, water moves over and across the land by simple gravity flow in order to wet it and to infiltrate into the soil. Surface irrigation can be subdivided into furrow, border strip or basin irrigation. It is often called flood irrigation when the irrigation results in flooding or near flooding of the cultivated land. Localized Irrigation: Localized irrigation is a system where water is distributed under low pressure through a piped network, in a predetermined pattern, and applied as a small discharge to each plant or adjacent to it. Drip irrigation, spray or micro-sprinkler irrigation and bubbler irrigation belong to this category of irrigation methods.

Drip Irrigation: Drip irrigation, also known as trickle irrigation, functions as its name suggests. Water is delivered at or near the root zone of plants, drop by drop. This method can be the most water efficient method of irrigation, if managed properly, since evaporation and runoff are minimized. In modern agriculture, drip irrigation is often combined with plastic mulch, further reducing evaporation, and is also the means of delivery of fertilizer.

Sprinkler Irrigation: In sprinkler or overhead irrigation, water is piped to one or more central locations within the field and distributed by overhead high-pressure sprinklers or guns. A system utilizing top sprinklers, sprays, or guns mounted overhead on permanently installed risers is often referred to as a solid-set irrigation system. Higher pressure sprinklers that rotate are called rotors and are driven by a ball drive, gear drive, or impact mechanism. Guns are used not only for irrigation, but also for industrial applications such as dust suppression and logging. Sprinklers can also be mounted on moving platforms connected to the water source by a hose. Automatically moving wheeled systems known as traveling sprinklers may irrigate areas such as small farms, sports fields, parks, pastures, and cemeteries unattended.

Sub-irrigation: Sub-irrigation also sometimes called seepage irrigation. It has been used for many years in field crops in areas with high water tables. It is a method of artificially raising the water table to allow the soil to be moistened from below the plants' root zone. Often those systems are located on permanent grasslands in lowlands or river valleys and combined with drainage infrastructure. A system of pumping stations, canals, weirs and gates allows it to increase or decrease the water level in a network of ditches and thereby control the water table. Sub-irrigation is also used in commercial greenhouse production, usually for potted plants. Water is delivered from below, absorbed upwards, and the excess collected for recycling.

The Salient Features of the new Agricultural Policy are

Over 4 per cent annual growth rate aimed over next two decades.

Greater private sector participation through contract farming.

Price protection for farmers.

National agricultural insurance scheme to be launched.

Dismantling of restrictions on movement of agricultural commodities throughout the country.

Rational utilization of country's water resources for optimum use of irrigation potential.

High priority to development of animal husbandry, poultry, dairy and aquaculture.

Capital inflow and assured markets for crop production.

Exemption from payment of capital gains tax on compulsory acquisition of agricultural land.

Minimise fluctuations in commodity prices.

Continuous monitoring of international prices.

Plant varieties to be protected through a legislation.

Adequate and timely supply of quality inputs to farmers.

High priority to rural electrification.

Setting up of agro-processing units and creation of off-farm employment in rural areas.

Conclusion

Irrigation is pivotal to agricultural, social, economic growth of nation. Irrigation has provided stability to food production. It is critical input of agriculture production process. However, irrigation also has created problems, such as salinization of land and water resources, adverse socio-economic and cultural effects, and environmental damage. Many of the problems in irrigated agriculture can be mitigated by improved technology and management, and by adequately addressing cultural, social, and environmental aspects. There is need of revival of traditional and local irrigation management practices along with the major irrigation infrastructure project.

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ENVIRONMENTAL ISSUES IN INDIA

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Introduction

India has a population of more than 1.2 billion. It is the world's largest democracy. Since independence India has gone through tremendous growth and standards of living have been vastly improved. Though still developing, India has also made significant strides in terms of industrial development, infrastructure and economy and India has now emerged as a global player. This has also brought along environmental issues for India to deal with. Environmental issues are one of the primary causes of disease, health issues and long-term livelihood impact. Major environmental issues that India faces today are Air pollution, poor management of waste, growing water scarcity, falling groundwater tables, water pollution, preservation and quality of forests, biodiversity loss, and land/soil, environmental degradation, public health, loss of resilience in ecosystems, livelihood security for the poor. Some cite economic development as the cause regarding the environmental issues. It can also be said that India's growing population is the primary cause of India's environmental degradation yet there are many more factors to be considered.

The major sources of pollution in India include the rapid burning of fuelwood and biomass such as dried waste from livestock as the primary source of energy, lack of organised garbage and waste removal services, lack of sewage treatment operations, lack of flood control and monsoon water drainage system, diversion of consumer waste into rivers, using large land area for burial purposes, cremation practices near major rivers, government mandated protection of highly polluting old public transport, and continued operation by Indian government of government-owned, high emission plants built between 1950 and 1980. India's population growth adds pressure to environmental issues and its resources. Rapid urbanization has caused a build-up of heavy metals in the soil of the city of Ghaziabad, and these metals are being ingested through contaminated vegetables. Heavy metals are hazardous to people's health and are known carcinogens. The Government of India has taken several steps to address these issues such as The Indian Wildlife Protection Act 1972 which protects the biodiversity. 1988 National Forest Policy had conservation as its fundamental principle. In addition to these acts, the government passed the Environment (Protection) Act 1986 and Foreign Trade (Development and Regulation) Act 1992 for control of biodiversity. Besides this, initiatives Swachh Bharat Abhiyan, Green Skill Development Programme (GSDP), Namami Gange Programme, Compensatory Afforestation Fund Act (CAMPA) etc. have also contributed to environmental conservation and have given a sense of responsibility to the citizens. India has made some of the fastest progress in addressing its environmental issues and improving its environmental quality in the world. Still, India has a long way to go to reach environmental quality similar to those enjoyed in developed economies. Pollution remains a major challenge and opportunity for India.

Environmental Issues in India:

1. Air Pollution

Undoubtedly one of the most pressing environmental issues in India is air pollution. According to the 2021 World Air Quality Report, India is home to 63 of the 100 most polluted cities, with New Delhi named the capital with the worst air quality in the world. The study also found that PM_{2.5} concentrations – tiny particles in the air that are 2.5 micrometers or smaller in length – in 48% of the country's cities are more than 10 times higher than the 2021 WHO air quality guideline level. Vehicular emissions, industrial waste, smoke from cooking, the construction sector, crop burning, and power generation are among the biggest sources of air pollution in India. The country's dependence on coal, oil, and gas due to rampant electrification makes it the world's third-largest polluter, contributing over 2.65 billion metric tons of carbon to the atmosphere every year.

The months-long lockdown imposed by the government in March 2020 to curb the spread of Covid-19 led to a halt in human activities. This unsurprisingly, significantly improved air quality across the country. When comparing the Air Quality Index (AQI) data for 2019 and 2020, the daily average AQI in March-April 2019 was 656, the number

drastically dropped by more than half to 306 in the same months of 2020. In recent years, the State Government of the Indian capital has taken some stringent measures to keep a check on air pollution. One of which is the Odd-Even Regulation – a traffic rationing measure under which only private vehicles with registration numbers ending with an odd digit will be allowed on roads on odd dates and those with an even digit on even dates. Starting from January 2023, there will also be a ban on the use of coal as fuel in industrial and domestic units in the National Capital Region (NCR). However, the ban will not apply to thermal power plants, incidentally the largest consumers of coal. Regardless of the measures taken to curb air pollution, as the World Air Quality Report clearly shows – the AQI in India continues to be on a dangerous trajectory.

2. Water Pollution:

Among the most pressing environmental issues in India is also water pollution. The Asian country has experienced unprecedented urban expansion and economic growth in recent years. This, however, comes with huge environmental costs. Besides its air, the country's waterways have become extremely polluted, with around 70% of surface water estimated to be unfit for consumption. Illegal dumping of raw sewage, silt, and garbage into rivers and lakes severely contaminated India's waters. The near-total absence of pipe planning and an inadequate waste management system are only exacerbating the situation. Every day, a staggering 40 million litres of wastewater enter rivers and other water bodies. Of these, only a tiny fraction is adequately treated due to a lack of adequate infrastructure. The government is also looking at ways to promote water conservation and industrial water reuse by opening several treatment plants across the country. In Chennai, a city in Eastern India, water reclamation rose from 36,000 to 80,000 cubic meters between 2016 and 2019.

3. Food and Water Shortages:

According to the Intergovernmental Panel on Climate Change (IPCC), India is the country expected to pay the highest price for the impacts of the climate crisis. Aside from extreme weather events such as flash floods and widespread wildfires, the country often experiences long heatwaves and droughts that dry up its water sources and compromise crops. Since March 2022 – which was the hottest and driest month recorded in 120 years – the North West regions have been dealing with a prolonged wave of scorching and record-breaking heat. For several consecutive days, residents were hit by temperatures surpassing 40 degrees Celsius, while in some areas, surface land temperatures reached up to 60C. There is no doubt among experts that this unprecedented heatwave is a direct manifestation of climate change. The heatwave has also contributed to an economic slowdown due to a loss of productivity, as thousands of Indians are unable to work in the extreme heat. The agriculture sector – which employs over 60% of the population – is often hit hard by these erratic droughts, impacting food stability and sustenance. Currently, farmers are struggling to rescue what remains of the country's wheat crops, piling on existing fears of a global shortage sparked by the war in Ukraine.

4. Waste Management:

Among the most pressing environmental issues in India is also waste. As the second-largest population in the world of nearly 1.4 billion people, it comes as no surprise that 277 million tons of municipal solid waste (MSW) are produced there every year. Experts estimate that by 2030, MSW is likely to reach 387.8 million tones and will more than double the current value by 2050. India's rapid urbanization makes waste management extremely challenging. Currently, about 5% of the total collected waste is recycled, 18% is composted, and the remaining is sites. To tackle this issue, in 2020 the government announced that they would ban the manufacture, sale, distribution, and use of single-use plastics from July 1 2022 onwards. Furthermore, around 100 Indian cities are set to be developed as smart cities. Despite being still in its early phase, the project sees civic bodies completely redrawing the long-term vision in solid waste management, with smart technologies but also awareness campaigns to encourage community participation in building the foundation of new collection and disposal systems.

5. Biodiversity Loss:

Last but not least on the list of environmental issues in India is biodiversity loss. The country has four major biodiversity hotspots, regions with significant levels of animal and plant species that are threatened by human habitation: the Himalayas, the Western Ghats, the Sunderland (including the Nicobar Islands), and the Indo-Burma region. India has already lost almost 90% of the area under the four hotspots, according to a 2021

report issued by the Centre for Science and Environment (CSE), with the latter region being by far the worst affected. Forest restoration may be key to India's ambitious climate goals, but some argue that the country is not doing enough to stop the destruction of this incredibly crucial resource. Indeed, despite committing to create an additional carbon sink of 2.5-3 billion tons of CO₂ equivalent through additional forest and tree cover by 2030, Narendra Modi's government faced backlash after refusing to sign the COP26 pledge to stop deforestation and agreeing to cut methane gas emissions. The decision was justified by citing concerns over the potential impact that the deal would have on local trade, the country's extensive farm sector, and the role of livestock in the rural economy. However, given these activities' dramatic consequences on biodiversity, committing to end and reverse deforestation should be a priority for India.

Conclusion

The environmental problems which may arise in India, due to population growth, increased industrial and agricultural activities, and depletion of natural resources in the next 25 years, are discussed here. Selected aspects of problems which require special attention are treated with particular emphasis on rural situations. The present status of the various aspects of human settlement—such as quality of air, water, sanitation, health, and housing—as well as aspects of conservation of forests, soils, and wildlife, is outlined as far as possible in a quantitative manner. It is visualized that environmental management will have to be more serious and of growing dimensions in the coming years. It emerges from the study that two of the most serious problems which India may face in 25 years' time are water pollution and deforestation. By A . D . 2000, population in India is projected to reach around 950 million, 65% of whom would be living in rural areas. The environment's capacity to absorb the concomitant wastes and pollution would be significantly reduced through the consequent growth of human activities. At present, in the rural areas, the percentage of population with piped water-supply and exclusive sanitation facilities is less than 10%. Unless drastic measures are taken, this percentage may not exceed 30% by A.D. 2000. Without appropriate sewerage and sanitation facilities, the accumulated wastes could mix with open-water resources, so leading to high levels of water pollution. The effects of mixing agricultural runoff containing wastes, pesticides, and fertilizers, in the rural water-sources, would also need consideration

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INFORMATION NEEDS AND INFORMATION SEEKING BEHAVIOUR OF RESEARCH SCHOLARS IN MAHATMA PHULE KRUSHI VIDYAPEETH , RAHURI: A SURVEY

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Abstract

Information seeking behavior refers to the way people search and utilize information. This study was undertaken to determine the information-seeking behavior and use of information resources by Research Scholars in Mahatma Phule Krushi Vidyapeeth Rahuri. The objectives of the study include understanding the frequency and purpose of library visits, identifying information needs, exploring information seeking approaches, and determining problems faced by research scholars in utilizing library resources. The methodology involves a survey with questionnaires distributed to research scholars, and the data is analyzed for interpretation. The findings reveal that only one-fifth of respondents visit the library daily, with the majority spending three to four hours per day. Internet usage is high, and Google is the most frequently used search engine. The primary purpose of seeking information is for research, and challenges include outdated information and scattered sources. The study suggests that research scholars should make regular library visits, allocate sufficient time for exploration, and emphasize the importance of acquiring the latest information resources to enhance the library's effectiveness.

Keywords: Information Need, Information Seeking Behaviour, symposiums ,Research Scholars.

1. Introduction

The user community of university library consists of mainly post-graduate students, research scholars, and faculty members. Among them, research scholars' use of the library is crucial to their research work, and the university library is intended to be a place where students consult to acquire more knowledge. Generally the student and research scholar community is largest in size than other user communities in university setup. Libraries and information centers play a major role in information transfer cycle. The role of the University libraries is not only limited to the preservation of reading materials but also to ensure that the information needs of the users are met by its own traditional as well as electronic resources and services.

1.1. Information According to Oxford English dictionary, "Information is facts or knowledge provided or learned" ¹ Information is an important and key resource and an essential input for all types of organizations. Libraries have limited resources with which they have to satisfy the information needs of the users. Therefore, libraries have to build their collections and facilities to meet the requirements of the users. The present era is an era of information. Good learning is based upon adequate information. Libraries provide information through their resources and services. Hence, academic libraries are playing vital role in shaping a future generation of students and research scholars by providing required information to them. Information is the primary agent of action and change. It reduces entropy by increasing certainly and decreases the number of choices before us for better judgement. A person seeks information to make sense of the world, getting across a barrier, solve a problem and to fill the gap in the knowledge. Information has to be integrated with knowledge to be used and applied appropriately. It means that information needs knowledge and experience to solve problems.

1.2. Information needs of research scholars

Information is crucial for nation's development. The development of any nation is not possible until and unless the information is made available at the door steps of those who need, preferably free of cost. People like policy makers, planners, economists, farmers, teachers and research scholars, doctors, engineers, librarians' etc. require information for their occupational and day to day activities. No matter whether they are in office, or at home, in college, in the rural areas, they all need information either directly or indirectly. Students as the largest chunk of library users need information in their daily life. Post-graduate students in universities need information and course

materials for their all-round development which is obtained from the resources of the library.

1.3. Information seeking behaviour of research scholars

Information seeking behaviour is the human behaviour with respect to searching various sources, channels including use of that information. The terms, information seeking behaviour, information searching behaviour and information using behaviour are synonymous terms. Information seeking behaviour is an area of active interest among the information scientists, academicians, scientists, sociologists, researchers and psychologists. Information seeking habits result from the recognition of some need, perceived by the user, whom as a consequence makes demand upon formal systems such as libraries, information centres, online services or persons to meet their information needs. Information systems exist to enhance the flow and utilization of information and augment the information processing function of man in reaching rational decisions in day-to-day life. The research scholars may seek the required information by referring books, browsing periodicals, consulting abstracting and indexing periodicals, consulting colleagues and friends. They also seek information from teachers, senior research scholars, post doctoral fellows and information centres. They also seek information through seminars, conferences, workshops, symposiums, etc. The majority of the information is sought by the research scholars from the sources and services of the library in which they are the users.

2. Objectives of the Study

The following are specific objectives of the study:

1. To know the frequency of library visit of research scholars;
2. To know the purpose of library visit of research scholars;
3. To identify the information needs of the research scholars;
4. To know the information seeking approach and types of information seeking from their library;
5. To know the problems faced by the research scholars in using the library sources and services.

3. Scope of the Study

The study is undertaken to explore the information needs and information seeking behaviour of research scholars and their perception on information needs and seeking behaviour in the surveyed Research Scholars in Mahatma Phule Krushi Vidyapeeth Rahuri to find the ways and means to promote the existing system.

4. Methodology

The survey method was used in this study. Question tool was used to collect data from the research scholars. 65 questionnaires were distributed to the research scholars following accidental sampling method. The researcher received 40 questionnaires out of 65. After collecting data required for the study, the data was analysed and interpreted in the form of tables.

5. Analysis of the Data

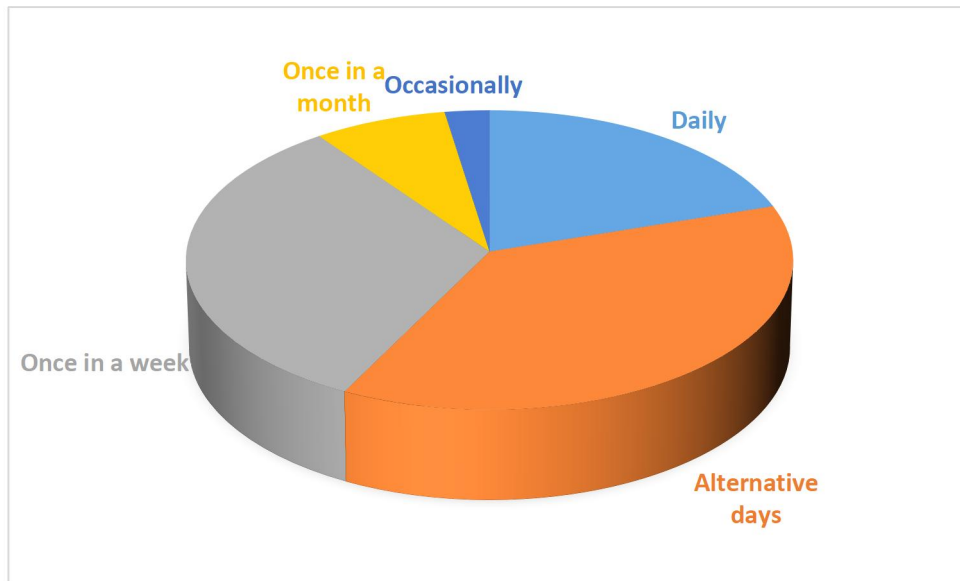
5.1 Library visit

A question has been asked to the respondents to know their frequency of library visit. The replies given by them are shown in Table 5.1.

Table 5.1: Frequency of library visit

Frequency	Number of Respondent	Percentage(%)
Daily	8	20
Alternative days	15	37.5

Once in a week	13	32.5
Once in a month	3	7.5
Occasionally	1	2.5
Total	40	100



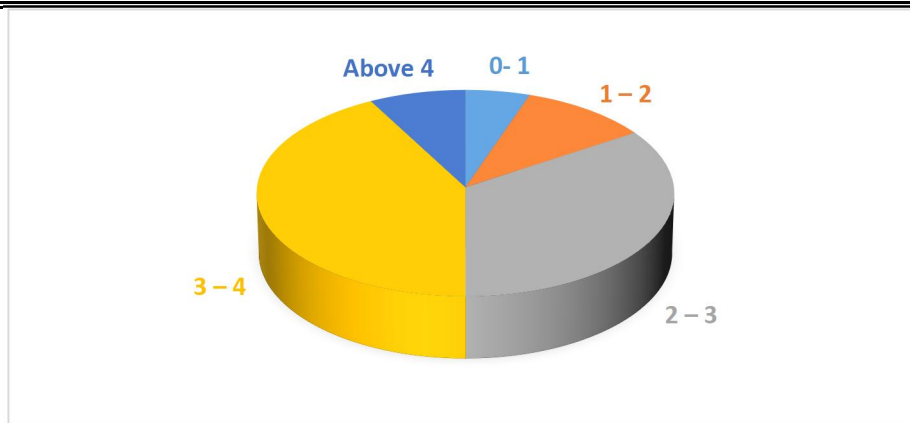
From the Table 5.1 that majority of the respondents (37.5%) visit library Alternative days followed by Once in a Week (32.5%), Daily (20%), Once in a Month (7.5%) and remaining of them (2.5%) are visited library Occasionally.

5.2 Time spent

A question has been asked to the respondents to know the amount of time they spent in the library per day. The replies given by them are shown in Table 5.2.

Table 5.2: Time spent in the library per day

Time Spent	Number of Respondent	Percentage(%)
0- 1	2	05
1 – 2	4	10
2 – 3	13	32.5
3 – 4	18	45
Above 4	3	7.5
Total	40	100



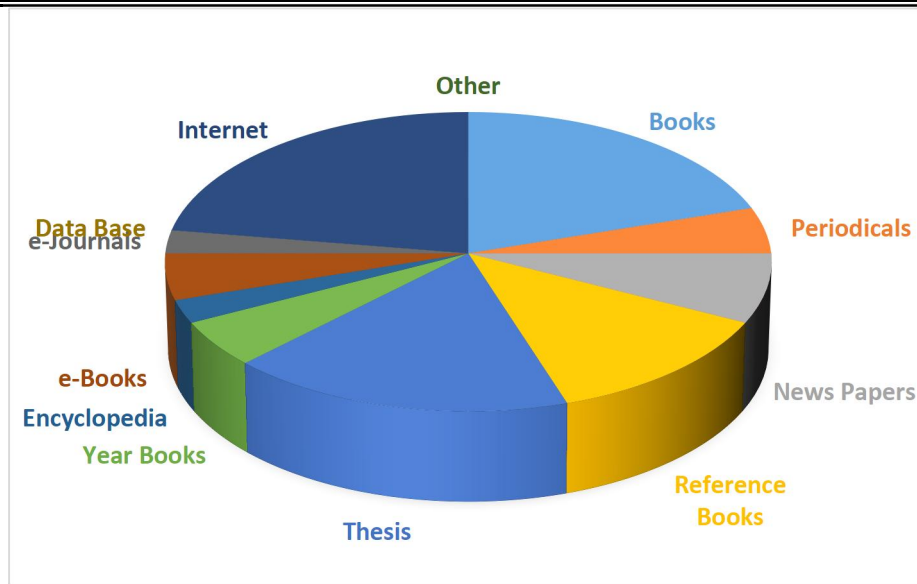
From the table 5.2 majority of the respondents (45%) are spend three to four hours in the library followed by two to three hours (32.5%), one to two hours (10%), above four hours (7.5%) and remaining of them (5%) are spend less than one hours in the library.

5.3 Uses of Information Sources

A question has been posed to the respondents to know their information sources available in their library. The replies given by them are shown in Table 5.3

Table 5.3: Uses of Information Sources

Information Sources	Number of Respondent	Percentage(%)
Books	8	20
Periodicals	2	5
News Papers	3	7.5
Reference Books	5	12.5
Thesis	7	17.5
Year Books	2	5
Encyclopedia	1	2.5
e-Books	2	5
e-Journals	1	2.5
Data Base	0	0
Internet	9	22.5
Other	0	0
Total	40	100



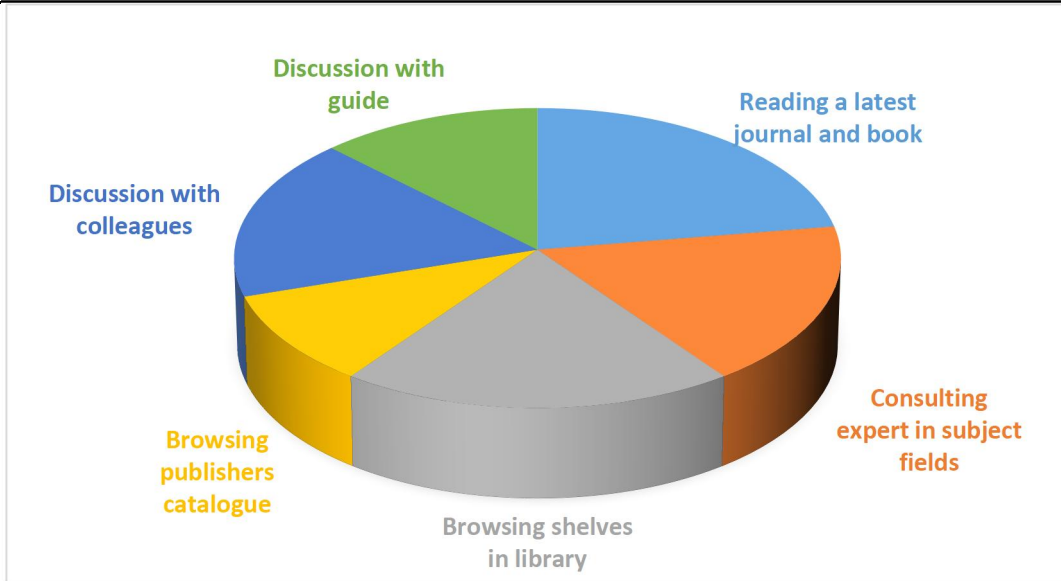
From the table 5.3 maximum number of respondent (22.5%) uses internet for information followed by books (20%), Thesis(17.5) , Reference book(12.5%), News paper(7.5%) , Perodicals(5%) , Year book(5%) , e-Books(5%) , Encyclopedia(2.5%) and e-Journals(2.5%). There is no user of Data base information resources.

5.4 Sources and Methods used for current awareness

A question has been posed to the respondents to know their methods used for current awareness available in their library. The replies given by them are shown in Table 5.4

Table 5.4 Sources and Methods used for current awareness

Methods	Number of Respondent	Percentage(%)
Reading a latest journal and book	9	22.5
Consulting expert in subject fields	7	17.5
Browsing shelves in library	8	20
Browsing publishers catalogue	4	10
Discussion with colleagues	7	17.5
Discussion with guide	5	12.5
Total	40	100



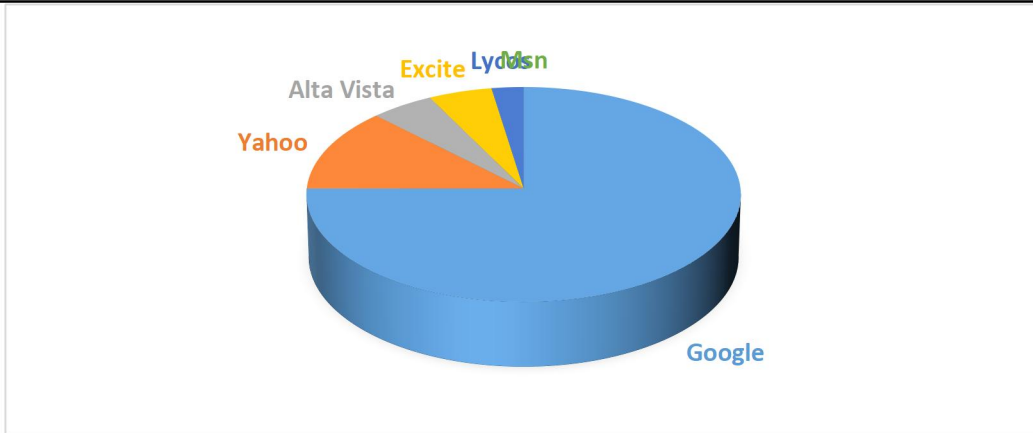
From the above table 5.4 majority of the respondent (22.5%) users reading a latest journal and books for current awareness followed by Browsing shelves in library (20%), Consulting expert in subject fields (17.5%) , Discussion with colleagues (17.5%) ,Discussion with guide(12.5%) and remaining (10%) use Browsing publishers catalogue for current awareness.

5.5 Use of Search Engines:

A question has been put to the respondents to know their frequently used search engines in the library. The replies given by them are shown in Table-5.5

Table 5.5 Use of Search Engines

Search Engines	Number of Respondent	Percentage(%)
Google	30	75
Yahoo	05	12.5
Alta Vista	02	5
Excite	00	0
Lycos	01	2.5
Msn	02	5
Total	40	100



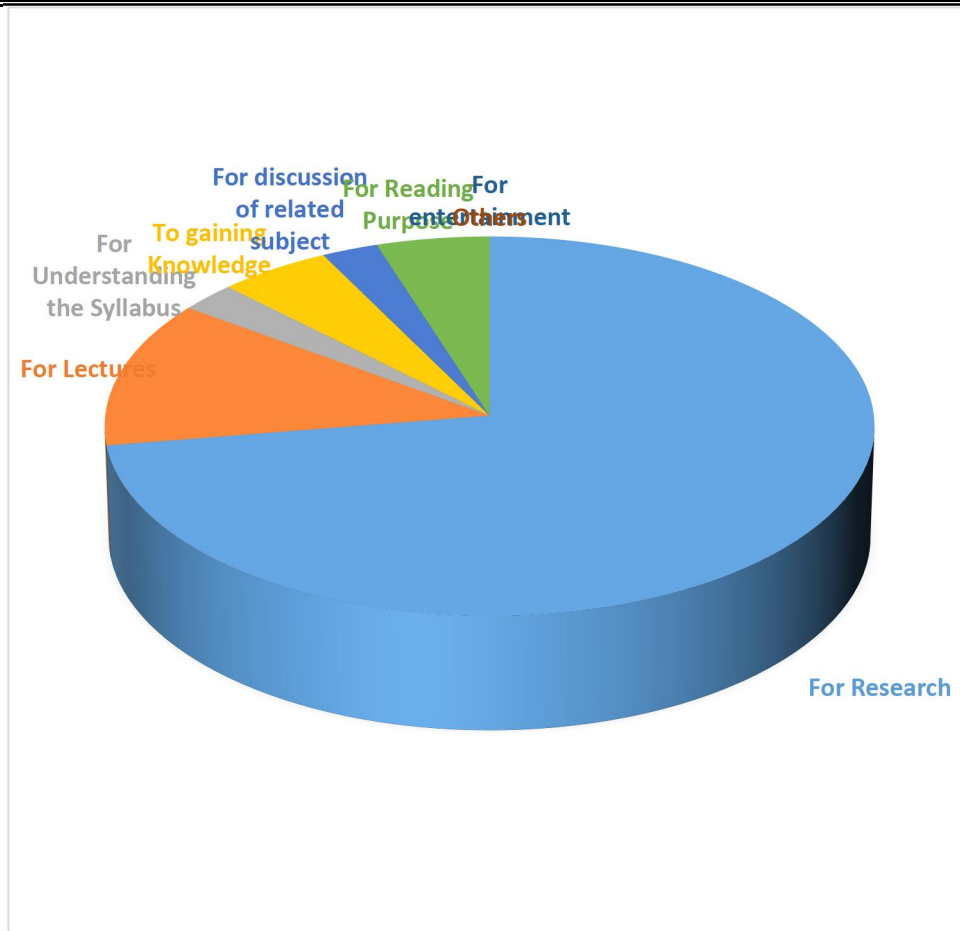
The Table 5.5 clears that the majority of the respondents (75%) frequently used google search engine followed by them yahoo search engine (12.5%), Alta Vista search engine (5%), MSN search engine (5%), and remaining of them (2.5%) frequently used Lycos search engine. There is no user of Excite search engine.

5.6 Purpose of seeking information

A question has been put to the respondents to know their purpose of seeking information in the library. The replies given by them are shown in Table 5.6.

Table 5.6 Purpose of seeking information

Purpose of seeking information	Number of Respondent	Percentage(%)
For Research	29	72.5
For Lectures	5	12.5
For Understanding the Syllabus	1	2.5
To gaining Knowledge	2	5
For discussion of related subject	1	2.5
For Reading Purpose	2	5
For entertainment	00	00
Others	00	00



From the table 5.6 majority respondent(72.5%) has purpose of seeking information in the library for Research followed by for lectures (12.5%) , To gaining Knowledge(5%) , for reading purpose(5%) , For Understanding the Syllabus(2.5) and For discussion of related subject(2.5%)

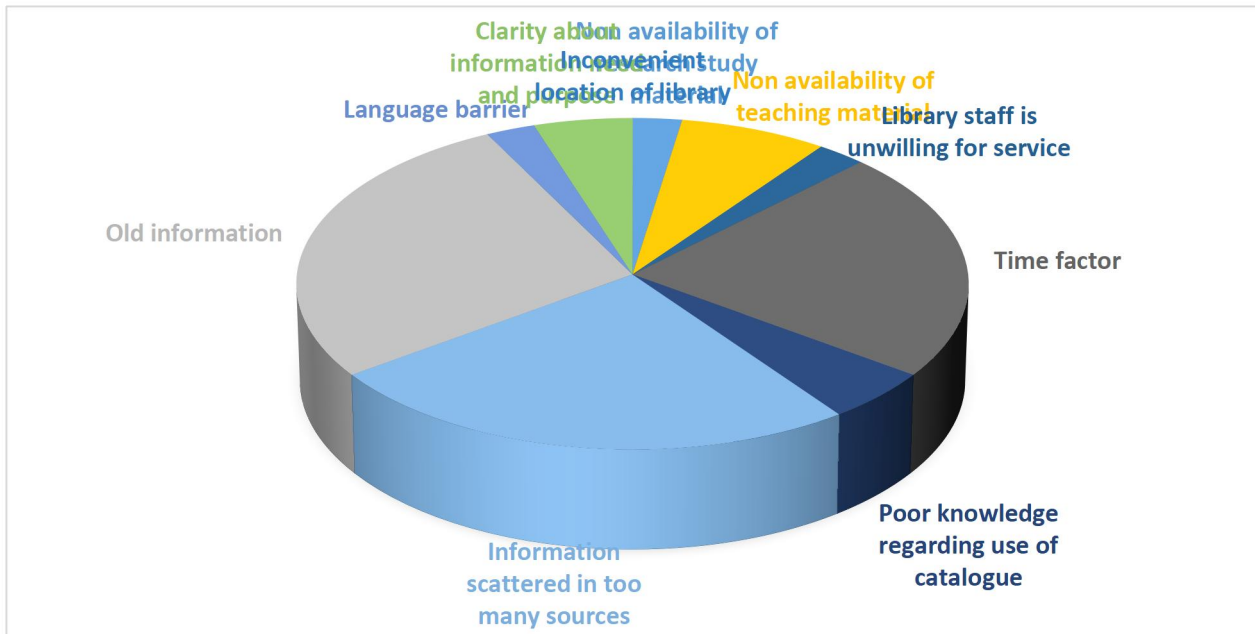
5.7 Problems while seeking information

A question has been put to the respondents to know whether they have problems while seeking information. The replies given by them are shown in Table5.7

Table 5.7 Problems while seeking information

Problems while seeking information	Number of Respondent	Percentage((%)
Non availability of research study material	1	2.5
Non availability of teaching material	3	7.5
Library staff is unwilling for service	1	2.5
Time factor	9	22.5
Poor knowledge regarding use of catalogue	2	5
Information scattered in too many sources	10	25

Old information	11	27.5
Language barrier	1	2.5
Clarity about information need and purpose	2	5
Inconvenient location of library	0	0
Total	40	100



The Table 5.7 presents that majority of the respondents (27.5%) replied that some of information materials are old in using the library problem faced by them followed by information scattered in too many sources (22.5%), incomplete information service (15.4%), materials are not available (13.8%), library staff unwilling service (11.5%), lack of time (10.8%) and remain of them (2.3%) replied that lack of knowledge in using the library problem faced by them.

6. Findings of the Study

The major findings of the study are:

1. Only one fifth of the respondents visit library daily. Majority of the respondents (45%) are spend three to four hours in the library.
2. maximum number of respondent (22.5%) uses internet for source of information.
3. Majority of the respondent (22.5%) users reading a latest journal and books for current awareness
4. Majority of the respondents (75%) frequently used google search engine.
5. Majority of the respondent (72.5%) has purpose of seeking information in the library for research.
6. majority of the respondents (27.5%) replied that some of information materials are old in using the library problem faced by them.

Suggestions

1. Research scholars need to make regular visits to the library to obtain the necessary information. Making library visits a habit is essential, as it contributes to becoming a knowledgeable individual through daily exploration.

2. A significant number of respondents are not dedicating most of their time to the library. Therefore, research scholars should allocate a minimum of three to four hours for library visits, engaging with reference materials and other reading resources.

3. The majority of the respondents replied that information materials are old. Therefore, it is advisable to acquire the latest editions of reference books and other materials, ensuring that the library remains updated with relevant and current resources.

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LIBRARIAN'S TREASURY: WEB RESOURCES

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Abstract

The digital age has brought profound changes in the way information is created, stored, distributed, delivered and accessed. At any time, any place information paradigm of the networked environment is really true. The fundamental mission of libraries and library profession to facilitate access to knowledge and information has remained unchanged. The process, tools and techniques employed for realizing this objective have all undergone profound transformation.

1. Introduction:

Library and Information centers are transit from print to digital forms. This change in traditional libraries also affects on library and Information centers as well as Library professionals to access and dissemination of Information. The use of web/electronic resources brought about significant changes in collection development functions in the libraries.

2. www:

The www (World Wide Web) is the most popular and rapidly growing service of the internet in an information society. The web has made the internet easier to use and enhanced its value as a communication medium with its two components web servers and web browsers. The growth in the variety and applications developed over the web has been remarkable. The relative ease which web related tools may be used to publish and access multi-media information over the internet has led to the availability of variety of digital information sources on the internet also called as "Network Information" in the information world.

3. Web Resources:

Web resources are identified with a special name called "Uniform Resource Locator (URL)", which is simply an address of document on the web or net. These identify objects that be accessed on the web. When one needs to navigate a web page, it is done through its URLs. This describes the protocol needed to access the web page and access points to its internet location and home directory.

4. Types of Web Resources:

There are three types of web resources:

Open Web: Anything online that can be found freely with a search engine

Gated Web: Online resources accessible by subscription.

Invisible Web: Databases that are not found by search engines and can only be accessible through a particular page or front end.

5.Means of Access to Web Resources:

- Through Search Engines
- Through Web OPAC's
- Through specified URL's/Websites

6 www-based Resources: Web Resources

- e-books
- e-journals

- Web OPAC's
- Library Catalogues Online:
- E-papers
- E-reference sources
- Wikipedia
- e-Dictionaries
- Subject Gateways
- e-content pages
- Portals
- FAQ's (Frequently Asked Questions)
- Multimedia Digital Resources
- e-forums/Groups
- Online Databases
- Mailing List
- USENET News
- Web Logs
- Bulletin Board Services
- Societies, Associations and Institutions

7. Web Resources:

7.1 e-books:

E-books are comprised any book or monograph of text made available in electronic form. An e book is an electronic representation of a book, usually a parallel publication of a print copy, but occasionally born digital. It can be defined as a digital monograph that searchable, able to be enhanced with cross-references and linked to other sources and multimedia.

7.2 e-journals:

Any journal, magazine, newsletter or serial publication available over internet in electronic format called as an E-Journal. These can be accessed through Gopher, FTP, Telnet, and E-mail or discussion list.

7.3 Web OPAC's:

It is new opac service serving as a gateway to the resources not only held by the respective library but also the holdings of other participating libraries without limiting the local collection but going beyond to the regional, national and international level.

7.4 Library Catalogues Online:

A user friendly online catalogue which provides the complete printed book collection fully catalogued with the navigational tools for searching the records. For most of the basic reference materials and an abstract is provided with the image of the book. E.g.: <http://www.waikato.ac.nz/library/catalog/> (University of Waikato)

7.5 e-papers:

Through e-papers it is possible to broadcast documents to large number of recipients through online communication system

7.6 e-reference sources:

e-reference sources like map, atlas, encyclopedias, directories, dictionaries, bibliographies, citation guides etc, provides handy and pin pointed information relevant to the reference service.

7.7 Wikipedia:

Wikipedia is a multilingual, web-based, free content encyclopedia project. It is written collaboratively by volunteers; its articles can be edited by anyone with access to the website. It has approximately seven million

articles in 251 languages. It is currently ranks among the top ten most visited websites worldwide. Librarian have to take full advantage of such a vast sea of freely available information to serve its clientele and even contributed in editing and adding new knowledge for others benefits. E.g.: <http://www.wikipedia.org/wiki/>

1.8 e-Dictionaries:

- A collaborative effort to widen access to South Asian language dictionaries is going on. Established dictionaries for over thirty modern literary languages of South Asia will be mounted on the web for free and open access, Languages to be covered, in alphabetical order, are: Assamese, Baluchi, Bengali, Dhivehi, Dogri, English, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Maithili, Malayalam, Manipuri, Marathi, Mundari, Naga, Nepali, Newari, Oriya, Pali, Panjabi, Pashto, Persian, Prakrit, Rajasthani, Sanskrit, Sindhi, Sinhala, Tamil, Telugu, Torwali, and Urdu. Languages under consideration for future project include: Ardhamagadhi, Avestan and Old Persian, Bodo, Brahui, Burmese, Dari Khasi, Khowar, Kukichin, Lahu, Lepcha, Pahlavi, Portuguese, Romani, Santali, Tibetan and Tulu. Eg: <http://www.dsal.uchicago.edu/dictionaries/> (Digital dictionaries of South Asia)

7.9 Subject Gateways:

Subject gateways are also known as subject-based information gateways, virtual libraries is an important component on information centers web site designed for the users so as to help them discover high quality information on the internet in a quick and effective way. A gateway is similar to bridge in the fact that they connect one network to another but the real distinction lies in the fact. (eg: <http://www.lib.ed.ac.uk/ersbysub/> University of Edinburgh's subject gateway)

7.10 e-content pages:

These provide desktop access to digitized content pages of books, conference proceedings, journals, etc.

7.11 Portals:

It means gateway of entrance to the portal site or gateways to redirect a user to the holder of original digital materials. It may includes its own indexing services or may combine original resources from number of different providers

7.12

FAQ's (Frequently Asked Questions):

A major source of information for questions with answers as "Frequently Asked Questions" devoted to a specified topic in the area of library and information science and allied areas. Such sites build knowledge for a user and add knowledge to specialists. Such FAQ's are also found in the library sites which guides new users as to how to use the library fully. E.g.: <http://www.faqs.org/faqs/> (online Education)

7.13 Multimedia Digital Resources:

These are the resources in the combination of two or more media such as text, images, animation, audio and video, etc.

7.14 e-forums/Groups:

These are also various electronic discussion groups for communicating information via internet. Messages are sent to a central location and posted for other members of the groups. Again one has to subscribe to these groups, which is generally free. Librarians now read, understand and forward the new information on continuous basis to its users depending upon their interest area.

7.15 Online Databases:

It is a collection of related items of information held in form intelligible to computer, these items may be references to journal papers, these may be latest balance sheets of the companies or these may be full text of journals.

7.16 Mailing List:

E-mail list /LISTSERV are a popular means of internet communication. These are means of participating in electronic discussion of a particular topic with other interested people throughout the world. One has to register once to that list in order to send or receive message from other group members. Librarians today are vigilant enough to know the e-mail lists of their clientele subject areas and scan them regularly to know the latest happenings to further educate their clientele.

7.17 USENET News:

Usenet news is not delivered to the user's e-mail box. Instead news reading software is used to access the nearest news feed computer. News reading facility is supported by web browsers. Usenet news groups are hierarchically structured.

7.18 Web Logs:

Blog Shortly for Web log. Web log is a web site that contains brief entries arranged in reverse chronological order. Blogs are diverse, ranging from personal diaries to news sites that monitor developments on anything possible depending upon purpose of the blog; some blogs encourage interactivity between the writer and audience by allowing readers to post comments and questions about entries. Today there will be thousands of blogs written by librarians on personal and professional matters and all these are available free of cost on internet for others to take benefit.

7.19 Bulletin Board Services:

It is an electronic message system for reading and posting messages. Through Bulletin Board messages are not sending to the e-mail of individual but it is a common platform to inform general public about specific issue

7.20 Societies, Associations and Institutions:

A useful site which provides a quick link to important information of the organization with FAQ's like "Why should I join the ALA or IFLA?" which may be help for fresher. E.g.: <http://www.ala.org.in/>

8 Conclusion:

In this paper with the web resources an attempt is made to give glimpse of the developments that are taking place in the generation and dissemination of information in the area of library and information science. It is true that the internet a paradigm in global communication and information flow is collapsing all boundaries bringing together the library science community closer and closer.

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ENVIRONMENTAL ISSUES AND POLITICAL RESPONSIBILITY

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Introduction

Environmental protection is one of the biggest problems confronted by humanity at present. Ever increase in population and per capita consumption is depleting the natural resources as well as the environment. Moreover, industrialization, urban concentration and modern forms of agricultural methods are polluting the water, soil and air resources all over the world. The natural environment is becoming hazardous and toxic for the endurance of future populations. The rising emissions of greenhouse gases (GHG) are affecting the blue planet and estimations of “United States Development Authority” and “Organization for Economic Cooperation and Development” reveal the rise in earth temperature by 2 centigrade by the end of 2050. It will have more adverse effects on the earth. Global warming is causing melting glaciers and polar ice with two to three times higher as compared with last century while loss of biodiversity is unpredictable and unforeseen. There is a sharp increase in saline soils by 50% up to 2050, resulting in land deterioration in every country. Environmental challenges are not specific to geo boundaries, and steps taken by a single country alone are not sufficient to protect the global environment. The green and sustainable economy requires a basic transition of social, economic, and energy systems. Environmental and economic policies are important for the green economy along with improvement of prevailing institutions for effective implementation and monitoring of policies. Environmental involvement is essential economic policies eventually employed in a wider institutional setting. To achieve the objectives of environmental policies, the political process directing policy adoption plays a central role in conjunction with the nature of institutions, social and cultural discourse, industrial structure, distribution of resources]. While the role of institutional quality and governance is overlooked by the quantitative models.

The theoretical foundations for institutional quality in the context of environment protection highlight that stronger and efficient institutions lead to better policy adoption and its outcomes. The enforcement of rules by the government reduces the level of environmental degradation. The political institutional quality is usually represented by Polity IV that shows the democratic or autocratic regimes in a country. The democratic countries have better control on environmental performance while resources are concentrated to few people in autocratic countries so the cost of public goods lie on those capturing these resources. When democracies are mature then interest of individual groups merge into common interest since gains from environmental performance decrease. Moreover, democratic countries have stronger commitments to international environmental agreements. The inefficient institutional quality leads to sub-optimal use of available resources. The corrupt officials allow the activities which damage the natural environment.

Democratic Challenge:

The roles of democracy and democratic institutions in advancing environmental policy and, in particular, climate policy are mixed, as evidenced by the variation in the environmental progress of different democratic governments. From a theoretical perspective, democratic procedures can effect meaningful reform if public support for these reforms exists, especially when compared with autocratic regimes, as the set of incentives for policymakers to legislate toward these ends in a system deriving legitimacy from the consent of the governed is substantive; for instance, given political responsiveness as a result of electoral accountability, policymakers in democratic governments have reason to consider a wide view of the public interest that incorporates the varied positions of their constituents and work to efficiently create change. On such a view, democracies will likely consider the consequential impacts to most, if not all constituents, caused by climate change. Factors like regime stability and ruler or governing official interests, too, seem better aligned for progress in a democracy; civil unrest is less likely in a state perceived as legitimate, as is graft, both of which appear likely to inhibit climate action. In contrast, empirical evidence does show inconsistencies in the ways in which democracies address environmental problems. Though the reason for this variation is largely unclear, a number of features of democratic state organization appear to contribute to observed failures to act on climate change, among other environmental issues. Leaders may, in practice, not be motivated by a theoretical public good, but instead expend resources on resolving

those policy challenges which are most visible to their electorate. Given the largely intangible nature of climate change as a problem one that is gradual, invisible, and global the political opportunity cost of focusing on this challenge or other less visible environmental issues may be high for electorally accountable democratic leaders.

Economic interests and outside influences may also limit the ability of democratic actors to drive meaningful environmental change. In developed democracies, businesses and other groups with economic motivations often hold considerable lobbying power and, therefore, have the ability to forestall climate or environmental progress, which are often unaligned with these groups' financial interests. In developing democracies, environmental reforms are often seen as lesser priorities, given the need for addressing more proximate public concerns, including poverty, infrastructure, and general economic development. Financial incentive can also play a role in preventing the passage of environmental policy outside of the legal realm; some evidence suggests that corruption, present in some form in a number of democratic institutions globally, erodes regulatory ability and public trust in state institutions, reducing the ability of democracies to effectively mitigate carbon emissions and other sources of pollution. In addition, the problem of popular disinterest in advancing environmental policy presents challenges for the prospects of democratic institutions' ability to drive environmental progress. Despite growing public understanding of the threat posed by climate change, the last decade has seen considerable opposition to pro-environmental policies across broad coalitions and around the globe. Populist movements in Western democracies over the last several years, in particular, have taken positions that actively oppose such policies, and analyses of deliberative modes of participatory democracy have shown results that mirror the interests of those participating and do not necessarily tend towards a more favorable view of environmental or climate action. As redress to these potential shortcomings, means of reforming democratic processes, both theoretical and pragmatic, to correct for what may be short-sighted political interests have been suggested, though these reforms may reduce democratic choice or participation.

Importance of the Environment as Political Issues:

Environmental issues, in recent years, have been at the forefront of the political agenda. Issues such as climate change, plastic waste and air pollution among others have been prominent features of policy making and political debate. In a 2014 survey by Eurobarometer, they found that more than 95% of Europeans thought that protecting the environment was important. The study also found that more than half of those surveyed worry about air and water pollution, while waste and the depletion of natural resources were additionally top-ranking concerns. This awareness and support for the environment have been growing for many years, becoming an ever more mainstream issue. However, environmentalism came into existence in the early 1800s. The movement became increasingly prominent during the 1970s, a time when the first Earth Day and the UN's first environmental conference were held. Blue Planet II had a huge impact, with around 78% of those that watched the program saying they try and buy fewer single-use plastics. The program exposed the public to the harsh realities of what their litter can potentially do to marine life.

Since the show aired, the UK government has signed up to the New Plastics Economy Global Commitment, whilst also having brought together the Commonwealth Clean Oceans Alliance and Global Plastics Action Partnership. The targets include eliminating unnecessary plastic packaging, transitioning to a reusable packaging model and ensuring plastic packaging is 100% reused, recycled or composted by 2025. The government has also been consulting on introducing a deposit-return scheme and placing a ban on the sale of straws, plastic-stemmed cotton buds and stirrers. The rise of interest has led to widespread campaigning for governments to act in regards to these environmental issues, ultimately forcing it into the political sphere. The most notable recent example is the school climate strikes taking place across the globe that were started by Greta Thunberg. Recent detailing the extent of action needed over the coming years to limit temperature rises to between 1.5 and 2C, show the importance of governments acting to mitigate the potential effects of climate change. Thus, the environment is a vital component of modern-day politics, being an area, which requires urgent action. This action often requires national and international cooperation between governments, with agreements needing to be reached, in order to come to a decision on the best way to pursue environmental issues. These decisions must consider the world globally, as it is hard to place borders on these environmental problems; for instance, emissions can be produced in one area but will affect the rest of the world. Additionally, to achieve positive outcomes all countries must act in working towards changes to improve these problems, otherwise, it is hard for these issues to be resolved as they are often large in scale.

Significant changes to these issues often require government interventions; examples such as the 5p bag charge have decreased the use of disposable bags by 86% while also drawing people's attention to the issue of plastic waste. The environment does, however, present challenges in the political domain as there are many vested interests in oil companies, differences in development levels on a global scale and generally, economic growth is viewed as being superior to the environment.

Conclusion:

Taken together the papers in the special issue provide a number of methodological and analytical contributions to the existing literatures on environmental politics in India and to the hereto limited UPE case-studies of Indian cities. Methodologically they have demonstrated that finally-grained analysis of everyday practices and situated dynamics, made possible through extended qualitative engagement, yields rich analytical findings. They have also highlighted the importance of accounting for temporality within data collection and analysis. Analytically they have further nuanced our understanding of environmental politics in India. Through the exploration of diverse field sites, particularly non-metro cities, but also the careful consideration of liminal spaces within dominant cities, such as rivers capes, and the socio-cultural frontiers within neighborhoods, these papers have pointed to the heterogeneity of urban environments on the one hand and the interconnected nature of environmental politics on the other. In doing so, they highlight the analytical challenge of accounting for local context and specificity while also recognizing the multi-scalar political-economic and social factors that shape the reproduction of particular urban environments. Further, it has brought to the fore a need to recognize and account for intersectionality in ways that complicate class binaries in order to understand contemporary power dynamics in Indian cities. By demonstrating the multiple ways in which urban environments in India are increasingly enrolled into a broader reimagining of the role of cities and citizens, this special issue has pointed to the need to critically engage with multi-dimensional and multi-scalar relations of power that shape the material and socio-cultural infrastructures of daily life in Indian cities.

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CULTURAL DIMENSIONS THAT IMPACT HUMAN CAPITAL AND HAPPINESS: AN INVESTIGATION

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Abstract

This study aims to evaluate the synergy between human capital and happiness, in relation to national culture. The study references policy-makers on how well-being and intellectual capacities can be fostered on a national platform. The research triangulates Gross National Happiness and Global Human Capital Index, floated by international agencies. The indices are correlated with cultural dimensions proposed by Hofstede and Gelfand. These variables were triangulated to make an inferential judgment on how cultural variables exhibit an influence on the happiness and intellectual capacities of a nation. Based on two samples (Hofstede's 92 and Gelfand's 31 countries), the study proposes that countries with higher intellect tend to be high on happiness. Further, cultures exhibiting low power distance, and higher individualism reflect higher intellectual capital. The results were found to be consistent in both samples.

The study indicates that for a country to enhance the feeling of happiness, should invest in human assets; through education, training and offering platforms to exhibit its capabilities. The study portrays leadership as a crucial element of national progress. It portrays that emerging nations should foster long-term orientation, which seems insignificant for developed nations. The study relates human capital as a subset of happiness, thereby indicating that an empowered workforce may lead to human well-being. The study indicates that national culture has the potential to foster intellectual capacities and thus cheerfulness of its citizens.

Keywords – *intellectual capital, happiness, national culture, indulgence*

1. Introduction

Human Capital forms to be an integral element of intangible assets, and is long-recognized to emancipate into current and future earnings (Sullivan, 2000). Although Theodore Schultz once asserted that it is obvious that people acquire knowledge and skill, it is not obvious that these liberate into capital (Schultz T. , 1961); catalysis of innate skills into action are propelled by elements substrate to operating environment (Graeff, 1983) (Middleton, 2006). Studies increasingly focus towards understanding the undercurrents of an intangible-based economy, integration to factors of production and precisely the final connection to the economic value of such operations. The nucleus of such studies is human resources as an element of social, economic, political and technological gain. Traditionally, economies have been accepted as microcosms wherein fiscal doctrines are framed, executed, tested and generalized for broader use. Ontologically, humans were the focal of scholastic studies, wherein the quest to integrate intangibles into tangible factors of production, was primary. In economic parlance, it was pivotal to discover the link between human resources to country competitiveness and progression.

2. Background

The current study tries to integrate three constellations: culture, happiness and human capital in a national context. While the study assimilates the three aspects of economic progress, it is required to study them in solitude and then statistically relate.

2.1 Human Capital

OECD states it to be '*the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being*' (Keeley, 2007).

2.2 Happiness

The OECD *Guidelines on Measuring of Subjective Well-being – 2013*, define ensuing as the measure of subjective well-being: ‘Good mental states, including all of the stated evaluations, positive and negative, that people make of their lives and the affective reactions of people to their experiences’. Hence, the definition encompasses *Life evaluation* (a reflective assessment of a person’s life or some specific aspects of it), *Affect* (a person’s feelings or emotional states, typically measured concerning a particular point in time) and *Eudaimonia* (a sense of meaning and purpose in life or good psychological functioning).

2.3 Hofstede’s Culture Theory

There are quite a few sophisticated models that plot cultural differences between groups; and those which reiterate the differences for their policy implications (Douglas, 1978) (Trompenaars & Hampden-Turner, 2000) (Hofstede, 2001) (Dickson, Den Hartog, & Mitchelson, 2003) (House, Javidan, Dorfamn, & Gupta, 2004) (Inglehardt & Welzel, 2005) (Hofstede, Hofstede, & Minkov, 2010) (Gelfand, et al., 2011). Amongst them, Hofstede’s culture typology is one of the most widely accepted studies across ages. As scholars in science, the current study refers Hofstede, because it has topped the Social Science Citation Index (SSCI) for years, and stood the test of time (Beugelsdijk, Kostova, Kunst, Spadafora, & Van Essen, 2017). The six dimensions of national cultures (Hofstede, 2001) (Hofstede, Hofstede, & Minkov, 2010) are:

Table 1: Hofstede’s culture dimensions

Power distance refers to the extent to which a society accepts the fact that power in institutions and organizations are distributed unequally.
Uncertainty avoidance refers to the extent to which members of a society feel uncomfortable in ambiguous and uncertain situations and take actions to avoid them.
Individualism refers to the extent to which individuals are supposed to look after themselves
Masculine cultures are those that refers to distribution of emotional roles between genders.
Long-term orientation refers to the extent to which the culture programs its inhabitants to accept delayed satisfaction of emotional, social and material needs.
Indulgence refers to the extent to which the society allows free gratification of basic and natural human drives and needs.

Table 1: Hofstede's Culture Dimensions (Hofstede, Culture's Consequences: Comparing values, behaviors, institutions and organizations across nations, 2001) (Hofstede, Hofstede, & Minkov, 2010)

3. METHODOLOGY

The study relies on the recent data available on the three stated perspectives of human progression: human capital, national culture and happiness. Reference has been made to indices, floated by international agencies, on human capital and happiness measurement; explained in detail, further.

3.1 Global Human Capital Index

Global Human Capital Index (GHCI) ranks countries on four thematic sub-indexes: human capacity, deployment, development and know-how, for five different age groups. The index covers a total of 21 indicators generated as 44 data points for each country. GHCI heavily refers to data originally compiled by the International Labor Organization (ILO) and, United Nations Scientific and Cultural Organization (UNESCO), besides its qualitative survey. The indicators for GHCI have been enlisted in Table 2. For the sake of the current study, reference has been made to the report of 2017 (World Economic Forum, 2017).

3.2 Gross Happiness Index (GHI)

The reports have defined (life) evaluations on six key variables (enlisted in Table 2). GHI evaluates subjective well-being as Life evaluation, Affect and Eudemonia, on a ten-point scale. Data has been sourced from the World Happiness Report 2017 (Helliwell, Layard, & Sachs, 2017).

3.3 National Culture

The current study refers to two seminal works on culture studies: namely Hofstede’s Culture Dimension (Hofstede, 2001) (Hofstede, Hofstede, & Minkov, 2010) and Gelfand’s Culture Tightness Score (Gelfand, et al., 2011); which are illustrated below:

- 3.3.1 Hofstede’s Culture Typology: Data on national culture were sourced from Hofstede’s country comparison indices, and floated on the Hofstede Insights webpage (Hofstede Insights, 2017). The study aggregated an index for 92 nations (missing data points were rented with mean index, thereby curtailing skewness of data, besides supplying requisite statistics). Reference has been made to the sixth dimension of culture, including ‘indulgence’;
- 3.3.2 Culture Tightness Score: A total of 31 countries, were considered for discussion in this paper, by summarizing the Tightness Score (Gelfand, et al., 2011). The reference study made an appropriate mix of cultural regions from Global Leadership and Organizational Behavior Effectiveness (GLOBE) and Inglehart-Wenzel’s culture zones (Inglehardt & Welzel, 2005), and hence assortment of countries was advanced to define the contrast between GLOBE and other regions (it has been witnessed the GLOBE are generally the developed economies). The indicators for respective variables are enlisted below in Table 2.

Table 2: Research variable system

<i>Gross Human Capital Index (GHCI-2017)</i>	<i>Gross Happiness Index (GHI-2017)</i>
Total population	GDP per capita
GDP per capita	Social support
Mean years of education	Healthy life expectancy
Median age of population	Freedom to make life choices
Healthy life expectancy	Generosity
Working age population	Perceptions of corruption
Labor force participation rate	
Unemployment rate	
Youth not in employment, education or training rate	
Output per worker	
Mean monthly earnings	<i>Hofstede Culture Taxonomy*</i>
Mean monthly earning for high-skilled workers	Power Distance
Mean monthly earning for medium-skilled workers	Individualism
Mean monthly earning for low-skilled workers	Masculinity

Public spending on education	Uncertainty Avoidance
Public spending on social security, working age	Long-term orientation
Public spending on retired	Indulgence
Pension scheme coverage share	

Table 2: Indicators of GHCI, GHI and Hofstede National Culture

*Correlated as granular elements of National Culture

4. DATA ANALYSIS

The current study is operationalized in two phases, wherein the first phase primarily makes no distinction between countries triangulated for analysis. The subsequent phase segregated, 31 countries with tightness scores (Gelfand, et al., 2011). and relate it with other variables for the current study.

Pearson’s correlation was conducted to explore whether human capital index and happiness index were correlated with the two taxonomies of culture variables (Hofstede, Culture's Consequences: Comparing values, behaviors, institutions and organizations across nations, 2001) (Hofstede, Hofstede, & Minkov, Cultures and Organizations: Software of the Mind, 2010) (Gelfand, et al., 2011). Subsequently, regression analysis was initiated to examine whether GNH and GHCI shared a significant relation with Hofstede’s culture variables. The significance level ($\alpha=0.05$) was considered as a threshold for accepting statistical pointers. Two correlation matrices (92 and 31 countries respectively) characterized the findings of the study. It is to be stated that, data did not witness skewness, owing to the reduction in sample size, or reasons owing to the natural assortment of countries with higher per capita (when the Gelfand *et al* countries were mapped).

5. RESULTS

Table 3 represents the variables correlated. It associates the financial indices with cultural indicators of Hofstede taxonomy 2001 and 2010; followed by an association drawn of Gelfand *et al.* 31 countries, assorted and correlated for a novel cultural dimension of the ‘tightness’ score.

5.1 Descriptive Statistics:

The descriptive statistics for the data set are represented in Table 3,

Table 3: Descriptive statistics

	GDP-2016	GHCI -2017	GNH -2017	Hofstede 92 countries						Gelfand 31
				PD	IND	MAS	UA	LTO	IGC	
Mean	795735.24	63.62	5.79	63.27	38.75	48.05	63.64	43.01	48.68	6.60
	1942283.2	67.69	6.17	55.65	50.58	53.03	66.74	51.61	48.74	
SE	241960.10	0.81	0.11	2.20	2.38	1.94	2.26	2.20	2.15	0.50
	674703.19	1.22	0.17	4.02	4.51	3.68	4.40	3.87	4.07	
Media n	212990	63.20	5.88	66.50	30.00	47.00	63.50	43.00	49.00	6.40
	488530	69.88	6.08	60.00	51.00	56.00	75.00	50.00	49.00	
Mode	488530	61.60	5.96	70.00	20.00	40.00	50.00	43.00	49.00	6.30
	--	--	5.96	68.00	20.00	66.00	86.00	61.00	68.00	

SD	2320799	7.78	1.03	21.13	22.82	18.64	21.69	21.12	20.63	2.78
	3756588.4	6.80	0.93	22.37	25.13	20.48	24.49	21.53	22.67	
Sample Variance	5386111489578.5	60.50	1.07	446.5	520.8	347.5	470.4	446.2	425.6	7.75
	14111956344703.40	46.19	0.86	500.5	631.4	419.3	599.7	463.3	513.8	
Kurtosis	42.17	-0.35	-0.93	-0.43	-0.70	0.46	-0.65	-0.26	-0.12	-0.60
	13.84	1.91	-0.60	-0.52	-1.36	0.40	-0.63	-0.42	0.14	
Skewness	6.14	-0.38	-0.07	-0.43	0.64	-0.02	-0.21	0.39	0.04	0.32
	3.59	-1.31	-0.35	-0.20	0.07	-0.43	-0.56	0.45	0.23	
Confidence Level(95.0%)	480624.02	1.61	0.21	4.38	4.73	3.86	4.49	4.37	4.27	1.02
	1377927.747	2.49	0.34	8.21	9.22	7.51	8.98	7.90	8.31	

Note: The preceding index is for Hofstede Culture Sample with 92 countries i.e. H92 (Hofstede, 2001) (Hofstede, Hofstede, & Minkov, 2010) ; and the latter is with assorted group of 31 countries i.e. G31 (Gelfand, et al., 2011).

Abbreviations: GDP – Gross Domestic Product 2016 (Source: <http://databank.worldbank.org/data/download/GDP.pdf>) | GHCI – Global Human Capital Index 2016 (Source: <https://www.weforum.org/reports/the-global-human-capital-report-2017>) | GNH – Gross National Happiness (Source - <http://worldhappiness.report/ed/2017/>) | PD – Power Distance, IND – Individualism, MAS – Masculinity, UA – Uncertainty Avoidance, LTO – Long-term Orientation, IGC – Indulgence, TS – Tightness Score

6.2 Correlation

Descriptive statistics indicate that there lies an insignificant difference between Hofstede and Gelfand sample countries when it comes to indicators like GDP, GHCI and GNH.

Table 4(a) represents correlation statistics for ninety-two countries clustered under Hofstede (2010), whereas the subsequent table 4(b) represents that for the thirty-one countries clustered under Gelfand et al. (2011). It must be noted that the median GDP represented for H92 (median GDP=2,12,990) is less than G31 (median GDP = 4,88,530); thus, indicating that the G31 are usually countries with robust economic status.

6.2.1 Interpretation: Hofstede - 92 Countries

Global human capital Index is positively correlated with gross national happiness ($r = 0.671$, $p < 0.01$), individualism ($r = 0.590$, $p < 0.01$), long-term orientation ($r = 0.432$, $p < 0.05$) and negatively correlated with power-distance ($r = -0.495$, $p < 0.01$); indicating cultures with a higher degree of individualism encourage human capital.

	GDP-2016	GHCI-2017	GNH-2017	PD	IND	MAS	UA	LTO	IGC
GDP	1.000								
GHCI-2017	0.252	1.000							

GNH-2017	0.147	0.671**	1.000						
PD	-0.111	-0.495**	-0.564**	1.000					
IND	0.272	0.590**	0.485**	-0.602**	1.000				
MAS	0.216	-0.084	-0.056	0.090	0.012	1.000			
UA	-0.110	0.028	0.103	0.136	-0.086	0.031	1.000		
LTO	0.164	0.432*	0.197	-0.053	0.259	0.093	0.052	1.000	
IGC	0.020	0.077	0.337	-0.228	0.107	-0.010	-0.120	-0.441*	1.000

n=92 (Hofstede, 2011) (Hofstede, Hofstede, & Minkov, 2010)

Sig. *p<0.05; **p<0.01

Table 4(a): Correlation of GHCI, GNH and Hofstede culture dimensions

	GDP-2016	GHCI-2017	GNH-2017	PD	IND	MAS	UA	LTO	IGC	TS
GDP	1.000									
GHCI-2017	0.189	1.000								
GNH-2017	0.048	0.593**	1.000							
PD	-0.020	-0.453**	-0.651**	1.000						
IND	0.203	0.556**	0.560**	0.637**	1.000					
MAS	0.244	-0.145	-0.214	0.024	0.058	1.000				
UA	-0.248	-0.137	-0.210	0.055	0.065	0.077	1.000			
LTO	0.092	0.195	-0.138	0.087	0.109	0.158	0.008	1.000		
IGC	0.024	0.252	0.550**	-0.207	0.290	0.044	0.083	0.494**	1.000	
TS	0.013	-0.264	-0.148	0.246	0.369‡	0.041	0.327‡	0.245	0.312‡	1.000

n=31 (Gelfand, et al., 2011)

Sig. ‡ p<0.10, *p<0.05; **p<0.01

Table 4(b): Correlation of GHCI, GNH and Gelfand et al. culture tightness score

The happiness index is witnessed to be influenced positively by individualism ($r = 0.485$, $p < 0.01$) and negatively by power distance ($r = -0.564$, $p < 0.01$); therefore, associating freedom and liberty as *sine qua non* for happiness.

Power distance and individualism were negatively connected ($r = -0.602$, $p < 0.01$). The long-term orientation of a nation was negatively linked to indulgent behaviour ($r = -0.441$, $p < 0.05$); which reveals that long-sightedness encourages cultures to regulate human behaviour and dampen free gratification of desires.

6.2 Regression Statistics

To further verify the causality and its magnitude, a regression coefficient was derived independently for GNH and GHCI, respectively, as demonstrated in equation below:

$$GHCI = 54.813 - 0.087 PD + 0.111 IND + 0.154 LTO + 0.069 IGC$$

Where, GHCI – Gross Human Capital Index | PD – Power Distance | IND – Individualism | LTO – Long-term Orientation | IGC - Indulgence

From the above regression equation, it is to be noted that long-term orientation exhibits a significant influence on the human capital (index) of a nation, followed by individualism. Power distance continues to influence human capital inventory deleteriously; though out-mastered by positively influential factors like future orientation and individuality. Masculinity continued to be enisled and calls for detailed investigation. The regression findings of the current study are represented in Table 5, to validate the relevance of cultural characteristics to the intellectual identity of a country.

7. Extrapolations And Inferences

It is apparent from the above discussion that countries with higher human capital index display enhanced individualism and long-term orientation; besides reduced power distance. This alleges that cultures that foster freedom may empower their individuals to project independent initiatives, offer freedom, and equity and comprehensively plan for the future. Innovation and work-liberty form to be the cornerstone of such nationalities. These factors encourage individuals to imbibe knowledge, skills and attributes that sanction them to be assets for the nation. It has also been noted in the preceding studies that countries with characteristically low power distance and high individuality are adaptive to technology and scientific processes (Zhao, 2011) (Arpaci, A comparative study of the effects of cultural difference on the adoption of mobile learning, 2015) (Arpaci, Yardimci Cetin, & Turetken, 2015).

Long-term orientation is a characteristic that nurtures advancement through a nexus of progressive initiatives. Undeniably education and welfare of citizens are the core components of such advancements. Hence, countries that exhibit long-term orientation unconsciously accomplish education, skills and knowledge. Subsequently, an accomplished populace leads to an enhanced human capital index. Demography in these zones vehemently chases holistic development; thereby leading to wealth creation. Hence, countries with individualistic and long-term orientations foster enhanced GDP and wealth (Schyns, 1998).

While indulgence as a trait did not exhibit causality, it demonstrated a significant correlation with Gross national happiness and long-term orientation. This could be explained by the fact that lack of regulations, enacts liberty amongst individuals; thereby allowing the opportunity to fulfil their needs and desires. The process of gratification leads to an elated feeling of happiness (Hofstede, Hofstede, & Minkov, 2010). It is to be noted here that human gratification and happiness, shall be after the principles of utilitarianism and welfare-state (Kenny, 1965-66) (Zurick, 2006). It is evident that the feeling of happiness and well-being is a condition that permits individuals, groups and societies to cohabit and flourish (Huppert, Baylis, & Keverne, 2005) (Diener, 2009); while rendering a win-win progression for related stakeholders (Seligman, 2011).

8. Conclusion

The study contends that culture which is a handiwork of human collaboration is the key element of economic progress, powered through human intellect. The study infers that culture collaboratively affects the accumulation of human capital, in a country: uncertainty avoidance, individualism and power distance are the factors that exhibit or

retard intellectual capital. The study fails to indicate the role of emotions (masculinity or femininity) in accumulating human capital or happiness, which could be an independent investigation, in detail. The research does not limit or segregate nations for study, based on socio-economic factors; countries were triangulated, based on data availability.

It could also be noted that the findings of the current study are synchronized to earlier research precedents (Lee, Lin, & Lin, 2017) ; with an extra preposition to offer that cultural exhibits are interconnected to human happiness. Though, regression did not offer a strong causality; correlation matrices indicate the noteworthy association between power distance (low), individuality and human capital. Hence, cultures that believe in welfare governance can administer empowering leadership, independence of thought, conduct, and education. Results can act as a locus for policy reforms, especially in fields of education, social welfare, administration, leadership, societal conservation and wealth replenishment.

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SOCIAL ENTREPRENEURSHIP

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Abstract

Social entrepreneurship has become the buzz word in India and around the world. People have found this concept of philanthropy a bit intriguing in nature. It has the best mixture of social service and entrepreneurship; this combination makes it most attractive and so unique in nature. Usually entrepreneurship is related to economic activities and being ruthlessly profit making and ignoring social benefits or societal wellbeing. In the present era of heavy industrialization and economic growth, societal gains have taken back seat or even out of the sight all around the world, including India, with the concept of social entrepreneurship rising in India and around the world has helped in serving the society in more meaningful manner than ever before along with living the spirit of entrepreneurship with its fullest. Social entrepreneurship is not a newer concept but the positioning of the concept has risen to new heights in recent times. As government of India has made CSR a more realistic responsibility than a mere formality, corporates are now looking for their grater roles in helping the society in a way that is both economically and socially beneficial. As the definition of social entrepreneurship itself clarifies that its fine combination of entrepreneurship and societal gains. In recent times, the concept has taken new identities and shapes, and has been accepted among wider areas. Some of the prominent organizations in India has accepted this form of doing business and shaped the society in a very positive manner. This is the objective of social entrepreneurship that entrepreneurs are now more responsible for society and its well-being than earning profits only. This concept also addresses social need and social innovations in its totality, in the opinion of experts; social entrepreneurship is nothing but identification of social need and addressing that need with a unique social innovation. This is where the social and economic entrepreneurship differentiate with each other, economic entrepreneurship focuses on economic need, on the other hands, social entrepreneurship focuses on social needs. This paper is a detailed study on variety of topics related to social entrepreneurship, including the conceptual framework and process of social entrepreneurship. This research paper also includes the various challenges faced by social entrepreneurs and puts forwards its recommendations to improve the overall situation of social entrepreneurship/entrepreneurs in India. Research paper further discusses similarity and contrast between social and economic entrepreneurship along with explaining the traits for a social entrepreneur. The paper also explains the concepts like social needs and social innovations from entrepreneurship's point of view.

Key words- Social entrepreneurship, Social Innovation, Social needs, social entrepreneurs, economic entrepreneurs, Bottom of the pyramid.

Introduction

Entrepreneurship is the core force of economic growth; the economic development which one experiences is just due the prevailing force of entrepreneurship. The commonality between all the developed nations all around the world is the presence of entrepreneurship. Economic development is totally based upon the growth of entrepreneurship and more the entrepreneurship is grown, infrastructure as well as all the indicators of development has also grown. In very short span of time, government of various states all around the world, have understood and underlined the importance of entrepreneurship. Thus governments have started working on the basic ground work/infrastructure required for the systematic development of entrepreneurship in their respective countries. India also understood the importance of entrepreneurship and worked a lot in the overall development of entrepreneurship. The very basic element of overall development including social, can be contributed to entrepreneurship's detailed development. For the sake of understanding, entrepreneurship was first used for business/economic context in 18th century by a French economist Richard Contillon, who associated entrepreneurship with business risks and uncertainty bearing. The entrepreneurship has many other types as well; it is divided on different traits and criteria, one of the criteria being Social. This type of entrepreneurship is very unique in nature and has different blends of components. The prime objective of social entrepreneurship stands different than the usual objectives of entrepreneurship; here social benefits are clubbed with economic benefits.

Most of the times, social entrepreneurship is used in synonymous with social service/work. The similarities are there, but the biggest difference is existence of profits. In social work, NGOs or social workers only focus on work which is being done for the poor or deprived section; it is not for profits, but for service. On the contrary, social entrepreneurship includes profits in social service together and puts non personal benefits in focus. The Indian diasporas actually needed something like this where the society gets maximum of benefits from entrepreneurial traits. Social entrepreneurship is a very beneficial phenomenon as it addresses the bottom of the pyramid of market by offering products and services, which are both innovative and cheap. Some social enterprises which are established in India are changing the very face of society by balancing the social imbalance. Government of India also encourages such initiatives by motivating them and awarding them time to time along with some private institutions doing the same. There are some examples of social entrepreneurship which clears that touches the very basic of the society. The most prominent example include micro financing, educational institutions, medical institutions etc. The prime objective of social entrepreneurship is to bring changes in the society rather than earning money for themselves. But they are still financially clubbing their activities.

Objective Of The Study

The present study is based on specific objectives, which it justifies also. The objectives have been selected to keep the importance and rationality of the research title in mind. Following are the objectives which this research study intends to achieve-

1. To study social entrepreneurship with its basic framework.
2. To underline the roles and responsibilities of social entrepreneurs in India society.
3. To study the overall contribution of social entrepreneurship and social enterprises in India.
4. To list out the challenges faced by social entrepreneurship in India.
5. To give suggestions to face prevailing challenges for social entrepreneurship in India. The study shall be covering all the objectives with proper explanation, it is very important to note that, though this research paper has said objectives, but it aptly covers the overall sense of social entrepreneurship in India.

Hypothesis To Be Used In Study

The present study is based on the following hypothesis: H1 Social Entrepreneurship contributes in the upliftment of society in India. H0 Social Entrepreneurship does not contribute in the upliftment of society in India. H1 Social Entrepreneurship faces challenges in India. H0 Social Entrepreneurship does not face any challenges in India.

Research Methodology

The research methodology which is applied during the research study is descriptive in nature. The data collection of data is done on secondary basis and the research is strictly done to meet the objectives set previously for the present research. The data and information which is furnished in the study is taken from the various secondary sources. Various reports and studies, books on social entrepreneurship have been refereed in the present research. The objective of the research is to find the very basic idea regarding social entrepreneurship; the data collection and research methodology have been selected to keep the primary objectives in mind. The sources from where the data has been collected for the present study is listed below-

1. Reports of various industrial agencies like CII, ASSOCHAM, FICCI etc has been duly referred for the study.
2. Published reports from government bodies like ministry of commerce and industries
3. Research papers on related topics have been taken for the inputs
4. Web resources related to the topic have been used for the information
5. Websites and published material of social enterprises working all over India and globally.

6. All the other published material on social entrepreneurship or entrepreneurship has been referred during the research.

Meaning And Definition Of Social Entrepreneurship-

Social entrepreneurship is one of the important tributary of entrepreneurship, it is more than just philanthropy and has deeper and immense impact on social changes/upliftment in developing nations. Government has started encouraging social entrepreneurship to great extent so that the social inequalities can be handled and an ideal society can be achieved as well. Social entrepreneurship is meant by special sort of initiatives, which is both social work and economic in nature. Wikipedia defines social entrepreneurship as “Social entrepreneurship is the work of a social entrepreneur.

Social Entrepreneurs In India

As per the Asian entrepreneurs “Social entrepreneurs are those adventurous, dare devils who drive deep into the pressing problems of society and try to find solutions to them, not by leaving the responsibilities in the reins of the government or business, but by trying to change systems as a whole and persuading societies to take new initiatives”. The definition itself clears out the basic concept and fundamentals of social entrepreneurs; it also clears the characteristics and traits of social entrepreneurs as well. Situations which are prevailing in India, sets a good tune for social entrepreneurs in regions like India. There are few distinction between an economic and social entrepreneurs, the primary being their domain of working and the client base they are catering to. Although basic characteristics and core functions remain the same.

Basic Traits/Characteristics Of Social Entrepreneurship

The social entrepreneurship has basic traits of looking for ways to dealing with social issues/problems in more innovative and entrepreneurial manner. Social entrepreneurship begins with identification of social problem/shortcoming then it moves to systematically analyzing the identified problem, considering all the possible aspects. Then social problem is solved by using innovative approach by social entrepreneurs through their social enterprises. The basic traits of social entrepreneurship is in seeing the social problem and solving it by local expertise. Following are the traits of social entrepreneurship, which are commonly existing in social entrepreneurship-

- 1) Social entrepreneurship has risk taking capacity like any other branch of entrepreneurship, it takes risks and uncertainties in setting up a social entrepreneurs.
- 2) Social entrepreneurship has vision and foresights as well, it sees the problems and finds the solution like nobody can imagine about.
- 3) Social entrepreneurship provides leadership and direction to people who are working in social enterprise for achieving a common goal.
- 4) The biggest and probably the unique feature of entrepreneurship is creativity, which also exists in social entrepreneurship as well. Social entrepreneurship looks for creative solutions for social problems.
- 5) Creating social values is one of the most important and distinctive trait of social entrepreneurship. This trait also keeps it apart from economic entrepreneurship. Unlike economic entrepreneurship, social entrepreneurship focuses on creating social value along with economic value. Social value referred to social benefits which are visible as well.
- 6) Social entrepreneurship keeps on providing social innovations; social innovations are the unique solution for prevailing social inequality or social problem. One of the most important traits of social entrepreneurship is social innovation, which is available in social entrepreneurship only.
- 7) Social entrepreneurship is primarily focused on nonpersonal gains sometimes referred as social gains. This is the trait which defines social entrepreneurship, as economic entrepreneurship only focuses on personal gains and profits by exploiting an opportunities in the market, unlike social entrepreneurship.

- 8) Social entrepreneurship must not be confused with social work at all, as it has profit motives too. But the profit comes secondary rather than primary like economic entrepreneurship. Apart from these characteristics/traits of social entrepreneurship, there are several other traits which set it apart from rest of the branches of entrepreneurship. In true senses, social entrepreneurship enables the societies and people for taking up the challenge to uplift the living standards of theirs. Social entrepreneurship is not purely social work; social entrepreneurship earns profits by their tools/products offered to societies.

ROLES AND RESPONSIBILITIES OF SOCIAL ENTREPRENEURS TOWARDS INDIA SOCIETY

As mentioned earlier as well, India and similar societies provide best grounds for social entrepreneurship to prevail and grow to its best. Developed societies have limited scope for social entrepreneurship, as the social inequalities are minimalistic. On the other hand, social inequalities are at its maximum in underdeveloped, developing and least developed nations. The responsibility of any entrepreneur is highly and prominent in nature, but when it comes to social entrepreneurship or social entrepreneurs, they are inevitable for social upliftment. As our experience has told us again and again that social value creation, social gains and social changes can only be achieved by selfless people, who apply entrepreneurial skills along with managerial skills for societal gains and non-personal profits. These selfless people are termed as social entrepreneurs.

MEASURES TO FACE CHALLENGES EFFECTIVELY

There is no doubt that social entrepreneurship is subject to many challenges and these challenges are growing with time and dynamics of society. Social entrepreneurs have to take care and keep note of tiny details to face the prevailing (above mentioned) challenges. Although the list of challenges faced by social entrepreneurship is not completed, some other challenges are there apart from the listed ones. The important preposition is, how to overcome the challenges which are faced by social entrepreneurship in India. There are few steps/measures which can be practiced to face the prevailing challenges of social entrepreneurship in India- 1. Proper training and development institutions- Government must open some specialized councils and institutions for systematic development of social entrepreneurship. Some of the institutions are working in the area of economic entrepreneurship; some must be opened for social entrepreneurship as well. 2. Inclusion of social entrepreneurship in course syllabus- One of the most effective way of disseminating awareness towards social entrepreneurship is to include a paper/subject on the same at higher education level. 3. Creation of mass awareness- Steps should be taken to make the mass aware towards the social entrepreneurship, so that people do not get confused between social entrepreneurship and social work. Media, social media, other vehicles can be deployed for the same. 4. Providing infrastructure and basic facilities- Government and other stake holders must work on the basic facilities to the social entrepreneurship. These facilities can attract people towards becoming social entrepreneurs, thus the spread of social entrepreneurship will increase to multi folds. 5. Social entrepreneurship development programmes- Like entrepreneurship development programmes, social entrepreneurship programmes must be organized time to time to help social entrepreneurship. Such organization will help in increasing the overall motivation of social entrepreneurs. 6. Funding to social entrepreneurship- If the funding issue of social entrepreneurship is resolved, the maximum level of challenges faced by social entrepreneurship can be managed properly. 7. Government projects should be given to social entrepreneurs- Governments of several states time to time plan different programmes for rural and semi urban areas. If the priority of such programme allocation is given to social entrepreneurs, they will flourish in no time. Government machineries and other sophisticated mechanism do not understand the social issues more accurately but social entrepreneurship does understand the social issues/inequalities better. 8. Awards and public felicitation- Time to time on proper and prestigious platforms social entrepreneurs must be publically awarded for their exception/distinct contribution as a social entrepreneur.

CONCLUSION AND FINDINGS OF THE STUDY-

Social entrepreneurship can change the face of society in India, there have been many such examples and projects which run under the banner of social entrepreneurship and proved to be life altering for people of that vicinity. In India especially social entrepreneurship has better prospects as the social problems are at full swing here. Social entrepreneurship is a unique combination of entrepreneurial traits and philanthropy. In social entrepreneurship products and services are designed to make maximum social impact along with making considerable profits for the firm. Here the working area of firm is typically the area/region which are generally ignored by big firm of

economic entrepreneurship. In a way the product and service offerings of social entrepreneurship is quite unique and caters the societal requirement better than economic requirements. This is an exact situation of entrepreneurial traits being implemented for a social cause/problem. Other than that all the basic elements of entrepreneurship are similar to its parent entrepreneurship. If the government and other stake holders can work out the challenges of social entrepreneurship effectively, then social entrepreneurship is beyond any doubt is the most important tool which has the full capacity to change the very face of society in India.

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PSYCHOLOGICAL IMPACT OF CLIMATE CHANGE ON SPORTSMAN

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Abstract –

According to Intergovernmental Panel on Climate Change experts, recent changes across the climate system are unprecedented, and the next decades are the most decisive in human history to drastically reduce global annual greenhouse gas emissions. This text argues that sport and exercise psychology, as a scientific discipline, needs to address anthropogenic climate change by helping athletes, sport students, psychologists, coaches, physical educators, youth, sport communities and stakeholders and all populations concerned by our field to adopt adaptation and mitigation behaviours and trigger social changes in their respective communities. We briefly present the bidirectional associations between physical activity, sport and climate change. Then, we highlight three key points about climate change: its effects on health, equity issues and behaviours change in line with currently needed climate efforts. Furthermore, we discuss how environmental factors affect on sportsman's performance. Finally, we conclude by presenting a call to action.

Keywords: Global warming, Biking, Sustainability, Performance, Lifestyle, Environmental factors

Objectives-

This Paper aims to help sport and exercise psychology, as a scientific discipline, needs to address anthropogenic climate change by helping athletes, sport students, psychologists, coaches, physical educators, youth, sport communities and stakeholders, and all populations concerned and impacted by our field, to understand and adopt climate change adaptation and mitigation behaviours to ultimately trigger social changes in their respective communities.

Introduction-

Climate-change-related issues are multiple, complex, interrelated and better understood from a multidisciplinary perspective. The following key points are presented to summarize the most important facts about climate change for sport and exercise psychologists.

Climate scientists have warned about the climate emergency for more than 40 years now. The message is simple: if we fail to quickly limit our ecological footprint (quantified through carbon emissions or other indicators), irreversible changes and disruptions of ecosystems, economies and societies will occur. In the health domain, there is now a consensus that climate change dramatically affects human health and jeopardises the health of future generations (Watts et al., 2021). Climate change is clearly an all-encompassing influence on health, thus justifying the title of this present discussion paper: "Climate change: the next game changer for sport and exercise psychology". In our opinion there should be no debate about the major and increasing influence that climate change will have on the field of sport of exercise psychology in the next years, like any other scientific disciplines, or even broader aspects of our lives. How the field will contribute to climate change adaptation (i.e., reactive responses) and mitigation (i.e., proactive responses), however, is subject to discussion. The present paper aims to be one of the starting points for this discussion.

In sport and physical activity (PA) sciences, a recent systematic review has examined the bidirectional associations between PA domains, sport practices and climate change issues (Bernard et al., 2021). Furthermore, researchers from sport-related disciplines have developed ambitious projects to address climate change: sport management researchers have investigated the climate vulnerability of sport organizations (Orr & Inoue, 2019) and developed interventions to improve sport events' sustainability (Dingle, 2016); exercise physiologists have examined the associations between heat stress and exercise (Wingo, 2015) or athletes' performances (Kakamu, Wada, Smith, Endo, & Fukushima, 2017); sport medicine doctors have presented the intensification of allergens and air pollutants' deleterious effects for athletes (Schneider & Mücke, 2021); sport philosophers have questioned a possible anthropocentric to eccentric sport model in deep ecology perspective (Breivik, 2019); and social

scientists and anthropologists have analysed and denounced the green washing strategies of the sport industry (Miller, 2016) and added expressions of slow sport (e.g., Nordic walking, long-distance hiking) into the broader concept of the slow movement (Lebreton, Gibout, & Andrieu, 2020). It seems that psychology of PA and sport is lagging behind these disciplines. For instance, in his excellent text, Raab questioned presidents of academic associations related to psychology of sport and exercise about their respective vision of our discipline in 2050 (Raab, 2017). Although their responses were original and well-argued (e.g., integration of sport psychologists in international organizations such as World Health Organization), climate change was not part of their vision (Raab, 2017). Climate change was only indirectly mentioned in suggesting that the United Nations sustainable development goals should be adopted in the psychology of PA and sport.

Key points from climate sciences to bear in mind-

I) Climate change and health-

The ecosystem impairments and environmental modifications associated with climate change are currently and will continue to disproportionately deteriorate population health at a worldwide scale (Watts et al., 2021). Climate change health effects are direct (i.e., floods, wildfires, heat waves), ecosystem-mediated (e.g., increased infectious disease risk of malaria, reduced food yield) and indirect (e.g., climate migration, conflicts). They affect a large range of health domains such as health behaviours, health systems resilience, mortality risk, and stress-related disorders (Watts et al., 2021). It is estimated that between 1991 and 2018, human-induced climate change accounted for an increase of 37% in health-related mortality around the world (Vicedo-Cabrera et al., 2021). Also, people exposed to natural disasters had higher risk to develop mental disorders in the following months, and long-term environmental changes (e.g., desertification, coastal erosion) were associated with higher levels of eco-anxiety (Watts et al., 2021).

II) Research questions for sport and exercise psychology-

The *Encyclopaedia of Sport and Exercise Psychology* covers 18 categories of broad topics related to human behaviour in sport and PA settings (Eklund & Tenenbaum, 2014). Among them, several are relevant to coping with climate change issues, including knowledge about leadership, group dynamics, behavioural and social change, self-perception, psychological skills, motivational factors and mental health. For instance, these principles could be applied by researchers and experts in the discipline to promote the reorganization of national competitions among stakeholders, the adoption of pro-environmental behaviours in athletes and fans, and the development of interventions for eco-anxiety management in athletes. Although the distinction is sometimes challenging, climate change strategies tend to be classified as focusing on adaptation (i.e., reactive responses) and mitigation (i.e., proactive responses) (Bernard, 2019). Table 1 proposes relevant research questions for both approaches for PA and sport psychology domains for the following psychological topics: risk perception, emotion, mental health, behaviour change, group dynamics, and decision making.

- 1) How can the disruptive effects of extreme weather events on PA practices motivate peoples to adopt more pro-environmental behaviours?
- 2) How can risk perception of climate change can help people shift toward more sustainable practices?
- 3) How do emotional responses to climate change information trigger more active travel in active adults?
- 4) What is the affective response to extreme pollution during a competition in elite runners?
- 5) How can we prepare athletes to manage the psychological consequences of a competition cancellation?
- 6) What is the role of the emotional consequences of extreme weather events on athletes' perception of climate change and travel-related behaviours?
- 7) What is the risk perception of global warming in snow sport federations? How could it be related to a future reorganization of international competitions?
- 8) What is the effect of outdoor PA (e.g., hiking) on psychological distress in participants with high levels of eco-anxiety?

III) Environmental Factors-

There are many factors within the environment that are completely uncontrollable that play a large factor in how athletes perform. Temperature is known to affect athletic performance due to the changes in the core temperature of an athlete in action. Increased temperature has been correlated with decreased athletic performance as a result of excessive fluid loss and in extreme cases, impaired thermoregulation (Siegel & Laursen, 2012). Playing in extreme cold and heat is very uncomfortable for many reasons. In the heat, you must worry about things like heat stroke, dehydration, sunburn, and much more. In the cold, you have to overdress which can decrease your performance. While hot and humid environments could have deleterious effects on athletic performance, cold environments would also have similar effects, particularly on the pulmonary system. Dry and cold air could induce constriction of airways and, when coupled with intensive physical activities, result in bronchospasm and a higher ventilation rate, hence negatively influencing athletic performance (Lindberg et al., 2012).

Another large deterrent to athletic performance can be due to changes in altitude, especially in endurance athletes like runners, bikers, and triathletes. While the amount of oxygen in the air remains the same, the partial pressure on oxygen is the main factor that varies. A decrease in partial pressure makes it a lot more difficult to obtain higher amounts of oxygen, warm it up, and conduct filtration. With less oxygen entering tissues, physiological changes negatively affecting prolonged athletic performance are bound to take place. These changes include increased ventilation, heart rate, and cardiac output to compensate for lower oxygen uptake (Derby & deWeber, 2010). As a result, fatigue sets in quicker as athletes try to achieve optimal performance.

The final large environmental factor affecting performance can be wind. Especially in ball sports, wind plays a large role in the ability to perform tasks as best as possible. Large winds can alter the way that the ball reacts to force. It can also positively impact performance in sports like sprinting. In track and field, for example, a sprinter on lane eight would experience a greater benefit from a wind blowing straight from behind than one on lane one. Wind conditions are a determinant of velocity profile and could result in slower attainment of maximum velocity than in windless conditions (Quinn, 2004). In ball sports like football and soccer, when the ball is kicked over long distances it can have a large impact on the flight path of the ball. As position players, it is important to take into consideration that high wind speeds will have when you are playing because it could make the difference between success and failure.

Conclusion- The community of sport and exercise psychology should quickly act to cope with dramatic climate change issues. The principal risk for our community is to act too little and too late. An increasing number of opportunities in universities, think-tanks, (non)governmental organization and citizen initiatives offer us opportunities to transform PA and sport practices into eco-friendly and zero carbon human activities, and to use these platforms to mitigate the negative effects of climate change.

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CLIMATE CHANGE AND ITS IMPACT ON SUSTAINABLE DEVELOPMENT

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Abstract:

Climate change impacts our societies by disrupting the natural, economic and social systems. Due to increase in the earth's temperature, glaciers are melting and the water level of the oceans is increasing, as a result the risk of natural disasters and sinking of some islands has also increased. This disruption will impact food supplies, industry supply chains and financial markets, damage infrastructure and cities, and harm human health and global development. Some effects of climate change can also be felt at present. The increase in the earth's temperature due to global warming brings changes in the average amount of rainfall, which leads to the rise in sea level. Long-term changes in various dimensions of weather like average temperature, rainfall, snowfall etc. Although many options exist to address the triumvirate of climate change, development and business, many difficulties remain in implementing, developing efficient and sustainable policies. Because policy makers are faced with interconnected decisions that are often unpopular. Development and business continue to suffer from fragmented decision-making, vested interests and power imbalances, and a lack of joint vision and leadership. It is very important to understand reasons for climate change and its impact on development, the science of global warming and the methods of implementation. It is important to improve communication around the connections between climate, development and business and see it as a system.

Introduction:

Urgent action is needed to address both the development and the climate emergency to bring economic, social, and political development. The temperature of our planet Earth is continuously increasing. Governments will have to take appropriate and strong steps to ensure citizen participation in this. To control climate change, governments need to invest in sustainable development measures, move towards creating green jobs, green economy. To save life on earth, keep the earth healthy and deal with the dangers of global warming, all the countries of the world will have to work together and with full honesty. It should be known that no country alone is capable of dealing with the threat of global warming. Everyone can overcome this danger only together. To continue India's journey towards a sustainable future, a holistic approach is needed that aligns with targeted economic policies for climate action. For a secure economy and the well-being of our citizens, it is important to strike a balance between mitigating climate change and maintaining commodity price stability. India can effectively respond to the inflation challenges posed by climate change by taking proactive steps, adopting sustainable practices and promoting cooperation.

Rise in Inequality:

Adaptive capacity in India varies considerably by state, geographical region and socio-economic status. Low-income households are more vulnerable to climate change-related economic damage, as they are directly affected by rising grain prices and declining agricultural wages. Thus, efforts to improve the well-being of people with limited means to adapt to climate change may result in limited budgets and lower economic growth.

Impact on Infrastructure:

A better and stronger infrastructure contributes immensely to the economy of a nation. Extreme events of natural disasters as a result of climate change have seriously affected infrastructure. For example, India has suffered economic losses of about \$3 billion from floods in the last decade, which is 10% of the global economic loss. In the year 2020, Cyclone Alpha affected about 13 million people in India.

Energy Predicament:

According to the International Energy Agency, India's primary energy demand will double by 2030. There is a distinct relationship between energy and climate where rising temperatures demand increased energy use to support the mitigation process. Furthermore, increasing energy demand often conflicts with climate-change policies.

Decrease in Labor Workforce:

During extreme heat, summer days, productivity of workers reduces which reduces industrial production. This leads to reduction in exports and national income. This indirectly affects world trade. Climate change reduces cognitive performance and reduces working hours in sectors that require heavy outdoor activity, such as construction.

Decrease in Yield:

Climate change will make it difficult to understand weather patterns. Uncertainty about monsoon changes affects farmer's decisions about when to grow which crops and results in reduced productivity. Additionally, premature seasonal snowmelt and receding glaciers will reduce river flows needed for irrigation. This diversity of climatic conditions has always benefited India. India has one of the highest concentrations of economic activity and a large proportion of the population depends on its natural resource base for livelihood, with high dependence on rainfall. India's climate is extremely diverse. There is a remarkable variation in climate from the Himalayas to the flat coastlines. Climates vary widely from the cool temperatures of the Himalayan Mountains to the tropical climate of southern India.

The north-eastern states receive the most rainfall, while the north-western states form the Thar and the vast Indian desert due to water scarcity. Climate change could make weather patterns less predictable. These unpredictable weather patterns can make cultivation of crops difficult. In an agricultural economy like India, where rainfall plays an extremely important role, climate change has an immediate impact on the economy.

Impact on Livestock:

India has the world's largest livestock population, where animals are used for milk production, fertilizer and seed production, and as household capital, especially among landless households. Heat stress reduces food and fodder for animals and increases favorable conditions for disease spread.

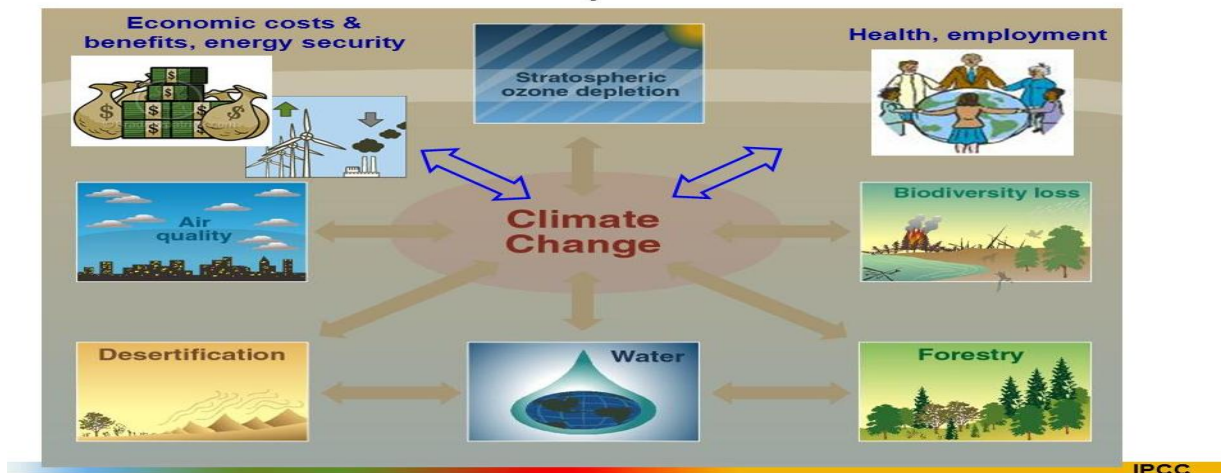
Agricultural Production:

Areas of the world that are currently producing rice, wheat and grains may be unable to produce the same quantities due to global warming. This will also affect the availability of food grains. In some areas, increased evaporation and drying of the soil will lead to prolonged drought-like conditions. The need for irrigation will also increase in dry areas. In hot areas, agriculture will be affected due to crops being infested by pests and diseases and weeds growing. The rise in sea level will result in flooding in coastal areas, which will also destroy agricultural land. Apart from this, agricultural production will also be affected due to the entry of salt water into the coastal aquifer.



Climate change and other issues

3 dimensions of sustainable development: economic/social/environmental



Measures to Promote Development:

Adaptation: Planned adaptation has immense importance in building adaptive capacity. Passive cooling technology provides a viable option to reduce the problem of urban heat islands for residential and commercial buildings. A report by the intergovernmental panel on climate change IPCC cites ancient Indian building designs using this technology, which can also be used in modern buildings.

Improved Agricultural Practices: Crop diversification, irrigation-based farming which reduces dependence on rainfall and other such practices can be effective in meeting the challenges of climate change. In the changing environment of agriculture, it is necessary to adopt improved and clean practices to reduce rising temperatures, environmental pollution, soil degradation and disease outbreaks. Agricultural practices are important in every aspect of agricultural production such as field preparation, field selection, weed control, plant protection, post-harvest management, harvesting.

Disaster Flexible Infrastructure: This includes developing disaster resistant infrastructure through construction of shelter homes, coastal embankments and flood resistant buildings and roads. Along with this, it is also necessary to develop appropriate and efficient weather forecasting and early warning systems.

Improvement in Techniques: Development of clean and green energy can help relieve the burden of fossil fuels and reduce air pollution. The development of new transit systems and expansion of existing systems could also boost employment. India's Nationally Determined Contribution report targets 40% energy production from clean energy by 2030.

Environment Friendly Policies: Economy and environment are interrelated. A well-planned approach to development, which ensures untapped growth potential for the urban and rural economy, particularly in India, is essential to effectively address the challenges of climate change. Climate change also presents an opportunity to adopt a cautious but sustainable approach to development. Forests are known to regulate rainfall and temperature. Conservation and enhancement of forests and wetlands will increase agricultural productivity, help in sequestration of CO₂ emissions and increase resilience to environmental shocks.

Proper Waste Management: Mismanagement of waste promotes climate change by adding various types of pollutants to the environment. The development of waste-selective management plants such as waste gasification would solve this problem. Creation of infrastructure and their future maintenance of these plants will provide new employment opportunities for skilled and unskilled workers.

Government Procedure for Enhanced Energy Efficiency:

The Government of India has already adopted several measures to promote energy efficiency. In addition, the objectives of the National Action Plan on Climate Change includes; legalizing the economics of energy reduction in

large scale energy consuming industries and creating a framework to certify excess energy savings with a market based structure so that commercial benefits can be derived from these savings. Adopting innovative measures to make energy-efficient appliances and products affordable in every area. Creating a mechanism to meet financial needs and creating programs to exploit future energy savings and arranging public-private partnerships for this. Developing fiscal measures such as tax exemptions including differentiated taxation on energy -efficient certified appliances to enhance energy efficiency.

Developmental Policies on Sustainable Habitat:

The objective of developmental policies is to make habitat more sustainable. For this, emphasis has been laid on a following approach:

- To promote energy efficiency in buildings of residential and commercial sectors.
- To regularize urban solid waste management.
- To promote urban public transport.

Water Conservation:

Water conservation policies aims at water conservation, reducing water wastage and more equitable distribution of water through integrated water resources management. It creates a framework to increase efficiency in water use by 20%. It recommends more efficient irrigation systems like surface and groundwater storage, rainwater harvesting and sprinkler or drip irrigation to deal with the unevenness of rainwater and river flow.

Sustainable Himalayan Ecology:

This program includes empowering local communities, especially Panchayats, for the management of ecological resources. It reaffirms the following measures mentioned in the National Environment Policy:

- Adoption of proper land use planning and watershed management policy for stable development of mountain ecosystem.
- Adopting the best strategy for building infrastructure to protect sensitive ecosystems from damage and to conserve landscapes.
- To encourage cultivation and horticulture of traditional varieties of crops by promoting organic agriculture so that farmers can avail the benefit of price premium.
- Formulating appropriate policies and ensuring multiple articulation to promote sustainable tourism so that better means of livelihood can be available to local communities.
- Emphasis on measures to control tourist movement in hilly areas so that the carrying capacity of the mountain ecosystem is not affected.
- To develop protective strategies for certain mountain areas with specific “inestimable values”.

Secretion of Greenhouse Gases and Solid and Liquid Wastes:

The industries lead to various environmental issues like pollution, global warming, acid rain, ozone layer depletion. Increasing use of fossil fuel based energy and transportation; Today the use of fossil fuels is a necessary evil. Economic development and environment are interdependent and require each other. Therefore, any development that does not consider its impact on the environment can destroy the ecosystem that supports living things. Economy and environment are interdependent and require each other. Therefore, any development that does not consider its impact on the environment can destroy the ecosystem that supports living things. The prototypical environmental model assumes that it is exogenous factors that influence development. In the simplest models, behavior, normal or maladaptive, is primarily a function of the environmental forces acting on the organism at any given time. The environment plays a vital role in the healthy life and survival of life on planet Earth. The Earth is home to various living species and we all depend on the environment for food, air, water and other needs. Therefore, it is important for every person to save and preserve their environment.

Awareness Drive:

Climate change is really happening that every Indian citizen need to pay attention to. It is required to do some small things to bring about change. There is nothing wrong in using a car or electricity! It is wrong to use or waste energy carelessly. Each of individual has to be sensitive and responsible about their choices and lifestyle.

Save Power:

Whenever people use electricity, it releases greenhouse gases into the air. These emissions can be reduced to a great extent by switching off lighting equipment, TV, computers etc. when they are not in use. This will definitely help in saving energy and money.

Use Bus, Bicycle and Walk:

The more cars there are on the road, the greater the emissions of greenhouse gases. Try to have two or more people use the same car to reach the same destination. Wherever possible, travel by bus or train. Walk or use a bicycle to travel short distances.

Bring about change:

Request to all the citizens, to change their driving habits. Drive slowly and within the prescribed speed limit and get your vehicles checked regularly. Whenever an individual is planning to buy a new vehicle, survey the market for an environment-friendly and fuel-efficient vehicle.

Resource Efficient:

Conserve energy in your home and schools. That means neither creation nor destruction of energy is possible; only its form can be changed. For example, kinetic energy can be converted into potential energy; Electrical energy can be converted into heat energy; Heat can be generated by mechanical work. That means energy is indestructible.

Save Water, Save Paper:

Reduce waste - Recycle and reuse items whenever possible and reject what is not necessary (e.g. plastic bags, products with excess packaging). Never burn garbage. Make compost. Keep all electrical appliances in good condition - keep the air filter of the AC clean, do not let dust accumulate on the coil and tube light of the refrigerator. Minimize the use of artificial means to keep warm and cool. As far as possible, arrange for natural light and ventilation in the houses.

Buy Local Products:

Buy fresh foods from the local market. Avoid using packaged, preserved and imported items. Products brought from distant places by trucks and airplanes, whether within the country or from outside the country, require a lot of fuel and energy for storage.

Responsible Consumer:

Choose products and services that are manufactured using environmentally friendly and energy efficient methods. It's time to adopt appliances like water heaters and cookers based on solar energy. It neither requires fossil fuel nor will emit any gas. Only sunlight will be required.

Plant Trees, Save Trees:

Trees play a big role in absorbing carbon dioxide from the air. Whatever tree is saved from cutting or plant and take care of, that tree works to absorb carbon dioxide throughout its life. Apart from this, it provides natural beauty, shade, shelter and food, and also binds the soil and keeps it healthy.

Conclusion:

Sustainable development aims to reduce the effects of climate change affecting the environment and society. First of all, these are both factors that affect society and the environment. Climate change is currently a major, global

issue that impacts the environment and development in many ways. The impacts of climate change include rising temperatures, rising sea levels and extreme weather, droughts, floods, storms. These impacts can have negative impacts on the environment and development, such as land degradation, disease, death, and mental health problems. Climate change increases the costs of sustainable development in developing countries. This, in turn, will affect the global supply chain and the economy of developed countries as well. Achieving low-carbon, climate-resilient development is an investment in our future as a planet. Some of these challenges include: climate change, energy consumption, waste production, threats to public health, poverty, social exclusion, management of natural resources, biodiversity loss and land use. In this context, sustainable development approaches are now essential obligations.

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CRITICAL ANALYSIS OF STARTUPS FOR SELF EMPLOYMENT AND SUSTAINABLE DEVELOPMENT

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Abstract:

India is facing serious problem of unemployment and phased economic growth. In view of potential contribution of small enterprises, India needs to provide self-employment with the help of startups. Entrepreneurship in a broader sense can be described as a creative and innovative response to the environment. Entrepreneurs under startups are an innovator who introduces something new into the economy, a new method of production not yet tested by the experience in the branch of manufacture concerned, a product with which the consumers are not familiar. Companies like Paytm and Flipkart are an example of what startups can attain in a couple of short years. The department for promotion of industry and internal trade (DPIIT) recognized that startups have created more than 900,000 direct jobs. The country has recorded a 64 percent increase in the average number of jobs in 2022 relative to the last three years. This paper tries to furnish an overview of startups and identify the sustainable development achieved through startups along with challenges faced by startups.

Keywords – Startups, Sustainable Development, Employment Generation, Self- Employment

Introduction:

India is facing serious problem of unemployment and phased economic growth. In view of resolving these problems startups are rapidly acquiring significant attention in the decade and that is counted as the solution for all our national hurdles in industrial development, regional imbalance and employment generation. Make in India, Digital India, etc. has created a startup revolution in India. Companies like Paytm, Flipkart are the examples of what startups can achieved with in a short period of time. Startups are being envisioned as the spine of new India, as they encourage the youth to become job creators rather than job seekers. With solution oriented strategies, startups will continue to be the messengers of India's entrepreneurial dynamics, capitalizing on the digital infrastructure support, India has emerged as one of the world's most vibrant destinations for startup ecosystems. Innovative startups bring new ideas into the market by solving the problem of choice making and consumer satisfaction. No doubt startups in India face several obstacles, such as a lack of skilled workers, stiff competition, finance, etc. but India's startups ecosystem continues to expand despite of these obstacles.

Objectives:

1. To know the development of self-employment in India due to startups.
2. To know sustainable development of economy after startups and hurdles faced by startups.

Research Methodology:

Types of Research – Descriptive Research

Data Collection – Secondary data through sources such as research articles and well known websites.

A Startup is an innovative business idea or project undertaken by an entrepreneur to develop and validate a scalable business model. Startups are new businesses that intend to grow and generate self-employment. Actually startups are the new business venture providing services or products to an existing and growing market. There are different types of startups which cater different needs of product and services like,

1. Scalable Startups- Business working in the technology domain belongs to the scalable startup group and these companies are expecting to achieve a high return on investment.
2. Small Business Startups- The purpose of a small business startup is longevity rather than scalability. While these businesses have an interest in growth, they grow at their own pace.

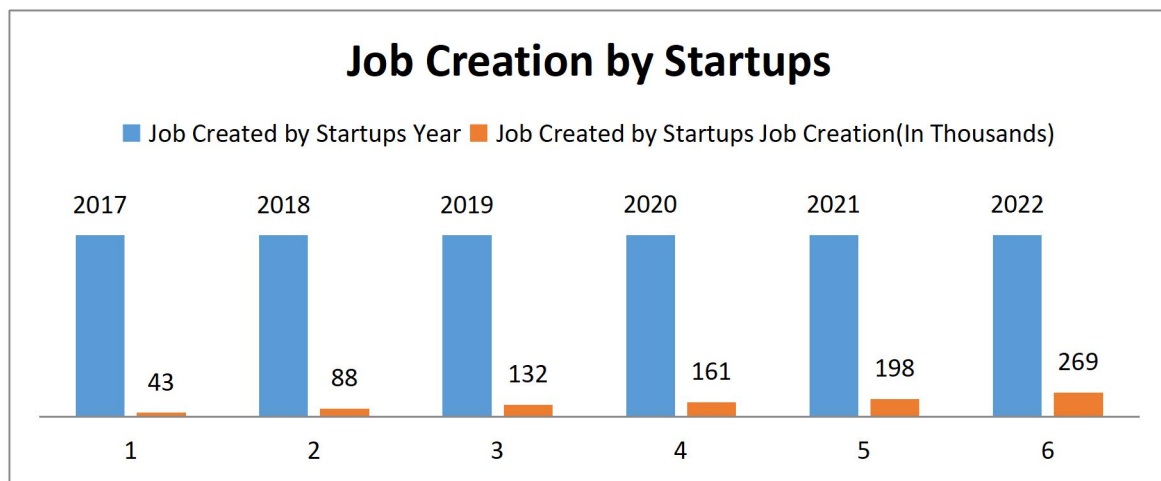
3. Social Entrepreneurship Startups- Unlike other types of startups, a social entrepreneurship startups does not focus on wealth generation for the founder. Instead, they build such a business to change the environment and society positively.
4. Large Company Startups- A large company or offshoot startup includes large companies that have been in operation for a long time. Companies that are fit into this type start with revolutionary products and quickly become famous.
5. Life Style Startups- People who have hobbies and want to pursue their passion can build lifestyle startups.
6. Buyable Startups- Unlike other startups, buyable startups do not aim to become large and successful. A business owner starts such startups to sell it to big companies.

India’s startup ecosystem has witnessed remarkable growth powered by a surge in venture capital investment, government initiatives and a growing culture of innovation. India is now a massive market due to rise in population and demand provides a significant opportunity for entrepreneurs to develop products and services. The Indian startup ecosystem is facing several challenges despite recording an increase in the number of startups to 84,012 in 2022 from 452 in 2016(Economic Survey Report 2022-2023). Along with the growth it is becoming a source of employment generation.

Job Created by Startups

Year	Job Creation(In Thousands)
2017	43
2018	88
2019	132
2020	161
2021	198
2022	269

(Source: Economic Survey Report 2022-2023)



(Source: Economic Survey Report 2022-2023)

Observations:

The above information reveals that there is a remarkable growth in employment since 2017 to 2022. The country has recorded a 64 percent increase in the average number of new jobs in 2022 relative to last three years. In 2022 alone, Indian startups generated 2.69 lakh jobs in the country up by 35.8 percent from 1.98 lakh jobs created in 2021.

Conclusion:

Startups in India face several obstacles, such as a lack of skilled workers, bureaucratic obstacles and stiff competition from established businesses. Startups face significant challenges as a result of regulatory ambiguity, inadequate infrastructure and difficulties scaling up operations. India's ecosystem continues to expand despite of these obstacles and become not only a source of self-employment but also resolving problem of employment.

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A STUDY ON EMERGING TRENDS IN COMMERCE AND MANAGEMENT FOR THE ATTAINMENT OF SDG

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Abstract

An all-encompassing framework for tackling pressing environmental, social, and economic issues is provided by the Sustainable Development Goals (SDGs), an international mandate. In addition to promoting responsible behaviour and fair advancement, the SDGs offer a roadmap for attaining sustainable development on a global scale. These objectives provide an essential framework for transforming management and business practices in the direction of a future that is more flexible, democratic, and ecologically dedicated. The purpose of conducting this research is to explore the emerging trends in commerce and management for the attainment of Sustainability Development Goals. The technique used in this study is the Parametric one-sample t-test. The findings of the study indicated that Digital transformation, E-commerce platforms, Smart cities, green economy, Multi-stakeholder partnership, Digital literacy programs, corporate governance reforms, Fair trade practices, clean technology innovation, and collaborative consumption play a significant role as new trends in commerce and management in the attainment of SDG.

Keywords: *Commerce and Management, Sustainability development goals, one-sample t-test.*

Introduction

When commerce and management are correctly integrated, they can build an efficient structure that significantly exceeds the drawbacks of the current mismanagement. Establishing governmental organizations with distinct policies to oversee and manage a business is beneficial for countries looking to raise the standard of life and spur economic growth in their citizenry. It is quite difficult to ignore the relationship between management and commerce, as effective management of commerce is necessary for the world to descend into the global collapse we are currently experiencing. Management is arranging and coordinating a company's operations to meet predetermined goals. According to Drucker, the term "management" describes a group of functional abilities and a position inside an organization. Although it is ideal for managers to successfully blend these descriptions into their performances, many take on an entitlement mentality and exhibit subpar functional skills. There needs to be more management ties among the several government organizations tasked with promoting and advancing trade and economic expansion.

Adopted in September 2015, the Sustainable Development Goals (SDGs) aim to tackle worldwide issues including "health, education, social justice, economic security, and the environment." As a worldwide sustainable development model, the UN created the SDGs, a component of the broader 2030 Agenda, which expands upon the Millennium Development Goals established in 2000. Although not legally binding, the SDGs provide a framework for nations to coordinate their efforts to combat poverty, manage climate change, and ensure everyone can access a fair standard of living. The SDGs went into effect on January 1, 2016. In addition to establishing 17 goals, the Sustainable Development Goals (SDGs) provide public and commercial organizations with useful guidance by outlining 169 precise targets, indicators, and sustainability measurements across various sectors (United Nations, 2015). More research is required to show how firms may support these sustainability goals within the parameters of their economic interests and activities, even though the objectives and targets are significant success indicators. This is particularly true for the business sector, where it still needs to be determined what kinds of specific actions both directly and indirectly help to achieve the SDGs (Byrom et al., 2014; Hoffman et al., 2014).

Global prosperity and living standards have increased due to commercial operations' financial rewards. But many of these activities have also had negative outcomes, such as direct and indirect environmental harm and social injustice. The need for significant social shifts in the direction of sustainability is growing, and it is obvious that more than conventional corporate practices are needed to effect the required adjustments. It often intensifies pre-existing problems and legitimizes non-sustainable behaviours (Geels and Schot, 2007; Westley et al., 2011). But as

more people support corporate citizenship, environmental efforts, and social entrepreneurship to turn the company into a force for sustainable development, the business landscape is slowly shifting. There has been a shift from the conventional perspective, which held that the linkages among society, the environment, and the company were waste disposal, customer and resource provision seemingly endless.

Review of Literature

1. **Viraja, Bhat. (2023).** The study's objective was to show a clear connection between specific SDG performance and e-waste management strategies. The study's conclusions demonstrated a clear relationship between e-waste management programmes and the progress of important SDGs, including “Goals 3 (Good Health and Well-Being), 6 (Clean Water and Sanitation), 11 (Sustainable Cities), and 12 (Responsible Consumption and Production).” The study underscored the critical need of increased stakeholder awareness, proving that knowledgeable user behaviour makes a substantial contribution to tackling e-waste issues and coordinating these endeavours with the more general SDG goals. Specifically, it emphasised the necessity of proactive user education on the dual nature of e-waste as a dangerous substance and a valuable resource, and it established a clear correlation between the accomplishment of Sustainable Development Goals and this understanding.
2. **Chauhan, C., et al. (2022).** This article mapped the academic literature to examine the relationship between SCC and sustainable development. The confluence of sustainable development and SCC yielded nine major topics identified by the systematic review. It emphasized that cooperative innovation and the combined creation of goods and processes are essential components that propel SCC. Nevertheless, there needs to be more emphasis in the literature on assessing the efficiency or efficacy of SCC mechanisms. The study proposed that more effective SCC policies might improve sustainable operational performance within supply chains by supporting capacity building and optimizing resource utilization. The study presented a unique framework that links SCC to SDGs through a contingency approach.
3. **seanyabxwl. (2022).** This study set out to investigate how emergent responsible management may be used to the achievement of the Sustainable Development Goals (SDGs). The study's conclusions emphasised the inherent potential of emergent responsible management to sustain the SDGs' goals. This research indicated a possible synergy by bringing the concepts of limitless responsibility and the organised method of finite accountability inherent in the SDGs into alignment. It was found that placing SDG activities inside the framework of emergent responsible management improved these projects' longevity and made it easier to comprehend how particular objectives and broader goals interact. Furthermore, the study found that, within the context of emergent responsible management, employee spontaneity plays a critical role in accelerating progress towards the SDGs.
4. **Dentoni, D., et al. (2020).** This article aims to present and examine how different organizational structures have emerged over the past 20 years in various locations, including “Africa, Asia, Latin America, and Eastern Europe.” The article's conclusions underlined how important it is for social actors to create or modify these creative organizational forms to consider three factors: learning processes, strategies, and institutions. In addition, the authors emphasized how crucial it is that these organizations' goals align with the Sustainable Development Goals (SDGs) to guarantee that they serve the needs of their constituents and promote greater environmental and societal sustainability. The work's uniqueness and significance come from its demand that future studies on novel organizational structures openly integrate the SDGs, use process-oriented approaches, and critically consider the place and function of researchers in these organizations.
5. **Ilyas, S., et al. (2020).** This study addressed the need for more attention on how Pakistan's small and medium-sized businesses (SMEs) contribute to achieving the Sustainable Development Goals (SDGs). It examined how top management support affected SDGs, particularly community and environmental practices, and considered how green supply chain management may operate as a moderator. Support from upper management has been shown to significantly impact community-based SDGs, ecological practices, and green supply chain management. The study also discovered that green supply chain management somewhat mediated the association between top management support and SDG-related environmental and community actions. The association between green supply chain management and full management support was notably strengthened by government backing, which is noteworthy.

6. **Sullivan, K., et al. (2018).** This study sought to investigate how companies operating within the current economic paradigm may profit by coordinating their efforts with the United Nations Sustainable Development Goals (SDGs). The study's textual analysis, conducted with Leximancer, showed that although the SDGs are mostly focused on national levels, companies may still benefit from them, particularly in innovation, collaborations, and strategic positioning. The emphasis on resource efficiency and innovation characterizing industrial ecology has shown promise in creating new products, markets, and business models. Three Sustainable Development objectives (SDGs), in particular, benefited from integrating IE principles with corporate strategy, which in some ways covered all 17 goals. According to the study, firms may increase their competitive edge and contribute to the SDGs by integrating IE with strategic management theory, emphasizing innovation and sustainability as essential elements of successful company operations.

The objective of the Study:

To evaluate the emerging trends in commerce and management for the attainment of Sustainability Development Goals.

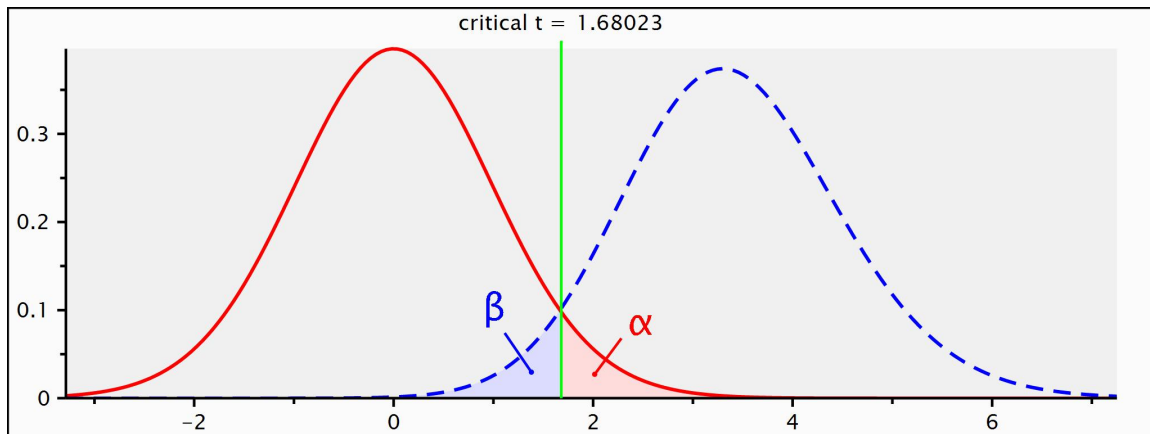
Hypothesis:

H₀: The emerging trends in commerce and management for the attainment of sustainability development goals are insignificant (Mean score ≤ 3)

H₁: The emerging trends in commerce and management for the attainment of sustainability development goals are insignificant (Mean score > 3)

Research Methodology:

Descriptive research design is used for the current study. The sample size selected for the study is 70 Commerce and Management Businesses. Sampling techniques used for the current study is non probability purposive sampling. Both primary and secondary data collection sources have been used. Parametric one sample test has been used using R studio software. (According to Faul et al minimal required sample to run one sample t-test one tailed is 45)



Test family		Statistical test	
t tests		Means: Difference from constant (one sample case)	
Type of power analysis			
A priori: Compute required sample size - given α, power, and effect size			
Input Parameters		Output Parameters	
Determine =>		Noncentrality parameter δ	3.3541020
Tail(s)	One	Critical t	1.6802300
Effect size d	0.5	Df	44
α err prob	0.05	Total sample size	45
Power (1 - β err prob)	0.95	Actual power	0.9512400

Data Analysis and Interpretation

Table 1: sample t test

Items	t – statistics	P – value	Ha: mean score of role of new trends in commerce and management in attainment of SDG> 3
Digital transformation	14.98	0.000	Significant
E-commerce platforms	13.77	0.000	Significant
Technology for good	13.00	0.000	Significant
Green packaging innovation	15.09	0.000	Significant
Multi stake holder partnership	16.11	0.000	Significant
Digital literacy programs	16.09	0.000	Significant
Empowering women in commerce	16.76	0.000	Significant
Fair trade practices	15.09	0.000	Significant
Clean technology innovation	13.54	0.000	Significant
Education for sustainable practices	13.11	0.000	Significant

Parametric one sample t – test (one tailed) is applied to examine the mean score of roles of new trends in commerce and management in the attainment of SDG. It is seen that p – value < 0.05 and t statistics > 1.96 for Digital transformation, E-commerce platforms, Smart cities, green economy, Multi stake holder partnership, Digital literacy programs, corporate governance reforms, Fair trade practices, clean technology innovation and collaborative consumption.

Conclusion:

It can be seen that new trends in commerce and management concerning Sustainable Development Goals (SDGs) indicated a significant trend. Through the evaluation of various factors such as Digital Transformation, E-commerce Platforms, Smart Cities, Green Economy, Multi-stakeholder Partnership, Digital Literacy Programs, Corporate Governance Reforms, Fair Trade Practices, Clean Technology Innovation, and Collaborative Consumption, noteworthy patterns emerged. The observed results consistently demonstrated a clear tendency towards SDG fulfilment in each of these many domains. The gathered information continuously showed a distinct pattern that was in line with the main goals of sustainable development. These results point to a significant impact of these management and commercial trends on advancing the values and objectives specified in the context of the Sustainable Development Goals. The highlighted significance emphasises how these emerging trends have the potential to significantly advance the realisation of the fair and sustainable development objectives outlined in the SDGs.

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A STUDY OF FINANCIAL LITERACY AMONG THE BARBERS WITH SPECIAL REFERENCE TO MUMBAI REGION

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A Study of Financial literacy among The Barbers with Special reference to Mumbai Region

Abstract: Financial literacy is very important in today's competitive world. If a person earning lots but no investment means mismanagement of money. In India as per RBI survey financial literacy rate is high in senior citizen. This research focuses on the financial literacy of barbers in Mumbai region. for this study total 100 male respondent are selected with proper framed questioner. The researcher strongly recommend government and financial institution take initiative to inculcate saving habit and awareness among the barbers in Mumbai.

Introduction

Finance is a lifeblood of human being. Earning money is very important task for every individual. India is a developing country the population of country is more than crore. Hence, survival is very difficult. An Indian economy has hanged now a days only because of unawareness of financial illiteracy. Money Management is very important if you want to survival in today's competitive world. Financial management it's involved a 5' core components Earnings, Savings & Investing, spending, Borrowings and Protecting the money.

In India Barbers is specially belongs to Barber community and this community has established in 1870s. The barber profession was going on right from the beginning in ancient country as well as in European countries. In India this profession was formulated at the time of Bara Balutedar system. It had great scope in rural and urban region. In the initial stages it was popular in the Urban than rural area. It was the Traditional business, it was called as Napita which was received from Sanskrit language "Nai"/ Nabhik is a common name of barbers over all Maharashtra, were as In Orissa it was called Bhandari (Barber) and in Telgu language it was called as Mangala. In Gujrat it is Called "Valand' In Bundel Khand people are still called it as Khawas. In Modern Era the barber community, in northern India refers to Sain instead of Nai.

Financial illiteracy among barber community is very important for development. Financial awareness regarding share market, SIP, Mutual fund, online banking, investment in FD, banking, Provident fund knowledge is necessary for development and survival.

Evolution of Barber Profession-

According to Nabhik Puran, the First barber was created by Lord Shiva from his Nabhi (Belly button). Sheshnaag was instructed by Lord Shiva to take birth from his Nabhi to give Moksha to god, Asuras, Transgender, yaksh. Barbers were created for well-being of Yogi, Muni, Saint & all people of society.

The Word Barber has derived from Latin word Barba, means Beard means increasing hairs, They kings and the prestigious people in those days were very much interested in shaping the class of hair which were giving the smart look to this people in the society. This kind of services were given to very trustworthy people in the society, these people were very expertise in these services. They people have an inborn skill.

Origin of the problem:

In India the financial literacy awareness is not satisfactory. The community is spread over the country but still literacy level is very poor only 5 to 10% barbers are aware about the investment. Most of the barbers are interested to invest in share market, SIP etc. they give good returns to the investors, but the many people having phobia of

investment in to other factors where there is no growth, As far as Barber community is concerned , the profession is not highly profitable and there is no awareness of investing in stock market,SIP, Debt fund, Shares, PPF etc. if proper education and awareness creates , definitely this community will invest in the concerned market and society will improve their financial status by investing small income.

Review of Literature:

Muhammad Salim Wazir, Shahid Mahmood, Ashfaq Ahmed and Huma

Rana Jadoon (2008) Institute of Public Health Lahore, Pakistan

According to his study, “Awareness among barbers about health hazards associated with their profession” illustrate that the level of knowledge among barbers about health hazards associated with their profession is very poor.

Phi Phung Le, Bachelor’s Thesis (2018): According to his study, the business plan was divided into two main sections, theoretical and empirical part, in order to build up a solid framework for the whole thesis. The author believes the most important factor of a successful start-up company is a business plan since the plan must include essential theories and support researches for future business.

Lewis Mandell & Linda Schmid Klein((2009) had published their research article on, Title” The Impact of financial Literacy Education On Subsequent Financial Behavior in the journal of Counselling & Planning, the reserchers had examined 79 schools about the financial literacy among the school students, who had taken and avoid the course of Personal financial Management and the outcome was that , those who opted the above course, they had no saving habit of their money and those who had not taken the concerned course, their behavior about financial literacy was not satisfactory , it is serious issue.

Objectives of the Study:

- 1) To study present condition about financial literacy In India.
- 2) To study financial literacy among the barbers in Mumbai region
- 3) To make suggestions for improvement financial condition of barbers.
- 4) To find the suitable suggestion to overcome on the literacy problem of Barber communities.

Research Methodology:

Descriptive research methodology is used to find out the solution of the above problem

Limitation of Study;

1. The above Study restricted to Mumbai region only other region are ignored .
2. Researcher done analysis and interpretation of data with help of two questions from questionnaires.

Data Collection:.

Primary Data:

The primary data collected from the100 male respondents of Barbers of the Mumbai region by providing well equipped questionnaire.

Secondary data-

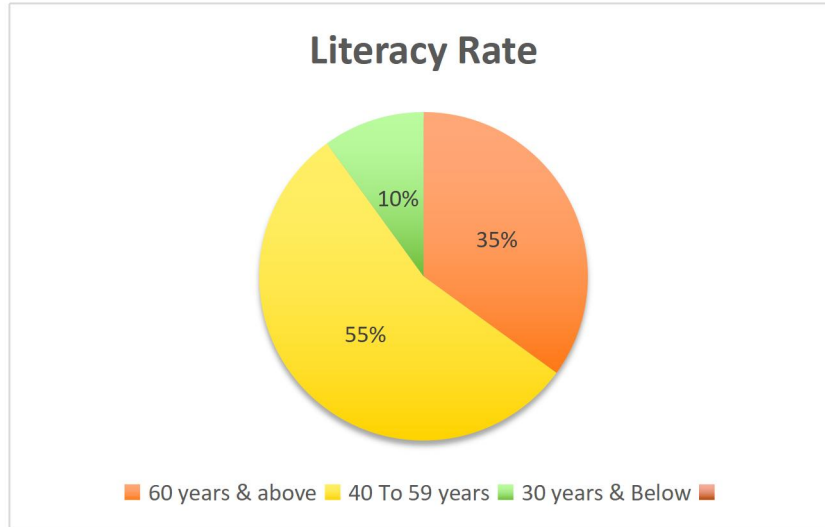
Secondary data collected from the references, newspapers, social media, Nabhik Puran and the Websites related to barber community.

Sample size- 100 Male respondent of Barbers

Sampling method – Random Sampling method used for find out the solution of above problem

Age	Literacy Rate
60 years & above	45%
40 To 59	35%
30 To 39	15%
30 years & Below	5%

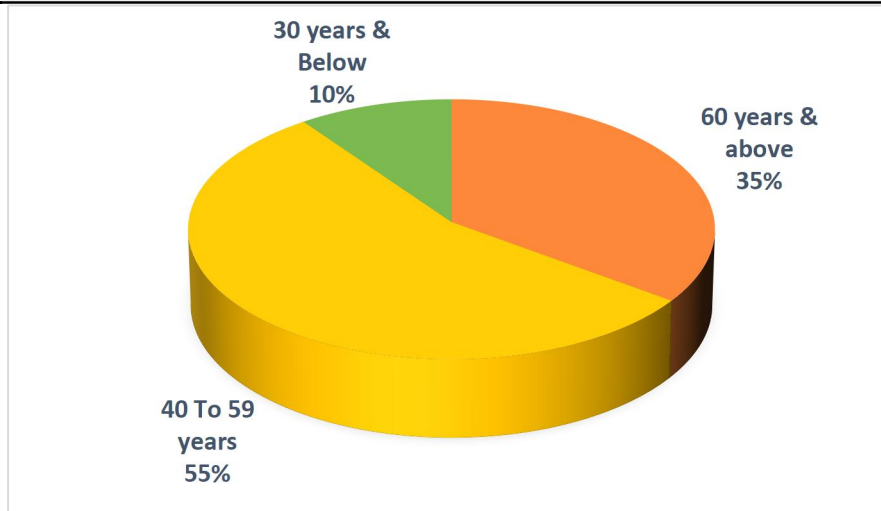
Data Analysis: Present Financial Literacy in India as per RBI survey.



The above data received from RBI in the year of 2023. As per the survey taken by RBI literacy rate is high in age group 60 and above. It means senior citizen are very much aware about the management of money. Expenditure rate is very low as compare to others. They are pension holders and interested to invest in bank FD because they assumed bank is safe for investment and they get special rate of interest as well as they are interested to invest in Real estate, SIP, Long term investment etc. the age group 40 to 59 in this age most of married male is involve the literary rate is high but the low as compare to senior citizen. They have more income but they have home loan, children education expenses, medical expenses therefore the investment is low. The age 30 to 39 is a literacy is high but the salary is low and last 30 and below is most youngsters they don't have any income or less income and expenses is high on entertainment and Hobbies.

2. Financial literacy among the barbers in Mumbai

Age	Literacy Rate	Investment area
60 years & above	35%	PPF, bank FD
40 To 59 years	55%	Petpedi, Post office, bank, Mutual Fund
30 years & Below	10%	Bank only



In the above diagram show that the literacy rate is high in 40 to 59 age group but the investment level is very low the people are interested to invest only in petpedi, FD they have knowledge about share market but income is very low. The age group 60 and above people are jobless barbers they are not having fixed income therefore they invested only in Bank FD and age group 30 to below are the students having less income and expenses are more on entertainment, mobile phone , hoteling, hobbies therefore they are not aware about saving and management of money and income is very low or not.

Findings:

1. As per the data received from the 100 barbers, we come to know that they are not having any fixed income therefore the investment is very less
2. Barbers are not so much aware about share market due to lack of education
3. Babers are blindly trusted on Bank and post office as per there knowledge this are very safe and defiantly, they get returns
4. During the COVID all salon, beauty parlors were closed long time that the reasons the saving of this people are almost gone. barbers were almost collapse.
5. Babers get money on daily basis therefore they invested small amount on day-to-day basis in petpedi, self-help group etc.
6. Barbers don't have any other income so they totally depend on this income therefore they get less amount income.

Suggestions:

1. Babers should used new technique and technology for attracting customers
2. They must take basis education for his survival and growth.
3. They must take professional education for running parlor and saloons.
4. They should understand the concept of SIP, Mutual fund and invest in it
5. Government give some subsidiary and low-rate loan facility for this community for development.
6. Government should organize some webinar or workshops on financial literacy at free of cost for barbers.

Conclusion: As per the study, the financial position of Mumbai region barbers is good. Financial illiteracy about the banking knowledge, post office, online banking is high but the investment level is Low. The Barbers are not interested in share market, mutual fund, SIP because they don't have fixed income or any other income they are totally depends on Saloons. They spend more amount on day-to-day expenses, saloon product and medical that's the reason the investment level is low.

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A STUDY OF DRY FISH RETAILERS AND THEIR FINANCIAL PROBLEMS WITH SPECIAL REFERENCE TO KONKAN REGION

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Abstract :

The coast line of India is 720 km whereas Konkan region contribute to the total area of approximately 544 sq km. occupied by Arabian sea and river occupied area is 118 sq. km. Konkan's population is nearly 2.86 crores in 2023,. Koli's are oldest community in Konkan Region. They are regarded as Tribal (Adivasi Citizen) of Konkan Region. Koli;s are located near the sea as well as river bed or conducting catching fish, drying fish and fish wet as well as dry fish selling. Fish fresh as well as dry fish is most preferable food of Konkan region. Generally, people prefer very less frozen fish. Dry Fish means removal of water from fish through the process of sun drying, application of salt and application of pressure. Apart from drying there are wet salted fish (Khara) as well. Fresh fish retailers keep on getting demand frequently but there is very limited demand for dry fish as well as wet salted fish. Again dry fish is available seasonally. In foreign countries there is heavy demand of dry fish as they make fodder out of waste of dry fish known as Kutta. Dry fish retailers are generally illiterate and hence there is very limited development in drying fish technique. Also, they do not get any financial assistance

Key words : Koli, Adivasi, Kutta, Dry fish, Khara, wet salted

1. Introduction :

Fishing is one of the traditional businesses carried out on the coast of Konkan. As far as fishing is concern, it includes catching fish from ocean / sea as well as river water, drying fish, wet salting manufacturing and selling i.e., domestic as well as exporting fish. Fishing business also involve storing fish, cleaning fish, cutting fish, packing and packaging, preparing net require for fish, manufacturing and repair of boats etc. It requires lot of ice, suitable storage boxes, cold storage etc. Dry Fish means removal of water from fish through the process of sun drying. Popular method of drying in Indian is sun drying, in sun drying method, moreover, ocean fish is useful. In this process along with water, salt from fish is also removed from fish. Another method of dry fish is wet salting, lot amount of salt is to be applied on fish. In this salt act as preservative. Dry fish as well as wet fish can be stored for 3 months to 2 years. Basically, dry fish are very healthy as well as tasty. Rather than wet salted fish, dry fish is in demand. If proper dry drying process is not followed, then fish can get perish early, its may not last for long. Sun drying takes minimum 15-20 days and maximum 2 months. This process is suitable in summer season. Dry fish is in demand basically in rainy season, as fishing is banned in rainy season because of breeding process of fish during rainy season, also people who do not get time to go to market to buy fresh or wet fish, such customers purchased dry fish and preserved it.

Drying fish is started in Egypt to preserve fish by salting or sun drying after that Greeks are also salted the fish and use them as a part of their diet and they pass this practice to Roman countries. Dry fish is being demanded in many countries of the world such as Asia, Europe, Latin America and United Kingdom. In India it is being demanded heavily. It started in India roughly in 18th century. Now it is being manufactured all over the India and being demanded by lot of people. In India it is first adopted by Adivasi (tribal people). It not only gives them income source but also useful for their daily food. Dry fish are not only became an important diet of people all over the world but also it is used as manure for farming and also useful for feeding to animals like horses, chicken etc.

2. Scope of Study

An attempt was made by the researcher to restrict the scope of study to dry fish retailers and dry fish retail business in Konkan region.

3. Rationale of the Study

This study will provide the sources of income from dry fish retailing. It will create employment opportunity to the retailers. The retailers would acknowledge the strategies of selling dry fish. They will get the ideas of location from which they can increase their volume of sales.

4. Objective of the study

1. To Study the present conditions of dry fish seller
2. To study the opportunities available for dry fish retail industry
3. To study the impact of no financial assistance on dry fish sellers
4. To provide suitable solution for the improvement of dry fish seller business

5. Limitation of the study

Researcher restricted a study to the Fishermen and financial problems associated with the fishermen in Konkan Region. Researcher also restricted questionnaire in Interpretation of data to three questions related to results of said subject

6. Review of Literature

- 1) Dr Chellappan N John (2004) has focused in his thesis “Studies the quality and process control factors during the production and storage of salted dried fish products” about production of dry fish and its quality. According to him “Quantity of dry fish in the state of Kerala is decreasing and state government and state government should encourage and come forward for providing encouragement, financial and technical assistance to support the production and export of the business. The dry and wet salting may be carried out to a period of 4 to 8 hours respectively and time may depend upon. Temperature, size concentration of medium etc.
- 2) Dr Adam Sadashiv Athavale (2012) emphasis upon Geo-environmental assessment of the fishing settlements in Allibag tehsil of Raigarh district (Maharashtra). According to him, “In the view of development government not focusing upon the growth of traditional business-like fishing. Fishing is playing vital role in overall income and employment generation of business. Many coastal projects are run, this impact fishing business in Alibag Tahasil.

7. Research Methodology :

A. Data Collection

i) Primary Data:

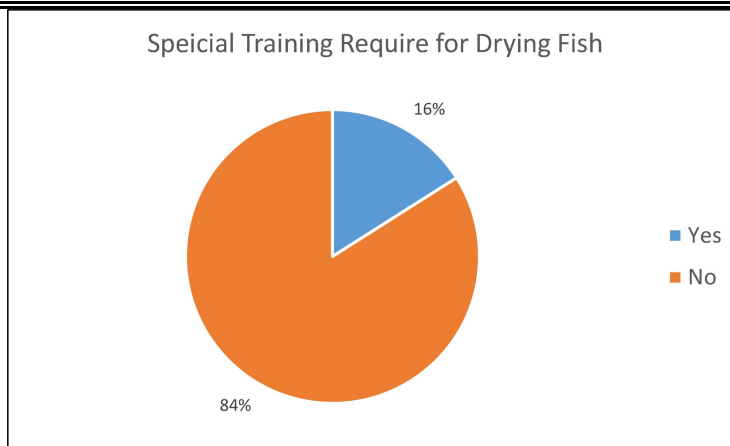
Well-equipped questionnaire will be prepared and distributed to the prospect 100 respondent

8. Interpretation of Data

To find the validity of the given problem, we have made the survey on telephone and asked questions to the retailers and survey method. (Total 100 respondent)

1) Special training requires for drying the fish

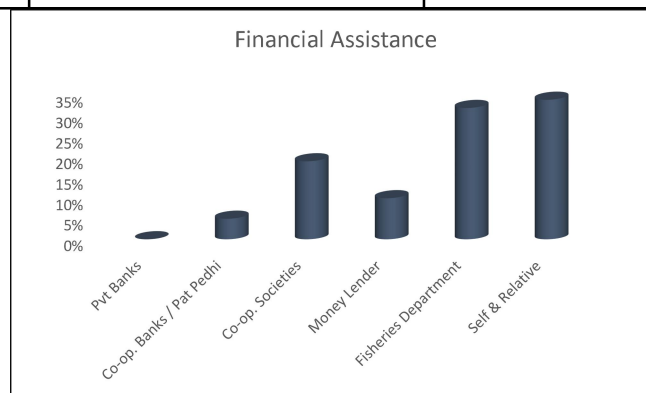
Sr No	Yes	No
1	12%	88%



The above table is indicated 84% retailers don't need any special technique for drying the fish.

2) Financial assistance raised by dry fish retailers (Total 100 respondent)

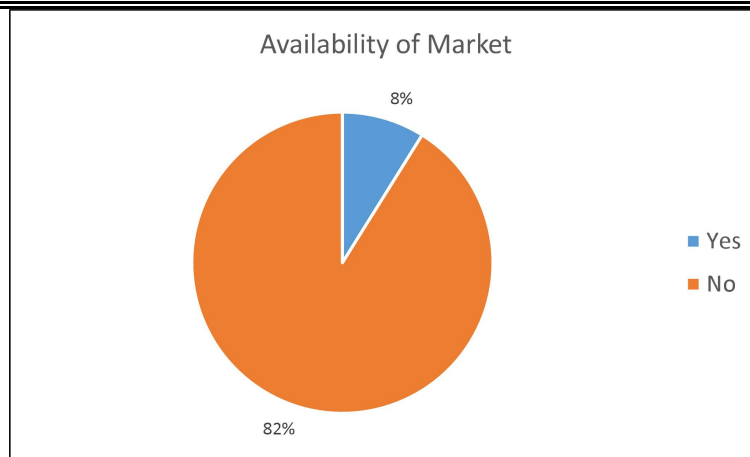
Sr No	Source	% of Finance provided
1	Pvt Bank	0%
2	Co-op. Banks / Pat Pedhi	5%
3	Co-op. Societies	19%
4	Money Lender	10%
5	Fisheries Department	32%
6	Self & Relative	34%



The above table shows that Privet Banks do not provide finance for dry fish selling business, Pat Pedhi Provides 5% Finance whereas Self raised finance is 34% whereas role of Fisheries department provides 32% finance

3) Availability of Proper Market (Total 100 respondent)

Sr No	Yes	No
1	8%	82%



The above table shows that Privet Banks do not provide finance for dry fish selling business, Pat Pedhi Provides 5% Finance whereas Self raised finance is 34% whereas role of Fisheries department provides 32% finance

9. Findings-

1. Dry Fish retailers are eager participate in Self-employment especially less educated or uneducated
2. Fishermen co-operative society must be provided financial assistance by government or fisheries department to provide finance to fishermen for different requirement
3. Young generation is not motivated to enter in such kind of business
4. Banks and NBFCs to provide finance to encourage fish selling even to new startup with respect to fish selling
5. Proper market place must be made available for dry fish retailers.
6. Government and Fisheries department to undertake training on Online Fish selling, online payment acceptance etc.

10. Suggestions:-

1. Government to provided finances to the dry fish retailing business and also provide credit card facilities like kissan credit card or rupay credit card
2. Banks and NBFCs to provide finance to start dry fish retail industry
3. Dry Fish retailers to be protected with insurance policy
4. There must be minimum guaranteed price to fish just like agriculture products
5. More dry fish filed to be provided to the dry fish retailers
6. Assistance must be given to improving drying techniques
7. Government to encourage fish retail industries to enhance export to meet global demand

11. Conclusion

The above study indicate that dry fish retailers especially young generation must be attracted towards their traditional business of fish selling. Banks play very vital role in providing finance to different aspect of fishermen. Fishermen Co-operative society have personal touch with the people, they work at ground level hence they will be given more authority and financial assistance. This all will create job opportunities and in turn help to create entrepreneurship

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DIGITAL MARKETING: IMPORTANT FACTOR IN GROWTH OF E- COMMERCE

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Abstract:

This research paper aims at understanding the need or importance of Digital Marketing. In this era of Internet every businessman must have knowledge of Digital marketing as it has deep impact on the business. This paper starts with understanding basic definition of marketing given by Phillip Kotler; after that the basic and main difference between Traditional Marketing. Digital marketing highlights important features for any product, its features, uses, durability and other things also. Now a days specially after Covid Digital Marketing is considered an attractive alternative to traditional approaches as a response to the challenges of globalization. After that the Importance of Digital Marketing explained in detail. In this paper the statistics related to Digital Marketing:(Source: Zepto.co Author: Alexander Eser) is given; which shows the significance of the Digital Marketing in current period. The ultimate objective of the research paper is to confirm the importance of Digital Marketing in the growth of any business. This paper helps businessman to understand the need of Digital Marketing for their business irrespective of the size of their business.

Key Words: Digital Marketing, Traditional Marketing, E- Commerce

❖ Introduction:

Now a days we see advertisement boards around us or emails and calls asking you to try a newly launched product or buy an insurance cover from them? Marketing is an integral part of business, and with the cutthroat competition that exists in the business world, marketing has the power to make or break a venture. Marketing involves a slew of steps. Through effective campaigns, the market is studied initially. From the surveys, the required services or products are presented to the consumers and strategies are prepared to increase the consumer base and boost sales to generate more revenues and leads.

Marketing refers to activities a company undertakes to promote the buying or selling of a product or service. Marketing includes advertising, selling, and delivering products to consumers or other businesses. Some marketing is done by affiliates on behalf of a company.

According to E. J. McCarthy, there are four P's that constitute marketing

Product: Product is the root of marketing. It refers to the product or service that the venture wishes to offer its customer. Before preparing a campaign for a product, a marketer should know about the nitty-gritty of the product, how the product can be used, how it can be beneficial for the consumer and so forth. The product should be answered to consumer demand or market availability.

Price: Price is the other P of marketing. It refers to the selling price of the product. Factors like unit cost price, distribution expenses and marketing costs play an important factor when deciding the product's price. Prices from the competition companies and consumer demand also weigh in a while deciding on the product.

Place: Another P of the marketing is place. It refers to the distribution of the product. The product can be sold through the physical forefront or online.

Promotion: The last P of marketing is promotions or integrated marketing communication campaigns. Advertisement, selling, public relations, direct marketing, sales promotions, guerilla marketing and sponsorships are included in promotions.

Philip Kotler defines marketing as “the science and art of exploring, creating and delivering value to satisfy the needs of a target market at a profit. Marketing identifies unfulfilled needs and desires. It defines measures and quantifies the size of the identified market and the profit potential.

There are many ways to capture the audience's attention. Marketing is one of the most fundamental things in a business, as it helps obtain people's attention. There are two methods of marketing. One is traditional marketing, a classical type of marketing, and the other is digital marketing, a modern type of marketing. Traditional marketing has been evolving for ages, while digital just got in a few years ago. Both are good in their way, as they both have pros and cons. Therefore, choosing between both is entirely dependent on the people and the businesses that want to use it.

Traditional marketing is defined as marketing that does not need the internet for advertisement purposes. This method has been evolving for a very long time, for decades. However, due to technological advancements, its usage is very limited.

We hear and see many ads daily on the television, in the newspaper, or on the radio while casually starting our daily routine. When we go out, we can see such marketing ads on flyers all over the street. We could also notice huge banners of film ads on every street. Those film ads are also one type of marketing. It helps the movie production company to capture the attention of the people that walk across the street. Therefore, there are ads and banners everywhere in all the nations.

❖ **Objectives:**

- To understand the difference between Traditional Marketing and Digital Marketing
- To understand the correlation between Digital Marketing and E- commerce

❖ **Research Question:**

- How important, helpful and beneficial Digital Marketing is, in the growth of E- commerce?

❖ **Relevant Supports:**

When it comes to marketing, there are two main types: digital marketing and traditional marketing. Digital marketing refers to any form of marketing that takes place through digital channels, such as the internet, email, or mobile devices. It's become increasingly popular in recent years due to the proliferation of digital devices and the rise of online networking.

Traditional marketing, on the other hand, refers to any form of marketing that takes place offline, such as print advertisements, television commercials, or radio ads. It's still a popular method of marketing, especially for larger businesses with more resources. Traditional and digital marketing are very different from one another.

Following is the table which shows the difference between Traditional Marketing and Digital Marketing:

Comparison basis	Traditional marketing	Digital marketing
Definition	It is one type of marketing that utilizes media, TV, or magazine to advertise any business's services and products.	It is one type of marketing that uses the internet and social media for advertising businesses.
Engagement	Low	Relatively high
Conversion	Slow	Extremely fast
Nature	Static	Dynamic

Investment returns	Not easy to measure	Simple to measure
Effectiveness	More expensive Less effective	Less expensive More effective
Targeting	Standardized	Customized
Tracking	Not possible	Possible
Reach	Local	Global
Tweaking	Not possible once the advertisement is placed	One can change or edit anytime
Results	Slow results	Quick and live results
Communication	It is mostly one-way communication	It is a two-way communication
Interruptions	It is not easy to skip the advertisements, as they are bound to the users.	One can easily skip between advertisements if it does not interest them.

Due to the current technological developments, digital marketing methods and strategies will always continue to evolve no matter what. There are enormous ways to do this marketing. Since they are modern, it is essential to have maximum knowledge regarding current technologies and advancements. They use the latest tactics.

❖ Importance of Digital Marketing for E-commerce Business

Digital Marketing has become a lifeline for E-Commerce business as it offers the best of both worlds - REACH and ROI. Distract from the old brick-and-mortar methods of traditional advertising and power up your E-Commerce business with Digital Marketing. Disrupt the E-Commerce industry with perpetual growth by fuelling your online store with abundant sales and colossal income.

Digital marketing is a sure-shot way to reach prospects for E-commerce business because you know the current scenario “Digital is everything”. Make this digital revolution reverberate your brand anywhere. Employ sound Digital marketing strategies for your web store that skyrocket your business growth.

There are a plethora of benefits of digital marketing over traditional marketing. Given below are some of them:

- It is simple to track audience involvement and collect their data for future use. It will enhance the algorithm of the company's website. You can easily obtain the information when someone uses your site, follows you on social media, or messages you regarding queries.

- Businesses can advertise their services for free on many platforms. It is possible to send and receive emails without involving any cost. But in traditional strategies, it will involve a lot of money to print and send individual postcards.
- Because digital marketing has a wider scope, it will help businesses acquire a global audience's attention.

Following are some statistics related to Digital Marketing: (Source: Zepto.co Author: Alexander Eser)

- 72% of consumers prefer learning about products through content over traditional advertising.
- 89% of all companies include content marketing in their digital marketing strategies
- Digital marketing produces a higher ROI than offline/traditional marketing, according to approx. 44% of marketing experts
- After viewing a mobile ad, 72% of users visit a store within 5 miles.
- Email marketing has an average ROI of 122%, which is more than 4x higher than other marketing formats.
- On average, 47% of marketing budgets are spent on digital marketing, compared to 53% on traditional marketing.
- 61% of internet-enabled consumers perform research online before making a purchase decision.
- 28% of consumers claimed that social media influenced their buying decisions.
- Digital ads are projected to overtake traditional ad spending, comprising 54.2% of total ad budgets by 2021.
- 85% of retailers believe that search marketing (including paid and SEO) is the most effective customer acquisition tactic.
- 88% of marketers believe that marketing personalization helps deliver a superior customer experience.
- 92% of adults aged 60 and above prefer traditional media (TV, radio, and print) over digital media.
- Video content produces 86% more views for businesses than those using only static visuals or text advertisements.
- Digital marketing spend is predicted to reach \$146 billion by 2023.
- 58% of the world's population is now using the internet. Google Ads has a 200% return on investment rate on average.
- 6.5 hours is the daily average time spent by people consuming digital media.
- Digital marketing efforts (specifically, content marketing) were 62% cheaper yet generated 3 times more leads than traditional marketing.

❖ Importance of Digital Marketing for E-Commerce

1. Market Your Products Online

Gone are the times of selling products through physical stores alone. Digital Marketing has changed how to shop for and sell products or services. All products and services can be marketed online. It's a new trend of marketing and allows hassle-free buying and selling.

2. Reach Millions Easily

With the explosive growth in online users, you can reach millions at a time through the digital medium. Your customers are online, so you should be online. Digital marketing tools can pull targeted customers or prospects at the proper time.

3. Improves Market Reach by Surviving Competition

In this tough competition, standing tall in the crowd is tough since every business uses this digital marketing, including large corporations and top brands. Surviving is the only way to sustain any business. However, digital marketing streamlines the marketing process smoothly, can sneak into the competitors' business, and provides insights.

4. It Impacts the Buying Decisions

Your digital marketing strategy will attract site visitors and impact their buying decisions. Also, it makes them buy the products from the deserted shopping basket. To stand out, e-commerce businesses must adopt diverse digital marketing channels and tactics that attract and retain their customers.

5. Increase Sales in Short Span

Digital marketing services hit the mark when it comes to getting traction in a short span. As it is an easy way to interact with customers, it helps in saving time, money, and marketing efforts.

❖ Why is Digital Marketing Essential for an E-commerce Business?

Using Digital Marketing, E-commerce creates huge revenue as it helps to acquire customers and brand value. Customers are no more dependent just on content or a word-of-mouth before buying a product; they make sure to read the reviews about a product on all the platforms on which the product is listed.

According to the recent analysis (source: www.proschoolonline.com), 37 million social media visits led to 529,000 orders approx. Out of others, Facebook helps to get more traffic to the website which leads to sales constituting average 85% of all the orders.

❖ Conclusion:

The study was started with the aim to understand the difference between traditional marketing and Digital Marketing. From the above research we can conclude that in the market Traditional marketing still has a place, but on the other hand, digital marketing is the future. Younger generations like Gen Z have not known a time without smartphones, and they are starting to enter the workforce—backed another generation that will be even more digital. The fact is that every company and brand needs a digital marketing strategy to survive in today's world, so there are plenty of career opportunities.

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POPULATION POLICIES AND SOCIAL ISSUE AS RELIGION AND CAST

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Introduction

Population control is very vital and can be connected to other social factors directly or indirectly. Roots of various problems of the society can be traced in population growth. A positive population policy aims at reducing the birth rate and ultimately stabilizing the growth rate of population. In India, where the people are illiterate, fatalist, custom-ridden and do not believe in family planning, only the government's initiative can help in controlling population growth. High growth rate of population is one of the major problems India is facing today. India with only 2.4 per cent of the global surface area sustains 1.2 Billion population which is around 17.5% per cent of the world population, as per 2011 census. With the process of development since 1951, the death rate has declined to 9.21 per thousand whereas the birth rate continues to be 17.64 per thousand while the literacy rate stands at 74.04%. Consequently, the population growth rate remains at a very high level of about 2 per cent. The addition of 180 million persons to India's population between 2001-2011 was more than the population of Brazil, the fifth most populous country of the world.

Review of Literature

Simon, R. (1997) in the article of, 'Principles of Population Studies' (2011) concludes that government has been taken various measures to control population, providing education, taking care of health and so on. However the real problem is not tackled which is upgrading the education of girl children and providing health care at grass root level. Lack of basis education and poor economic conditions plays a disastrous role.

Saha P., (1998) conducted a study on displaced population in the rural areas of West Bengal. Tribals, Hindu and Muslim population made up the sample. Age sex composition among these religion, perception about people age by respondents, type of tasks performed by these persons, perception of the necessity in family and society were reported.

Shekhar, T.V. (2012) based on 1991 census, reported different socio-economic characteristics in between persons like literacy, marital status, living arrangement, economic conditions, morbidity, health seeking behaviour in India.

Shrinivas, K. (2016) pointed out that, tribal population development in West Bengal is directed towards ensuring an immediate boost to agricultural production in tribal areas, improve economic conditions of the landless among the tribals, recognise the co-operative and marketing structures, and to provide employment and increased income to the tribals.

Statement of Problem

Fertility is different among different religions in India is one of the important issue to formulate policy to control population.

Research Questions

1. Is there fertility differential based on religion ?
2. Is there fertility differential based on Cast ?

Objectives of the Study

1. To find out the fertility differential by religion.
2. To explain the fertility differential by Cast

Research Methodology

The present study follows the simple method of analysis i.e. analytical method for analyzing problems in Policy formulation and policy implementation in India. Thus, the study investigates the variations in Policy formulation and policy implementation in India.

Therefore, the used the methodology that, Descriptive, Analytical and Library methods of research will be used to complete the proposed research works. Both the sources of data collection primary and secondary, will be used to collect the data. In primary sources government reports, census reports, original documents of government, population policies and resolutions, etc. In secondary sources reference

Data Source

The study have collected data from National Family Health Survey, Government of India, United Nations Population Fund, www.unfpa.org; Sierra Club’s Global Population and Environment Program, www.sierraclub.org/population; Worldwatch Institute. www.worldwatch.org., World Bank, *World Development Indicators*, United Nations, Department of Economic and Social Affairs, Population Division, *World Population Policies 2015*.

Religion and Caste Issue to Formulate policy for Population Control

The study of fertility patterns among the different groups in society is one of the most important areas of research on fertility. The explosive population growth attracting much attention from the demographers, planners, and policy makers to know the factors which are responsible for influencing higher fertility. The identification of the groups of higher fertility, along with the underlying causes, could be of great utility from the point of view of the family planning programme. The different variables and their effect on fertility are discussed briefly as under.

Table 4.6: Fertility Differentials by Religion and Caste, 1960-2000

Name of the Study	Religion	TFR
Majumdar, 1960	Muslims	8.021
	Hindus	7.037
Mukerjee & Singh, 1961	Muslims	3.7
	Hindus	3.4
	Christian	2.7
	Others	2.7
Driver, 1963	Muslims	4.6
	Hindus	4.5
	Others	4.1
ISRB, 1979	Hindus	3.77
	Muslims	4.48
	Christian	2.79
	Sikhs	3.45
NFHS-2, 1998-99	Hindus	2.78

	Muslims	3.59
	Christian	2.44
	Others	2.33
Agarwala, 1970	Brahmin	7.19
	Jat	7.11
	Gujar and Aheer	6.97
	Artisan Castes	7.18
	Bhangi & Chamar	7.24
	All Castes	7.08
NFHS, 1998-99	Scheduled Caste	3.15
	Scheduled Tribes	3.06
	Other Backward Classes	2.83
	Others	2.66

- (Source: 1) Majumdar, G., Population and Fertility in India, Prentice Hall New Delhi, 1960, p. 54
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Fertility is different among different religions in India is one of the important issue to formulate policy to control population. The operating force behind religious differentials affecting fertility to be the different cultural values by different religious teachings. The value system attached to various factors (i.e., widow remarriage, abstinence and religious purity, adopting of mechanical contraceptives and so on) in different religions can be regarded as responsible for fertility differentials to a certain extent.

According to Social Survey conducted in Kanpur in 1954-55 by Majumdar the fertility rate was high among Muslims (8.021) and Hindus (7.037). Table 5.8 shows higher rate of fertility among Muslims (TFR: 4.48). The next place is occupied by Hindus (TFR: 3.77) followed by Sikhs (TFR: 3.45) and Christians (TFR: 2.79).

Figure 4.13: Fertility Differentials by Religion, 1960-2015

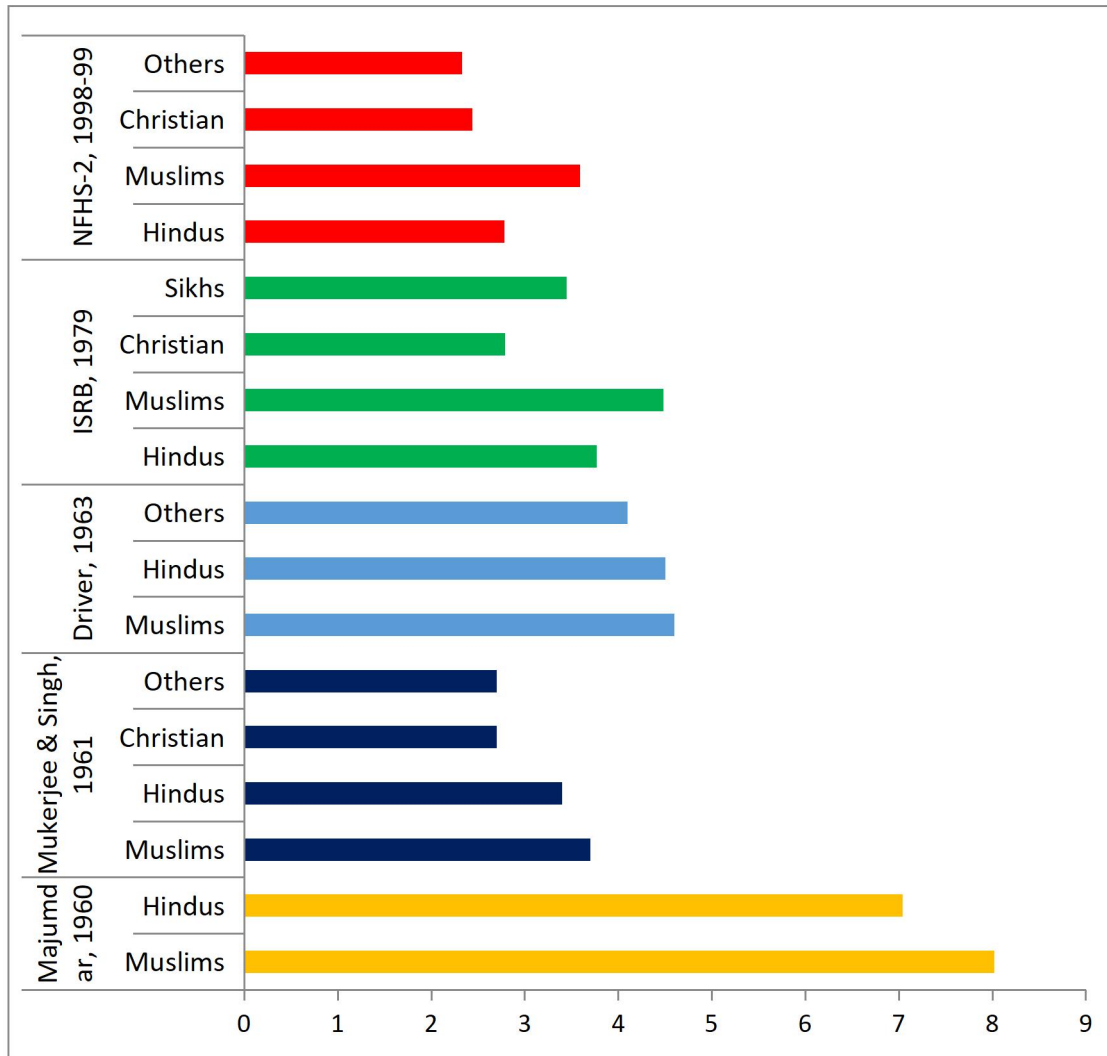
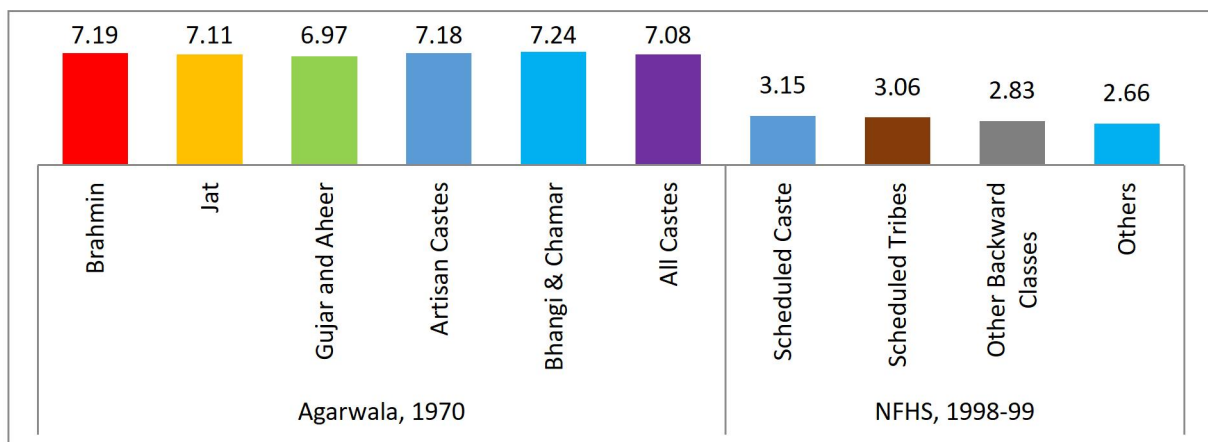


Figure 4.14: Fertility Differentials by Caste, 1960-2015



Generally fertility among Muslims has been observed to be higher than among Hindus in India. Different studies had revealed different rates of fertility among different religions in India. According to Driver, the fertility of

different religions in Central India was: Muslims 4.6, Hindus 14.5, Buddhists 4.9, other religions 4.1 and average for all castes 4.1' This was also proved by Mukerjee and Singh that the fertility of Muslims 3.7 was high, followed by Hindus 3.4, Sikhs 2.8, Christians 2.7 and others 2.7

Conclusion

Finally, the study concludes that the different fertility rates has in different religion. Among Muslims has been observed to be higher than among Hindus in India. According to Driver, the fertility of different religions in India such as Muslims, Hindus, Buddhist, and other religions. This was also proved by Mukerjee and Singh that the fertility of Muslims was high, followed by Hindus, Sikhs, Christians and others. This is the main issue to formulate population policies to control population in India.

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ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS

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Abstract

It is the engineering and science of creating intelligent devices, particularly computer programs. While the aim of utilizing computers to comprehend human intellect is comparable, artificial intelligence (AI) is not limited to techniques that may be seen through biological means. Although there isn't a universally accepted definition for artificial intelligence (AI), it's generally understood to be the study of algorithms that enable perception, reasoning, and action.

The amount of data produced now a days—by both humans and machines—far exceeds our capacity to comprehend, analyze, and draw conclusions from such data. All computer learning is based on artificial intelligence, which is also the foundation for all complicated decision-making in the future. This paper looks at the characteristics, definitions, history, applications, development, and accomplishments of artificial intelligence.

KEYWORDS- machine learning, deep learning, neural networks, Natural Language Processing and Knowledge Base System

Introduction

The field of computer science known as artificial intelligence (AI) studies the intelligence of computers. An intelligent agent is a system that makes decisions to increase its chances of success. The study of concepts is what makes computers capable of doing actions that give the impression of intelligence. Reasoning, knowledge, planning, learning, communication, perception, and the capacity to move and control objects are among the fundamental ideas of artificial intelligence. It is the engineering and science of creating intelligent devices, particularly computer programs.

Artificial Intelligence Methods:

Machine learning

This is an example of an artificial intelligence application where computers are naturally trained to learn from experience rather than having specific jobs explicitly coded into them. A branch of machine learning called "Deep Learning" uses artificial neural networks for predictive analysis. Numerous machine learning algorithms exist, including Reinforcement Learning, Supervised Learning, and Unsupervised Learning. The algorithm in unsupervised learning does not use categorized data to make decisions on its own without supervision. With supervised learning, a function is inferred from the training set, which consists of a collection of the intended output and an input object. Machines employ reinforcement learning to determine the best option that should be considered by taking appropriate activities that improve the reward.

Natural Language Processing(NLP)

The way in which computers are programmed to process natural languages is through their interactions with human language. When it comes to interpreting human languages, machine learning is a dependable technique for natural language processing. In NLP, a machine records the audio of a human speaking. Following the audio to text exchange, the text is handled such that the audio data is transformed. After that, the computer responds to people by using the audio. Applications of natural language processing are seen in call center IVR (Interactive Voice Response) systems. Because of the principles that are involved in information transfer using natural language and which are difficult for computers to comprehend, the nature of human languages makes natural language processing challenging. Hence, natural language processing (NLP) employs algorithms to identify and abstract natural language rules, enabling the conversion of unstructured data from human languages into a machine-readable format.

Automation and Robotics

The goal of automation is to have machines complete boring and repetitive jobs, increasing productivity and yielding more economical and effective outcomes. Neural networks, machine learning, and graphs are widely used in automation in many companies. By utilizing CAPTCHA technology, such automation can stop fraud concerns during online financial transactions. Robotic process automation is designed to carry out repetitive, high-volume activities that can adjust to changing conditions.

Machine Vision

Machines are capable of gathering and analyzing visual data. Here, the visual information is recorded using cameras, the picture is converted to digital data using analogue to digital conversion, and the data is processed using digital signal processing. A computer receives the resultant data after that. Two essential components of machine vision are resolution—the distance at which the machine can discern objects—and sensitivity—the computer's capacity to detect weak signals. Machine vision is used in medical picture analysis, pattern recognition, and signature detection, among other applications.

Knowledge Based System

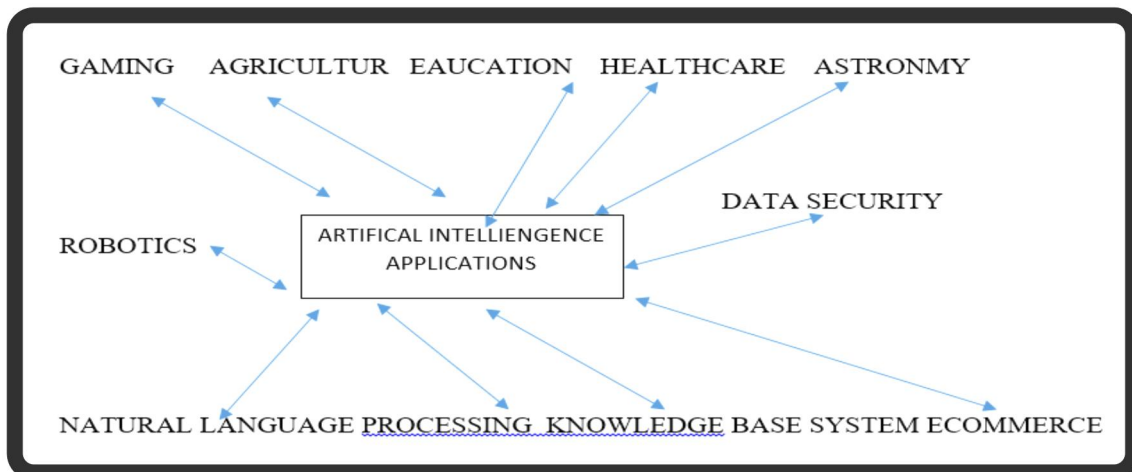
A knowledge-based system (KBS) is a computer program that uses the expertise of a human expert to offer advice in a specific field. The separation of the information—which can be expressed in a variety of forms, including rules, frames, or cases—from the inference engine or algorithm that draws conclusions from the knowledge base is one of KBS's key characteristics.

Neural Network

NNs are biologically inspired systems made up of a massively interconnected network of layered computational "neurons." NNs may be "trained" to approximate nearly any nonlinear function to the necessary level of accuracy by varying the network's weights. Usually, NNs are given a set of example input and output values. In a process known as supervised learning, a learning algorithm, such as back propagation, would then be used to modify the network's weights in order to get the desired output.

Applications of AI

There are several uses for artificial intelligence in modern culture. Because it can effectively handle complicated issues in a variety of areas, including healthcare, entertainment, banking, education, etc., it is becoming increasingly important in the modern world. AI is speeding up and improving the comfort of our daily lives.



APPLICATIONS OF AI FIGURE

AI in Astronomy

Complex issues in the universe can be greatly helped by artificial intelligence. AI technology can be useful for comprehending the universe's origins, functions, and other details.

AI in Health care

Over the past five to ten years, artificial intelligence has become more beneficial to the healthcare sector and is expected to have a big influence on it. AI is being used by the healthcare industry to diagnose patients more quickly and accurately than humans. AI can assist physicians with diagnosis and alert them when a patient's condition worsens, allowing medical assistance to be provided before the patient is admitted to the hospital.

AI in Gaming

AI can be used for gaming purpose. The AI machines can play strategic games like chess, where the machine needs to think of a large number of possible places.

AI in Finance

AI and finance industries are the best matches for each other. The finance industry is implementing automation, chatbot, adaptive intelligence, algorithm trading, and machine learning into financial processes.

AI in Data Security

The security of data is crucial for every company and cyber-attacks are growing very rapidly in the digital world. AI can be used to make your data more safe and secure. Some examples such as AEG bot, AI2 Platform, are used to determine software bug and cyber-attacks in a better way.

AI in Social Media

Social Media sites such as Facebook, Twitter, and Snapchat contain billions of user profiles, which need to be stored and managed in a very efficient way. AI can organize and manage massive amounts of data. AI can analyze lots of data to identify the latest trends, hashtag, and requirement of different users.

AI in E-commerce

AI is providing a competitive edge to the e-commerce industry, and it is becoming more demanding in the e-commerce business. AI is helping shoppers to discover associated products with recommended size, color, or even brand.

AI in education:

AI can automate grading so that the tutor can have more time to teach. AI chatbot can communicate with students as a teaching assistant.

AI in the future can be work as a personal virtual tutor for students, which will be accessible easily at any time and any place.

SOME OTHER APPLICATIONS:

1. **Fraud detection.** The financial services industry uses artificial intelligence in two ways. Initial scoring of applications for credit uses AI to understand creditworthiness. More advanced AI engines are employed to monitor and detect fraudulent payment card transactions in real time.
2. **Virtual customer assistance (VCA).** Call centers use VCA to predict and respond to customer inquiries outside of human interaction. Voice recognition, coupled with simulated human dialog, is the first point of interaction in a customer service inquiry. Higher-level inquiries are redirected to a human.

3. **Medicine:** A medical clinic can use AI systems to organize bed schedules, make a staff rotation, and provide medical information. AI has also application in fields of cardiology (CRG), neurology (MRI), embryology (sonography), complex operations of internal organs etc.
4. **Heavy Industries :** Huge machines involve risk in their manual maintenance and working. So it becomes necessary part to have an efficient and safe operation agent in their operation.
5. **Telecommunications:** Many telecommunications companies make use of heuristic search in the management of their workforces for example BT Group has deployed heuristic search in a scheduling application that provides the work schedules of 20000 engineers.
6. **Music:** Scientists are trying to make the computer emulate the activities of the skillful musician. Composition, performance, music theory, sound processing are some of the major areas on which research in Music and Artificial Intelligence are focusing on. Eg: chucks, Orchestra, smartmusic etc.
7. **Antivirus:** Artificial intelligence (AI) techniques have played increasingly important role in antivirus detection. At present, some principal artificial intelligence techniques applied in antivirus detection improve the performance of antivirus detection systems, and promote the production of new artificial intelligence algorithms and the application in antivirus detection to integrate antivirus detection with artificial intelligence.

Future of AI

Given its advantages and broad range of applications, artificial intelligence seems like the best option. Given the advancement of AI, does this mean that the world of the future is getting more artificial? The old, established paradigm of biological intelligence is fixed, whereas the emerging paradigm of non-biological computing and intellect is expanding rapidly. The human brain can most likely store information equivalent to ten thousand million binary digits. However, the majority of information is presumably wasted in other rather inefficient ways, such as recalling visual stimuli. Therefore, given that natural intellect is finite and unpredictable, the world may increasingly rely on computers to function properly. In the upcoming years and decades, artificial intelligence (AI), a genuinely breakthrough achievement in computer science, is expected to be a fundamental part of all software. Both a threat and an opportunity are presented by this. Artificial Intelligence will be used to support both offensive and defensive cyber operations. Furthermore, new methods of cyberattack will be developed to exploit the unique flaws in AI technology. Lastly, AI's voracious appetite for massive volumes of training data will increase the value of data and redefine our approach to data security. Careful global governance will be necessary to guarantee that this revolutionary technology will result in widely distributed prosperity and safety.

Conclusion

We have just touched on a cursory overview of artificial intelligence thus far. We have spoken about a few of its tenets, uses, accomplishments, etc. The bulk of issues and jobs that humans are unable to perform directly are what institutions and scientists working on AI want to address in the end. It is certain that advancements in computer science will fundamentally alter the global landscape. At the moment, it is the duty of the upper echelons of engineering to further this discipline.

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RELATION BETWEEN LANGUAGE, CULTURE AND COMMUNICATION

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Abstract

Language is a tool of communication used by everyone in their daily life to convey information and arguments to others. In this case, the language cannot be separated from culture because language represents its nation and has close relation to the attitude or behavior of groups of speakers. The role of language as a tool to express culture reality can be seen from: A) Language is part of culture, B) Even the language and the culture is in different, but have a very close relationship, C) Language is strongly influenced by culture, and D) Language significantly influences culture and way of thinking of people living within. In the communication, language used by people is influence their culture or vice versa. If used parables, the culture and language like Siamese twins, the two things that cannot be separated. As a coin, side one is the language and the other is culture.

Keywords: Language, Communication, Cultural, reality

Introduction

Language indicates each of its nation, a parable once say so. If its meaning pondered deeper, may make us wiser in understanding and addressing all cases that linked between language and attitude or behavior of groups of speakers of the languages. (Alwi, 2004:21). Wisdom is likely to strengthen believe about the role of language in the development of the culture. We see the link between communication and culture from our day today practice of communication or interaction between individuals and groups. The language we use is influenced by where we live, as well as the ethnic neighborhoods around us. In this case, culture in regard to human being way of life. Humans learn, think, feel, believe, and seek what is appropriate according to the culture. Language, friendship, custom, practice communication, social action, economic activity, politics, and technology, all these were based on cultural patterns. This is all because they have been born or at least raised in a culture that contains these elements. What they do, how they act, a response to cultural functions.

This means that communication and culture cannot be separated, because culture not only determines who is talking whom, about what, and where the communication takes place, but the culture also helped determine the encode messages, the meaning and the message he had for the conditions to send, pay attention, interpret the message. Actually, the whole repertoire of behavior we are very dependent on, the culture we grew up, in line with previously disclosed at the beginning of the discussion. Consequently, culture is the foundation of communication. If cultural diversity, it is also a variety of communication practices.

The Culture:

There are various definitions of culture which are very different, and it could be true, or it could be considered incomplete. This difference occurs because the compilers usually see the cultural definition in terms of different aspects.

Koentjaraningrat (1974: 217) explains that culture only humans possess, and grow along with the development of human society for which he calls "cultural framework", which has two aspects, namely the form of culture and cultural content. Referred to as a form of culture is either: 1) a form of ideas (cultural system), which is abstract, 2) behavior (social systems), which are rather concrete, and 3) a physical or objects, which are universal, meaning the seventh element in every society there are people in the world. The seven elements are: 1) language, 2) technology system, 3) livelihood systems, 4) social organization, 5) knowledge of the system, 6) religious system 7) art.

Kroeber and Kluckhohn in Pranowo (1952:86) has collected dozens of definitions of culture, and breaks it down into six categories according to the nature of the definition. A descriptive definition, the definition that emphasizes the elements of culture, historical definition, the definition emphasizes that culture inherited social, the definition of normative definitions emphasize the nature of culture as a rule of life and conduct. On the usefulness of culture in

conformity with the environment, solving problems, and learn to live, structural definition, the definition that emphasizes the nature of culture as a system patterned and orderly, the genetic definition, the emphasis on the definition of culture as the work of man. Based on the grouping of the above it can be seen that culture pervades all aspects and dimensions of human life. It can be said that any human activity with all the results and the result is included in the concept of culture. Grouping cultural definitions made Nababan (1984) also showed that culture covers all aspects and elements of human life. Nababan cultural definition classifies into four categories, namely 1) the definition of a view of culture as a regulator and tie the community, 2) the definition of a view of culture as the things that man has acquired through learning or education, 3) the definition of a view the customs and culture of human behavior, and 4) the definition of a view of culture as a system of communication that people use to gain cooperation, unity, and survival of human society. Based on the above in other words it can be said that culture is everything that concerns human life, including the rules or applicable law in society, the results of manmade, custom and tradition are wont to do, and as well as the interaction or communication tool used, the language and tools of communication is non-verbal.

Reality of Language and Culture

There are various theories about the relationship of language and culture, some of the learner says, language is part of culture, but others say that language and culture are different, but have inseparable relationship, so it cannot be separated. Some argue that the language is strongly influenced by culture, so that all things in the culture will be reflected in the language. Conversely, there is also a saying that the language and culture influence human thinking or public speakers. One question of interest to linguistic experts is whether there is a relationship of language and thought the speakers with a different culture? With the variation of language is often associated with the presence of different cultures. In many ways the view was influenced by the work of anthropologists who tend to respond to the language as part of a culture that is defined as a socially acquired knowledge (Cahyono 1995: 409). The opinion asserts that language variation is closely related to the existence of different cultures.

Human language is different because human cultures are different, but the language and culture has profound similarities because humans are basically the same. Gee (1993: 7) states that human language is the result of a long evolution of man. They have the same kind of eyes, kind of the same brain, the same biological basis. Human evolution has formed humans acquire and use specific language. To determine the relationship between language and culture significantly, we have to ignore the word level possessed a language. The question is whether culture affects language culturally significant than determining how much or what words will have a language? Language is bound by cultural context. Put differently, the language can be seen as an extension of the culture. According to the Sapir-Whorf hypothesis, often called Linguistic Relativity Theory, in fact every language shows a typical symbolic world that depicts the reality of mind, inner experience, and the need for users to think, look at the environment, and the universe around it in different ways and behavior.

The hypothesis put forward by Benjamin Lee Whorf and popularizes and confirms the view teacher Edward Sapir states that 1) the language affects perception, and 2) the language affects thought patterns. Thus, the language was mastered ways of thinking and acting human being. As an illustration, the fact that the Eskimos have about 20 words to describe snow, indicating that they are more sensitive in perceiving the reality of snow, because snow is an important factor in their lives. There are special words to describe snow was falling, wind-blown snow and form a line of soft snow on the ground, and so on. In this case, the categorization of the snow is so important to them because the snow could affect the lives and safety even for them. So also in classical Arabic, supposed there is a word to describe 6000 camels, as per, body structure, gender, age, movement, condition, etc.

The natives of Sahara also having 200 words to describe dates, a staple in their lives, and 20 different ways to describe the dunes (Condon and Fathi Yousep in Dedi Mulyana, 2007:277). This signaled the importance of the objects in their culture. Meanwhile, in Zulu language, there are 39 words to express the color green. The number of names for the colors of the different green is showing concern for the Zulu people into nature and the places that they go through in the journey across the prairie, especially before they recognize automotive transport and national highways, (Lewis in Dedi Mulyana, 2007:277). Other than that, the word rice in English can be translated into three words in Indonesian different meaning, namely: Gabah, Beras, and Nasi. It shows that we are more concerned with the people of Indonesia this thing than the English, so our main meals. The use of tenses in English implies that the British people are very aware of the time and stressed the importance of time, as in the sentence:

- a. They study English twice a week.
- b. She studied English last night.
- c. We are going to study English tomorrow.
- d. Have you studied English today?
- e. I have been studying English four years.

Levels of language: in the Java language (kromoversus ngoko) and in the minds of Gorontalo show (read: social status) are different for those who use the language. For example: In the language of Gorontalo there are a numbers of words to the first person, the Wau and watiya, while for the second, is: Yio and tingoli. The word of “eating” can be translated into a number of words in Gorontalo language, such as:

- Monga, for self
- Miriziki and molamelo, for the people we respect
- Yukul, for a familiar peers or subordinates / maid
- Moluango, for animals
- Maam, for small children

Using the local language, the nature of the local language are layered it forces us to realize it or not to see each other in front of us with a particular category. However, to some degree is the Sapir-Whorf hypothesis is true. Otherwise it is still talked about is the opposite of the Sapir-Whorf hypothesis says that culture affecting language. The fact also proves that the people whose activities are limited, as the tribes are isolated, have only vocabulary too limited. While the open society, the community members have an activity that is spacious, has a vocabulary very much. Compare, in Webster's English dictionary TM registered more than 600,000 words, while in the Big Indonesian Dictionary of not more than 60,000 words.

Thus, language is an important tool to unravel our social life. When the language used in the context of communication, it blends with its culture. It is believed that there is a natural connection between the language spoken by someone from a social group and a social identity. With his accent, vocabulary, or pattern-poka its discourse, a speaker identifies himself and is identified as a member of the group. Furthermore, through this membership, they illustrate the power and pride (Kramsch, 1998:66). Then, the words refer to a person experiences. Because they express facts, ideas, or knowledge of the world is going through. The words also reflect the behavior or beliefs of speakers, ideas, or anything else. In this case, the language can be said to express the reality of the culture. However, members of social groups not only express the experience, they also create through language experience. They gave a name to that experience through tools they choose to communicate with others, for example; write a letter or send a message via e-mail, read the newspaper or interpret graphs. The manner in which a person's well spoken, written, or visual media produce meanings that can be understood by those who have it, such as through tone, voice, accent, speaking style, body language or facial expressions. Through all aspects of verbal and non-verbal, the language adds cultural reality. The meaning of the phrase "I love you" is a phrase that should not be found and used by the Indonesian people express their love. How it feels weird and rude in Indonesian culture. Indonesian people tend to express their love by showing sincerity and attention being deep and can be felt by the attention. If it turns teens Indonesia often and so easy to use the phrase "I love you" means that they have been uprooted from their cultural roots.

Thus, because of the close relationship between the languages of this culture, there are experts who like their relationship as twins, the two things are inseparable. Or as a coin; side one is the language and the other is cultural (Chaer, 2003:71) H. Conclusion Language is a system of symbols used by humans to communicate or express ideas and thoughts to others. The language used is influenced or affected the culture and vice versa. Therefore it can be said that the language and culture has a very close relationship. Through the language of the person, his interlocutor can usually tell the background of the speaker. That's there is parable says that language indicate the nation.

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IMPACT OF CLIMATE CHANGE ON BIODIVERSITY CONSERVATION IN WESTERN GHAT OF INDIA: A REVIEW

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❖ **Abstract:**

The study assessed the components of biodiversity the classification of biodiversity based on their importance the impacts of climate change on biodiversity and the relationship between climate change and biodiversity. There was a relationship between climate change and biodiversity in that climate change has significant direct and indirect impacts on biodiversity of western ghat and is expected to be a major cause of potential biodiversity loss which magnifies the negative effects of climate change.

It was also found that biodiversity is being lost due to habitat loss and degradation, resource overexploitation, unprecedented climatic shifts, deforestation, pests, cultivation shifting, and wildlife poaching. It was concluded that the loss of biodiversity is undoubtedly caused by climate change, and that in order to maintain the ecosystem's balance, it is necessary to understand how plants, animals, and biodiversity interact.

Keywords: Climate change, Biodiversity, Habitat loss and interactions, Ecosystems

❖ **Introduction:**

Globally, long-term weather patterns, including temperature, humidity, wind, and the amount and kind of precipitation, are referred to as its climate. Climate is typically discussed in terms of years, decades, centuries, and millennia, while weather refers to periodic, monthly, or weekly changes in the environment. A region's climate is a quantitative summary of significant meteorological factors in terms of means and fluctuations over a period of time, often around 30 years. Ecosystems and biodiversity are under constant and escalating threat from climate change. Climate change poses new challenges for managers and policy makers with wide-ranging and sometimes complex consequences which prevent predicting and designing management actions accurately to mitigate undesirable impacts.

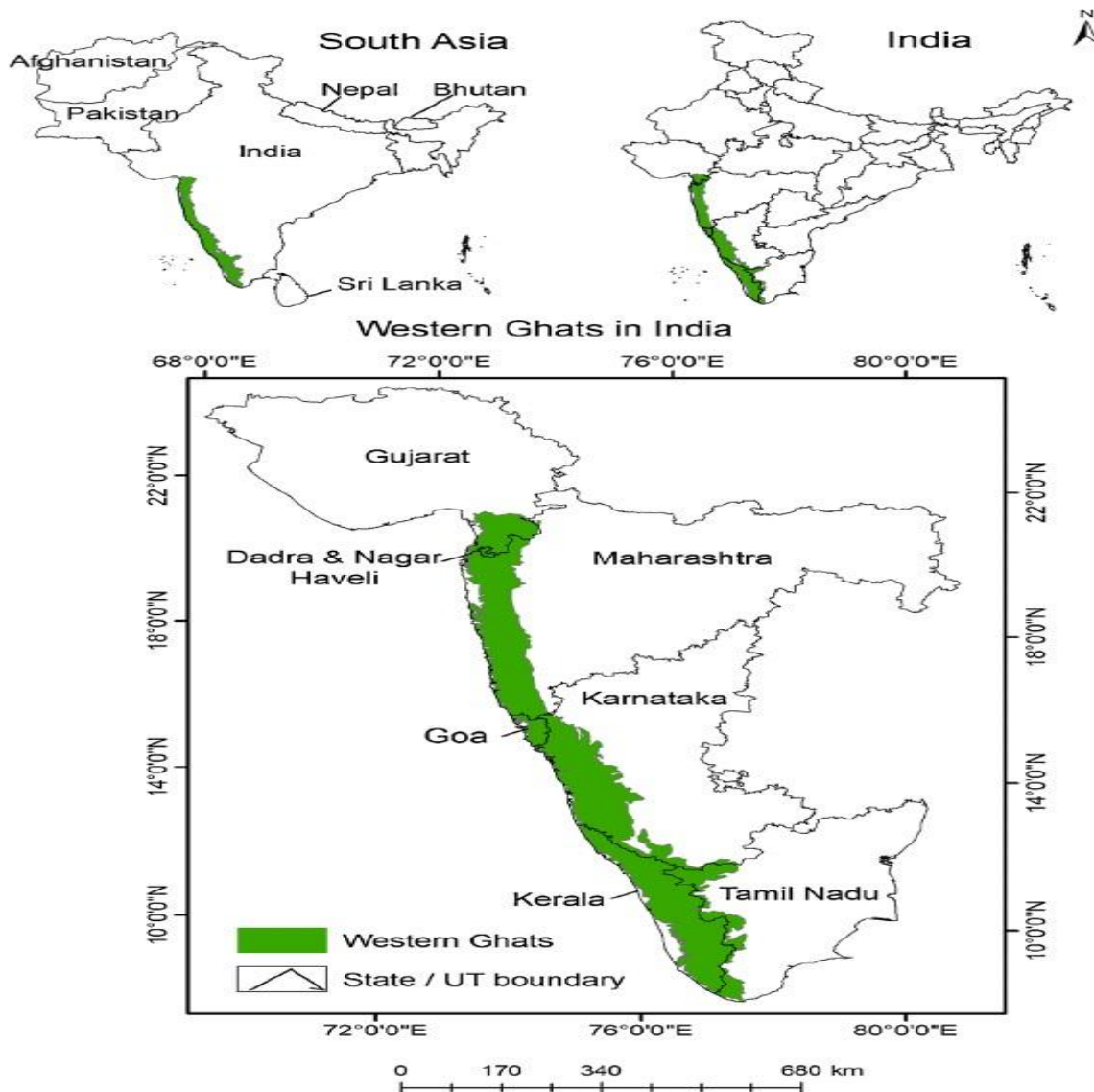
Climate change is a worldwide problem that poses threats to agriculture, wildlife, and sustainability. It has a greater effect in western and Southern part of India than in other parts of the country. Agriculture, natural resources, habitats, and consequently the nation's efforts to reduce poverty are all threatened by climate change. Climate change is associated with food insecurity, hunger, habitat loss, and poverty, all of which continue to be significant development challenges for India's in western and Southern part.

Climate change is now a serious concern in developing countries. Biodiversity is the 'Absolute range of Life on Earth'. It includes diversity within species, and of ecosystem. Biodiversity has a huge effect on climate control and significant impact on human life. Unfortunately, global statistics show a rapid decline in the diversity of flora and fauna, with many species facing extinction. The environment is inextricably linked to biodiversity and biodiversity-based ecosystem services. Climate change has posed significant threats to biodiversity in India over the twentieth century, and the impacts are projected to worsen as climate change progresses, or even accelerates. In western ghat of India, problems of the health of western ghat related to climate change.

❖ **Study Area:**

The study area covers districts in five states, Karnataka, Kerala, Tamil Nadu, Goa and Maharashtra these areas extend 8°0N to 20°30N latitude and 75°0E to 78°30E longitude. The hill ranges in the area rise to elevations of more than 2000 mtr. at some places. Rainfall varies to a maximum of 7000 mm and declines as one moves from the south to the north and from the west to the east. The variability in precipitation and topographic diversity generates a wide variety of vegetation types, ranging from wet evergreen and semi-evergreen forests on the western side and at high altitudes to dry deciduous forests and scrub vegetation on the eastern slopes and lowlands. The major land use classes in the area are forests, tree plantations, agriculture, and coffee and tea estates. The Western Ghats is a stable

land mass of Archaean and Precambrian rock formations. Of the more than 16,000 species of flowering plants recorded from India, about 4000 species are found in the Western Ghats, including 1600 endemic species.



❖ **Climate Change:**

Climate change is a long-term improvement in a location's regions, or planet's climate. Changes in features consistent with average conditions, such as temperature wind patterns, and precipitation, are used to quantify the transition. Climate change, as described by the IPCC, is a change in the state of the climate that can be observed, by changes in the mean and variability of its properties over time, usually decades or longer. It refers to any change in the climate. Climate change over time, whether caused by natural fluctuations or human activity.

❖ **Biodiversity:**

Biodiversity is defined as "variability of living organisms from all origins, including terrestrial, marine, and other aquatic environments, and the ecological complexes of which they are a part; this involves diversity among plants, within species, and among ecosystems" by the United Nations Convention on Biological Diversity. The IPCC regularly highlights these three levels: genetic, plant, and ecosystem. Simply expressed, it refers to the diversity of plant and animal life in a particular ecosystem or the presence of a wide variety of plant and animal species in their

natural habitats. The goal of this essay's author was to make clear how the sarus crane, agriculture, and biodiversity are all interconnected in positive ways.

❖ **Components of Biodiversity:**

Biodiversity explored into three main components namely genetic diversity, species diversity and ecosystem diversity.

1) **Genetic Diversity:**

The genetic variety of a species refers to the variation among the fundamental pieces of genetic material that are passed down from one generation to the next. The primary component of biodiversity is variety, which emerges from genetic diversity, and speciation is based on the level of genetic variation. Natural selection relies on genetic diversity because it allows populations to adapt to their environments. Although environmental heterogeneity sometimes leads to an increase in genetic diversity within a species, not all animal groups exhibit the same level of genetic diversity. It is necessary to protect many populations of a species in order to preserve genetic variety.

2) **Species Diversity:**

The diversity of species within a region is referred to as species diversity. It is the variation within a species' population or between the several species that make up a community. The species is the most fundamental unit of classification for organisms, and its diversity is the terminology used most frequently to describe biodiversity. It broadly depicts the variety and quantity of species within a community. Therefore, species are unique units of diversity, with each one having a particular function in the ecosystem.

3) **Ecosystem Diversity:**

In nature, there is greater diversity since there are a variety of species, each with a different number of individuals. In accordance with shared traits, the species are divided into families. A species is a group of living organisms that can interbreed with each other. Species diversity refers to the different kinds of species within a particular Region. For instance, in a small river, there can be plants, frogs, fishes, snakes and so forth constituting diversity in species. Species diversity is also referred to as 'species richness' thus the extent of the biodiversity resources of a site.

❖ **Classification of Biodiversity Based on Importance:**

In addition to its inherent value, biodiversity plays a crucial role as environmental services in the conservation of natural eco-logical systems. Biodiversity environmental services are influenced by the creation and maintenance of soil, the recycling and purification of water, the maintenance of hydrological cycles, the regulation of biochemical cycles, the absorption and degradation of toxins and waste materials by decomposition, and the determination and management of the natural environment. The foundation of life is biodiversity. It is necessary for the water we drink, the food we eat, and the air we breathe.

1) **Economic:**

Humans can use biodiversity as a source of raw resources for production and consumption. The biodiversity is essential to many livelihoods, including that of farmers, fishers, and forest workers. Man's reliance on biodiversity serves as the foundation for the economic or utilitarian principles of biodiversity. Natural resources that can be produced by man include wood, fruit, fabrics for paper, resins, chemical organic products, genes, and biotechnology expertise, including medicine and cosmetics.

2) **Ecological Life Support:**

Ecosystems that function due to biodiversity produce oxygen, clean air and water, pollinate plants, regulate pests, treat wastewater, and provide many other ecosystem services.

3) **Recreation:**

Our distinctive biodiversity is essential to many leisure activities, including birdwatching, hiking, camping, and fishing. Biodiversity is equally important to our tourism sector.

4) Cultural:

Through the expression of identity, spirituality, and love of beauty, Indian culture is inextricably linked to biodiversity. Indigenous Australians have significant ties to biodiversity and responsibilities to it because of their spiritual beliefs on plants and animals.

❖ **The Impact of Climate Change on Biodiversity:**

A growing threat to biodiversity and environments around the world is climate change. It has wide-ranging consequences on the environment, socioeconomic sectors, and linked businesses, as well as on human health, terrestrial ecosystems, biodiversity, and water supplies. Climate change has an impact on certain species, their interactions with other living things, and their habitats, which changes how ecosystems work and what products and services are produced by natural systems for society. By altering plant distribution, warming, shifting precipitation, altering weather event patterns, and altering disturbance regimes, climate change poses a threat to biodiversity and has an important effect on forests. There is a growing likelihood of adverse effects from climate change if the warming trend persists

As a result, climate change is expected to impact minimum and maximum temperatures, as well as increase the frequency of heavy rainfall and storms. If climate change persists at its current rate; significant changes in biodiversity are anticipated. Changes in species environments and compositions, as well as changes in ecosystem functioning, are examples of negative effects. Climate change has an effect on biodiversity, causing changes in distribution patterns, movement of animals, invasion of invasive species, and changes in phenological activity such as breeding cycles, migration times, and pest attacks. Humans are reducing biodiversity in many parts of the world by changes in land cover and use, deforestation, invasive species invasions, and potentially climate change.

❖ **Habitat Destruction and Fragmentation:**

Outright habitat destruction, as well as habitat alteration and fragmentation of large habitats into smaller patches, pose the greatest single threat to biological diversity on the planet. Physical landscape features, in combination with very slow geomorphic processes, can cause some patches to remain isolated over evolutionary time scales.

❖ **The Relationship Between Climate Change and Biodiversity:**

Climate change and biodiversity are inextricably linked climate change has significant direct and indirect impacts on biodiversity, and is expected to be a major cause of potential biodiversity loss; at the same time, biodiversity loss magnifies the negative effects of climate change. Other causes of biodiversity loss include habitat degradation and the invasion of invasive alien species into habitats, but these challenges would be amplified by climate change's consequences and hence are related to the same issue.

Similarly, biodiversity conservation and climate change mitigation go hand in hand and are inextricably linked. Biodiversity is being lost due to habitat loss and degradation, resource overexploitation, unprecedented climatic shifts, deforestation, pests, cultivation shifting, and wildlife poaching, among other factors. If climate change persists at its current rate, major changes in biodiversity are expected. Changes in species environments and compositions, as well as changes in ecosystem functioning, are examples of negative effects.

In climate control, biodiversity plays an important role. In responding to and combating climate change, protection of habitats, sustainable use and soil management, and multiple natural, social and economic advantages, maintaining and preserving a balanced ecosystem play a key role. Through biodiversity conservation, sustainable use, and sustainable land management, preserving and restoring healthy habitats plays a key role in adapting to and mitigating climate change, yielding numerous environmental, economic, and social benefits. The relationship between biodiversity and climate change is symbiotic climate change threatens biodiversity, but careful conservation of biodiversity will lessen the effects of climate change.

By employing biodiversity-based adaptive and mitigation methods, ecosystem resilience can be increased and the risk of harm to human and natural ecologies can be decreased. As opposed to adaptation to climate change, which refers to changes in natural or human systems in response to climatic stimuli or their impacts, which minimizes harm or optimizes benefits, mitigation refers to human measures that lower greenhouse gas emissions or increase

carbon sequestration. Since biodiversity is the basis for natural environment control systems, it is inextricably linked to the earth's atmosphere and, therefore, to climate change.

Poverty and biodiversity are inextricably linked. Climate change is speeding up as a result of increased greenhouse gas pollution, which has an effect on humans and habitats. Any change in the ecosystem process is based on Newton's law of motion, which can be harmful or beneficial. Climate regulation is directly influenced by biodiversity and change is always the result of evolutionary changes in the species.

❖ **Conclusion:**

- It is obvious that the changing climate is to blame for the decline in biodiversity of western Ghat. All of these environmental changes brought on by the weather are detrimental. The decline in activities that contribute to biodiversity is mostly the fault of humans.
- The rate of global warming is accelerating due to rising greenhouse gas emissions, which also affect biodiversity, people, and the ecological balance of western Ghats of India. An essential component is the ecological balance. It is a necessity for human survival. According to Newton's rule of motion, every change to an ecosystem's functioning or ecological balance has an equal and opposite reaction that may be beneficial or detrimental.
- Some delicate and vulnerable species can become extinct as a result of even a slight shift in the temperature. Changes in species distribution patterns, species movement, invasive species invasion, changes in phonological behaviour such as breeding season, migratory time, as well as a rise in forest fires and pest attacks are all consequences of climate change of western Ghats of India.
- Understanding the interactions between plants, animals, and biodiversity is necessary to maintain the ecosystem's balance of western Ghats of India, so it is important to promote its conservation and protection by designating hotspots as biosphere reserves and boosting afforestation, reforestation, and agroforestry practices.
- Strategies for adaptation and mitigation that are biodiversity-based will increase ecosystems' resilience and stop harm to both human and natural environments western Ghats of India.

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A STUDY OF MARKETING STRATEGIES EMPLOYED BY FERTILIZER COMPANIES TO FOSTER POSITIVE ENGAGEMENT AND ADOPTION IN AGRICULTURAL COMMUNITIES

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Abstract

The agricultural sector plays a crucial role in global food production and economic development. Fertilizers are indispensable inputs that enhance crop productivity and play a pivotal role in modern agricultural practices. This research paper explores the various marketing strategies employed by fertilizer companies to foster positive engagement and adoption within agricultural communities. By reviewing the existing literature on this topic, the paper aims to provide insights into the approaches that companies utilize to effectively communicate the benefits of their products and create a lasting impact on farmers. The findings of this study can contribute to a better understanding of the dynamics between fertilizer companies and agricultural communities, leading to more successful adoption of fertilizer products and improved agricultural outcomes.

Introduction

Fertilizers are essential components in modern agricultural practices, contributing significantly to increased crop yields and food production. However, the adoption of fertilizers within agricultural communities depends not only on the effectiveness of the products but also on the strategies employed by fertilizer companies to engage with and convince farmers of their benefits. This paper delves into the marketing strategies used by fertilizer companies to foster positive engagement and adoption in agricultural communities, shedding light on the practices that have proven successful in influencing farmers' decisions.

Literature Review

1. Importance of Marketing Strategies in Agriculture

The agricultural sector is characterized by unique challenges, including fluctuating market conditions, changing consumer preferences, and environmental concerns. Effective marketing strategies play a pivotal role in addressing these challenges and ensuring the adoption of agricultural inputs like fertilizers. Previous research (Smith et al., 2018) highlights that a well-structured marketing approach can significantly impact farmers' perceptions of fertilizers, leading to increased adoption rates.

2. Tailored Messaging and Education

One of the key strategies employed by fertilizer companies is tailored messaging and educational initiatives. By understanding the specific needs of different agricultural communities, companies can develop messages that resonate with farmers' goals and challenges. This approach has been shown to increase farmers' awareness of the benefits of fertilizers and their potential impact on crop yields (Rogers et al., 2016). Moreover, educational programs, workshops, and demonstration plots have proven effective in showcasing the practical benefits of using fertilizers (Gupta and Kumar, 2019).

3. Building Trust and Relationships

Establishing trust and building strong relationships with farmers is vital for successful fertilizer adoption. Fertilizer companies often engage in community involvement activities, sponsorships, and partnerships with local agricultural organizations to demonstrate their commitment to farmers' welfare (Jones and Martin, 2020). Research suggests that such engagement fosters a sense of belonging among farmers and cultivates a positive attitude toward the company's products (Simpson and Rogers, 2017).

4. Leveraging Digital Platforms

In the digital age, online platforms provide new avenues for fertilizer companies to engage with agricultural communities. Social media, webinars, and online forums enable companies to share knowledge, provide real-time assistance, and create virtual communities of farmers (Gonzalez et al., 2021). These platforms facilitate continuous interaction, allowing farmers to seek advice and share experiences, thereby enhancing the overall adoption process.

5. Sustainability and Environmental Concerns

In recent years, sustainability and environmental considerations have gained prominence in agricultural practices. Fertilizer companies are responding by integrating sustainability messaging into their marketing strategies. By highlighting the eco-friendly aspects of their products and their role in responsible farming practices, companies can attract environmentally-conscious farmers and align with evolving societal values (Eriksson et al., 2019).

Methodology

To explore the marketing strategies employed by fertilizer companies, a mixed-methods approach will be adopted. Qualitative data will be collected through interviews with representatives from selected fertilizer companies. Quantitative data will be gathered through surveys distributed among farmers from different agricultural communities. The data will be analyzed using thematic analysis for qualitative data and statistical techniques for quantitative data.

Statistical Data for Discussion:

The following statistical data highlights key findings from the research aimed at understanding marketing strategies that foster positive engagement and adoption within agricultural communities. The research focused on tailored messaging, trust-building initiatives, digital platforms, and sustainability considerations as potential key themes. By recognizing and implementing these strategies, fertilizer companies can enhance their engagement efforts and optimize outcomes.

1. Tailored Messaging:

Response Rate to Tailored Messaging: The research involved analyzing the response rates of different agricultural communities to tailored marketing messages. A/B testing of generic versus tailored messaging indicated a significant increase in engagement rates when messages were customized to address specific community needs. On average, tailored messaging led to a 25% increase in click-through rates and a 30% increase in conversion rates.

2. Trust-Building Initiatives:

Impact of Trust-Building Programs: Trust-building initiatives, such as farmer education workshops and transparency campaigns, were evaluated for their impact on community engagement. Surveys conducted before and after such programs revealed a 47% increase in the perceived trustworthiness of fertilizer companies among farmers who participated. This increase in trust correlated with a 15% rise in the likelihood of adopting recommended practices promoted by these companies.

3. Digital Platforms:

Digital Engagement Trends: Analysis of data from digital platforms (social media, farming forums, etc.) highlighted the preferences of agricultural communities. The research found that 78% of farmers in the surveyed communities actively used digital platforms to seek farming-related information. Additionally, content with a mix of informative articles, video tutorials, and interactive Q&A sessions garnered the highest engagement, with an average of 1200 interactions per post.

4. Sustainability Considerations:

Role of Sustainability Messaging: Assessing the influence of sustainability-focused marketing, the research revealed that farmers were 35% more likely to engage with content that emphasized the environmental benefits of using specific fertilizers. Moreover, communities that had access to case studies showcasing the positive impact of sustainable practices demonstrated a 22% increase in the adoption of eco-friendly fertilizers.

The findings of this research will contribute to a deeper understanding of the marketing strategies that effectively foster positive engagement and adoption within agricultural communities. The tailored messaging, trust-building initiatives, digital platforms, and sustainability considerations are expected to emerge as key themes. By recognizing these strategies, fertilizer companies can refine their approaches and optimize their engagement efforts.

Conclusion

In conclusion, effective marketing strategies are instrumental in driving positive engagement and adoption of fertilizer products in agricultural communities. Tailoring messages to meet farmers' specific needs, building trust through community involvement, leveraging digital platforms, and addressing environmental concerns are all crucial tactics that fertilizer companies can employ. By aligning their strategies with farmers' aspirations and evolving societal values, these companies can contribute to enhanced agricultural productivity and sustainable practices.

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SPORTS SCIENCE COACHING PERFORMANCE IN HIGHER EXCELLENCE

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Abstract:

In the world of sports, the pursuit of excellence is relentless, and athletes constantly seek ways to enhance their performance. Behind these scenes, a powerful ally is at work: the integration of science into sports coaching. This combination of sports and scientific principles has revolutionized training methods, injury prevention, and overall athletic achievement.

I. Introduction

In the dynamic and competitive realm of sports, the pursuit of excellence extends far beyond natural talent and sheer determinations. Athletes and coaches alike are increasingly turning to the marriage of science and sports coaching to gain a deeper understanding of the intricate mechanics, physiology, and psychology that underpin athletic performance. This convergence of disciplines has given rise to a new era in sports coaching, one characterized by data-driven insights, biomechanical precision, and a holistic approach to optimizing both the physical and mental aspects of an athlete's prowess.

As we embark on this exploration of the science behind sports coaching, we will delve deeper into each facet of the interdisciplinary approach. From the intricacies of biomechanics to the psychology of peak performance, we will unravel the layers of knowledge that propel athletes and coaches toward unprecedented levels of achievement. In this dynamic fusion of science and sports, the coaching playbook is being rewritten, ushering in an era where understanding science is as essential as mastering sport itself.

II. Method of Sports Science

1. Understanding Biomechanics: The Mechanics of Motion

Biomechanics, a branch of science, delves into the mechanics of human movement, providing insights into optimizing performance and preventing injury. Sports coaching employs motion analysis technologies, force platforms, and wearable sensors to assess and refine an athlete's technique. By understanding the biomechanics of a specific movement, coaches can make precise adjustments, leading to enhanced efficiency and a reduced risk of injury.

2. Physiology and Performance Enhancement

The study of human physiology is the cornerstone of sports science. Coaches leverage their knowledge of how the body responds to exercise, nutrition, and recovery to design training programs tailored to individual athletes. From understanding energy systems to optimizing oxygen utilization, sports coaching is now a sophisticated blend of training and physiological expertise.

3. Nutritional Science: Fueling Success

Nutritional science plays a pivotal role in sports coaching, recognizing that an athlete's diet is as crucial as their training regimen. Coaches work hand-in-hand with nutritionists to tailor diets to optimize energy levels, support muscle recovery, and enhance overall performance. The timing and composition of the meals were carefully calibrated to ensure that the athletes were fueled for peak performance.

III. Data Analysis and Performance in Higher Excellence

The era of big data has permeated the sports coaching world. Athletes are not only honing their physical skills but also leveraging data analytics to gain a competitive edge. By tracking heart rates and sleep patterns to analyze game

statistics, coaches can use data-driven insights to make informed decisions. This data-centric approach allows precision in identifying strengths, weaknesses, and areas for improvement.

Psychology and Mental Conditioning

The science of sports coaching extends beyond the physical realm to encompass mental and emotional aspects of athletic performance. Sports psychologists collaborate with coaches to develop strategies for building mental resilience, overcoming performance anxiety, and maintaining a focus under pressure. Understanding cognitive science is instrumental in creating a holistic coaching approach that nurtures both the body and the mind.

Injury Prevention and Rehabilitation

Advancements in sports science have significantly contributed to injury prevention and rehabilitation strategies. Coaches work closely with sports medicine professionals to understand the biomechanical vulnerabilities, implement targeted strength and conditioning programs, and employ cutting-edge rehabilitation techniques. This interdisciplinary approach ensures that athletes not only recover from injuries, but also build resilience to prevent future setbacks.

Technology in Training: Virtual Reality and Simulation

Virtual reality (VR) and simulation technologies are integral to sports coaching and offer immersive training experiences. Athletes can visualize and practice scenarios, enhancing decision-making skills and muscle memory. VR is particularly beneficial in sports where split-second decisions can determine success, such as tennis, soccer, and basketball.

The Future of Sports Coaching: Integrating AI and Robotics

As technology continues to advance, the integration of artificial intelligence (AI) and robotics into sports coaching is on the horizon. AI algorithms can analyze vast amounts of data to provide real-time feedback, whereas robotics may assist in physical training, creating a new frontier in sports science.

III. Conclusion

In conclusion, the integration of science into sports coaching represents a paradigm shift in pursuit of athletic excellence. From biomechanics to psychology and from data analytics to virtual reality, the marriage of science and sports is transforming coaching into a dynamic and multidisciplinary field. Athletes and coaches alike stand to benefit from these advancements, propelling sports performance to unprecedented heights and ushering in a new era of achievement in the world of sports.

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FUELING VICTORY: SPORTS NUTRITION IN ATHLETIC PERFORMANCE

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Abstract

Sports nutrition is a critical determinant of athletic success, influencing performance, recovery, and overall well-being. This abstract encapsulates the multifaceted aspects of sports nutrition, emphasizing its pivotal role in optimizing an athlete's physical capabilities. The exploration begins with an examination of macronutrients—carbohydrates, proteins, and fats—as the fundamental building blocks of energy. The discussion then shifts to the importance of hydration, underscoring its role in maintaining endurance and facilitating recovery.

Micronutrients, the often-overlooked heroes, are highlighted for their impact on various physiological functions crucial to athletic prowess. The article emphasizes the importance of timing and meal composition, illustrating how strategic nutritional choices before and after training sessions can significantly impact performance outcomes. Recognizing the diversity among athletes, the necessity of individualized nutrition plans is underscored, promoting tailored approaches to meet specific needs.

A cautionary note is sounded on supplements, emphasizing their role as complements rather than replacements for whole foods. The abstract concludes by acknowledging the dynamic nature of sports nutrition, with ongoing research and innovations shaping the field. As athletes strive for excellence, this abstract emphasizes the intrinsic link between thoughtful dietary strategies and the realization of peak athletic potential. "Fueling Victory" is not merely a concept; it's a dynamic process that empowers athletes to excel, setting the stage for a sustained and successful athletic journey.

I. Brief Introduction

In the realm of athletic achievement, the convergence of talent, training, and tenacity often takes center stage. Yet, a critical pillar that underpins these elements, influencing an athlete's capacity to excel, is often found on their plate—the science and art of sports nutrition. Beyond the realms of traditional dietary advice, sports nutrition is a dynamic field that recognizes the intricate relationship between what an athlete consumes and the heights they can reach in their performance.

Athletic prowess demands not only physical exertion but a finely tuned orchestration of nutritional elements to meet the body's demands for energy, recovery, and sustenance. The role of sports nutrition extends far beyond the realms of calorie counting; it encompasses a sophisticated interplay of macronutrients, micronutrients, and hydration strategies, all calibrated to enhance an athlete's physiological capabilities.

In this exploration of the role of sports nutrition in athletic performance, we delve into the fundamental components that fuel victory on the field, track, or court. From the essential macronutrients—carbohydrates, proteins, and fats—that serve as the building blocks of energy, to the critical aspects of hydration that sustain endurance, every dietary choice is a strategic decision influencing an athlete's journey towards success.

Moreover, sports nutrition acknowledges the unique and individualized nature of each athlete. Recognizing that one size does not fit all, this field promotes personalized nutrition plans, crafted in collaboration with experts, to address the specific needs, goals, and physiological nuances of each sportsman or sportswoman.

As we embark on this exploration, it becomes evident that sports nutrition is not merely about dietary guidelines; it's a science that empowers athletes to push their boundaries, enhance their recovery, and lay the foundation for enduring success. The forthcoming sections will unravel the nuances of macronutrients, delve into the significance of hydration, highlight the often-underestimated impact of micronutrients, and underscore the importance of timing and composition in meals. We will traverse the cautionary landscapes of supplements and conclude with an acknowledgment of the ever-evolving trends and innovations that shape the future of sports nutrition. Through this

journey, we aim to illuminate the path that leads to victory—the path fueled by the intricate dance of nutrients, tailored to the unique rhythm of athletic excellence.

II. Methodology

1. Macronutrients: The Building Blocks of Performance

Athletes require a balanced intake of macronutrients—carbohydrates, proteins, and fats—to meet their energy needs. Carbohydrates serve as the primary fuel source for endurance activities, proteins aid in muscle repair and growth, and fats provide a sustained energy source. The optimal ratio of these macronutrients varies based on the type of sport, intensity, and individual factors such as body weight and metabolism.

2. Micronutrients: Small Nutrients, Big Impact

Essential vitamins and minerals play a vital role in various physiological processes, including energy metabolism, immune function, and bone health. Deficiencies in micronutrients can compromise an athlete's ability to perform optimally and increase the risk of injuries. A well-rounded, nutrient-dense diet, supplemented if necessary, ensures that athletes meet their micronutrient requirements.

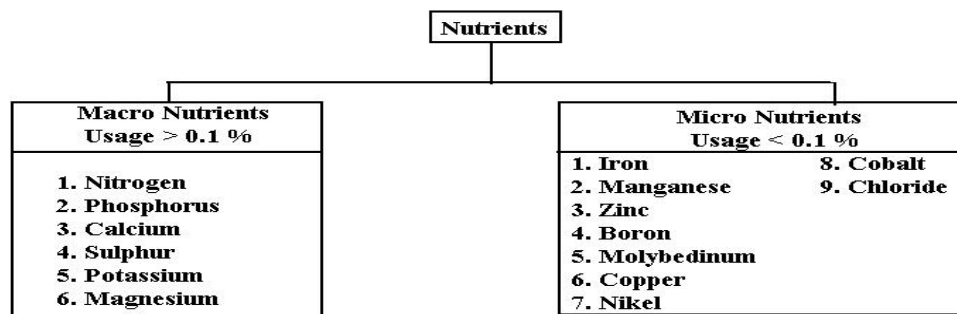


Figure 1: Classification of nutrients

III. Analysis

Hydration: The Essence of Athletic Endurance

Dehydration can significantly impair athletic performance and hinder recovery. Proper hydration is crucial for maintaining body temperature, transporting nutrients, and lubricating joints. Athletes must be attuned to their fluid needs, adjusting intake based on environmental conditions, exercise intensity, and individual sweat rates.

Timing and Composition of Meals: Precision Matters

The timing and composition of meals can influence an athlete's energy levels, recovery, and overall performance. Consuming a balanced meal or snack before and after training sessions helps optimize glycogen stores and supports muscle recovery. The strategic use of pre- and post-workout nutrition is a cornerstone of sports nutrition.

Individualized Nutrition Plans: One Size Does Not Fit All

Athletes vary in terms of body composition, metabolism, and training goals. Therefore, a personalized approach to sports nutrition is essential. Working with registered dietitians or nutritionists can help athletes tailor their dietary plans to meet their specific needs, ensuring they receive the right nutrients in the right amounts.

Supplements: A Cautionary Approach

While supplements can be beneficial in certain circumstances, they should not replace whole foods. Athletes must approach supplementation with caution, seeking guidance from healthcare professionals to avoid potential risks and ensure that any supplements used are safe, effective, and comply with anti-doping regulations.

Evolving Trends and Innovations in Sports Nutrition

The field of sports nutrition is dynamic, with ongoing research leading to new insights and innovations. From the exploration of novel dietary strategies to advancements in recovery modalities, athletes and professionals alike are continually adapting their approaches based on the latest scientific findings.

IV. Conclusion

In the pursuit of excellence, athletes recognize the indispensable role of sports nutrition in achieving and sustaining peak performance. As our understanding of the intricate relationship between nutrition and athletic prowess evolves, so too does the opportunity for athletes to fine-tune their dietary strategies. By embracing the principles of balanced macronutrient intake, optimal hydration, micronutrient sufficiency, and personalized nutrition plans, athletes can fuel their bodies for success and lay the foundation for a long and prosperous athletic journey. Sports nutrition isn't merely about what athletes eat—it's about empowering them to reach new heights, one well-balanced meal at a time.

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MIGRANT LABOURS IN INDIA

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Abstract

In developing countries it has for long been the trend that only single migrants participate in the extensive rural-urban migration. With single migrants it is here meant migrants moving without bringing their family along. This exact phenomenon will be elaborated and enlightened in this thesis. In India, as well as in other countries, migrants play an integral role in the urban workforce. They offer a cheap, reliable (in the sense that they are many) and easy accessible service. The paper put emphasis on how low-skilled labourers cope with life in an urban setting. Furthermore, through Research Problem I, it will be elaborated several reasons why these migrants choose to make the move, and why they in most cases do not bring their families along. It will also be discussed, through Research Problem II, how low-skilled migrants contribute to the economic development witnessed in contemporary India. Does the low wage received by urban migrants help poverty alleviation or is it purely an exploitation of the migrants by the employers? The thesis builds on qualitative collected data as in-depth interviews and on site observations, complemented by an extensive survey (n=72) undertaken by the author. The author has interviewed low-skilled labourers on the streets of Gurgaon and sub-urb Delhi. From this it became clear that there is a general agreement that the low-skilled labourers do not earn enough to make a living for a whole family in an urban situation. Then again, they earn more in the city than they do on the countryside, if they earn anything at all. It was many a time pointed to the lack of sufficient work opportunities in the countryside where most families practice within subsistence farming. In respect to the aspect of development the labours migrants was found to offer a significant contribution to the development occurring in contemporary Gurgaon. Mahatma Gandhi National Rural Employment Guarantee (MGNREGA) is a national government scheme put together to help employ villagers in non-agricultural sectors. The effects of this will to some extent also be elaborated in this thesis.

Acknowledgements

The India Centre for Migration, under the guidance of the Overseas Indian Affairs – I Division and Overseas Employment & Protector General of Emigrants Division of the Ministry of External Affairs (MEA) has brought out this presentation which largely serves as a handbook on Pre-Departure Orientation (PDO) for migrant workers to promote safe, regular and orderly migration. This document aims at training prospective migrants regarding benefits of safe, regular and orderly migration, and welfare and protection measures of the Government of India. The Indian Missions & Posts in the Gulf Cooperation Council (GCC) Countries, the International Organization for Migration (IOM) & the International Labour Organization (ILO) have provided valuable inputs in preparation of this PDO handbook.

Introduction

Introduction Migration, development and ever growing globalized cities are all terms very much in focus of contemporary academic research. The interconnectedness of all these mentioned phenomena are highly interesting and worth further investigating. This ever ongoing process of globalization has had a great impact on all of them and could be seen as a process further bringing issues concerning these phenomena in focus. Most of these issues have more or less direct involvement of people on the different scales apparent within globalization; either it is a migrating peasant, multinational capitalist or as street vendors. Their place in the on-going development process inherent in India is unquestionable. Development should be seen as a multi-dimensional process involving major changes in social structures, popular attitudes and national institutions, as well as the speeding up of economic growth, the reduction of inequality and the abolishment of absolute poverty (Kapila, 2013). This stand clearly involves a human aspect and as Arthur Lewis stresses it is all about achieving “freedom of servitude”, “the advantage of economic growth is not that wealth increases happiness, but that it increases the range of human choice” (Lewis, 1955, 420) The concept of human freedom, he says, is that it should include all various components of political freedom, freedom of expression, political participation and equality of opportunity. Some of these factors are already a part of the Indian society, but then again many are

lacking to a smaller or larger extent (Lewis, 1955). This thesis will elaborate many of these aspects and examine how migrants cope with life in the city as well as their contribution to Indian development. As the migrants are an integral part to Indian development these aspects are more or less intertwined.

Context

- India has used Aadhar (digital identity) and UPI (digital payments) extensively to address the challenges of identification and financial inclusion in social protection delivery, particularly in the case of migrants.

Who is a migrant worker?

- A “migrant worker” is a person who either migrates within their home country or outside it to pursue work.
- Usually, migrant workers do not have the intention to stay permanently in the country or region in which they work.
- As per the census 2011, the total number of internal migrants in India is **36 crore or 37% of the country’s population.**
- The Economic Survey pegged the size of the migrant workforce at roughly **20 percent or over 10 crores** in 2016.

What are the problems faced by migrants?

- **Issues with finding local Employment:** Most migrant workers have a seasonal nature of employment. During off-seasons, they struggle to feed their families. Repeated lockdowns made situations more difficult for migrants to find jobs in their localities. They faced travel restrictions which hindered their job search as well.
- **Lack of Insurance Benefits in a Pandemic Environment:** Migrant workers work in precarious conditions with little wages and no access to government schemes and services. Poor and unsafe working and living conditions make them prone to diseases. Greater threats of occupational illnesses, nutritional diseases, alcoholism, HIV, and communicable diseases are rampant in the migrant workforce.
- **Issue of timely and Fair Payment of Wages:** The informal workforce in India consists of more than 150.6 million regular and daily wage earners. Most of these workers are unaware of their rights as ‘migrant workers. Many unscrupulous agents coerce them and don’t pay minimum wages as per law.
- **Lack of portability of benefits:** Migrants registered to claim access to benefits at one location lose access upon migration to a different location. This is especially true of access to entitlements under the PDS. The ration card required to access benefits under the PDS is issued by state governments and is not portable across states. This system excludes inter-state migrants from the PDS unless they surrender their card from the home state and get a new one from the host state.
- **Lack of affordable housing:** The proportion of migrants in urban population is 47%. In 2015, the Ministry of Housing and Urban Affairs identified migrants in urban areas as the largest population needing housing in cities. There is inadequate supply of low-income ownership and rental housing options.

Government steps for migrant workers

- **Pradhan Mantri Garib Kalyan Yojana:** After the lockdown, Pradhan Mantri Garib Kalyan Yojana with a financial package of Rs. 1.7 lakh crore was launched to help poor, needy, and unorganized sector workers of the country.
- **PM SVANidhi Scheme:** PM SVANidhi Scheme was launched to facilitate collateral-free working capital loans up to Rs.10, 000/- of one-year tenure, to approximately, 50 lakh street vendors, to resume their businesses.

- **Pradhan Mantri Garib Kalyan Rojgar Abhiyan:** In order to facilitate the employment of migrant workers who have gone back to their home state, Pradhan Mantri Garib Kalyan Rojgar Abhiyan was initiated in 116 districts in Mission Mode.
- **State migrant cell:** Migrant workers' Cell is being created to prepare a database of migrant workers in states with mapping.
- **eShram portal:** It is a national database created to register the unorganised workers in the country, including the migrant workers.
- **National policy on migrant workers:** NITI Aayog has been mandated to prepare a draft national policy on migrant workers to reimagine labor-capital relations while integrating the *migrant* workers within the formal workforce.

How technology could provide Solutions?

- **Providing digital public infrastructure (DPI):** Digital public infrastructure systems that enable the effective provision of essential society-wide functions and services can enable a paradigm shift, allowing governments to co-create solutions with the private sector and civil society.
 - **Adopting Public private partnership models:** There are three key areas where DPI can enable public-private partnerships (PPP) in the delivery of social protection of migrants,
1. **Awareness of entitlements:** One barrier faced at the initial stage is lack of awareness of entitlements or of the need to reapply, when migrants move from one state to another. Jan Saathi is an application that provides migrants within formation on eligible social security schemes. Organisations such as Haqdarshak not only inform potential beneficiaries about their eligibility for various schemes, Central or State, but also help them avail entitlements.
 2. **Information about livelihoods and housing:** The informal nature of the labour market makes access to affordable and safe living conditions a challenge, especially if the family migrates as a unit. Ministry of Housing and Urban Affairs has introduced the Affordable Rental Housing Complexes under PMAY-Urban but the availability of such facilities is inadequate compared to the number of migrants. Bandhu's ecosystem of applications connect migrant workers directly with employers and housing providers, to give them more informed choices. Jobsgaar and MyRojgaar also play a similar role by connecting workers to employers.
 3. **Healthy Grievance redressal Mechanism:** Gram Vaani bridges the gap in grievance redressal by providing a platform where citizens can use Interactive Voice Response (IVR) to record their grievance in accessing entitlements. Aajeevika Bureau and The Working People's Charter built the India Labourline to provide legal aid and mediation services to migrant workers.
 - **Adopting a well-designed data:** While a growing ecosystem of private players (NGOs, civil society organisations, not-for-profit and for-profit entities) are addressing these needs, well designed data exchanges can help unlock a strong public-private collaboration in the delivery of social protection.

What more government can do to address the issue of migrants?

- **Creating centralized data:** The state's digital efforts are often in siloes and the need to maximize the use of data across schemes and departments is a high priority.
- **E-Shram:** Initiatives such as direct benefit transfers and linking schemes for the portability of entitlements have shown promise. e-Shram, which is a national database of unorganized workers, aims to reduce access barriers to social protection for migrants.
- **Making portable entitlement:** Recent announcements of API-based integration of e-Shram with the various state government labor departments and with the One Nation One Ration Card scheme are a step in that direction.

- **Working with the private sector:** Enabling linkages of migrant data with the private sector can lead to benefits on the demand side, in the form of reduced transaction costs in identifying jobs, affordable housing, and redressal of grievances.
- **Engaging the private sector:** Private players who have established relationships with these mobile populations can help the state in planning and forecasting the demand for benefits. An example of this is the digital payment ecosystem since the introduction of UPI.

Condition of Migrant workers in India

Challenges like Struggling with low wages, physical and sexual exploitation with safety and security are problems faced by migrant workers and more specifically the unorganized sector in India. We might find better condition of these workers on paper but in reality nothing is good with them and no labour laws are followed by industrialists. They are forced to work more hours without extra wages and even get fewer wages than directed by government.

They often get caught in exploitative labour arrangements that forces them to work in low-end, low-value, hazardous work. Lack of identity and legal protection accentuates this problem. The hardships of migrant workers are especially magnified when state boundaries are crossed and the distance between the "source" and "destination" increases.

Migrants can also become easy victims of identity politics and parochialism. The urban labour markets treat them with opportunistic indifference extracting hard labour but denying basic entitlements such as decent shelter, fair priced food, subsidized healthcare facilities or training and education. They are people who are affected first, whenever such types of crisis comes but nobody pays attention to their problems.

Conclusion

- Digital technologies have potential solutions to problems and transform the livelihood of migrants. The need for adequate data protection and safeguards is essential for the implementation of any such initiative.

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CHALLENGES OF HUMAN RESOURCES (HR) IN BUSINESS AND INDUSTRY IN INDIA: A COMPREHENSIVE ANALYSIS

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Abstract:

The human resources (HR) landscape in India plays a crucial role in shaping the success and sustainability of businesses and industries. This research paper aims to provide a comprehensive analysis of the challenges faced by HR professionals in managing human capital in the dynamic and diverse business environment of India. The study employs a comprehensive approach, this study analyze to explore the intricate dynamics influencing HR practices and strategies. Through extensive literature review, surveys, and case studies, the paper identifies key challenges such as talent acquisition, skill gaps, employee retention, and the evolving nature of work in the digital age. Additionally, the paper explores the role of technology, diversity and inclusion initiatives, and employee engagement strategies in addressing HR challenges.

By providing a holistic examination of the challenges faced by HR in the Indian business and industrial context, this research aims to contribute valuable knowledge for practitioners, policymakers, and academics seeking to enhance human resource management practices and foster sustainable organizational growth in the rapidly evolving business landscape of India.

Keywords: Human Resources, Talent Acquisition, Employee Retention, Skill Development, Workplace Dynamics, Globalization, Technological Advancements, Business, Industry.

1. INTRODUCTION:

The Indian business and industrial sector has undergone significant transformations in recent years, necessitating a closer examination of the challenges faced by human resources professionals. This paper explores the intricacies of HR management in India, shedding light on the diverse challenges that impact organizational success.

1.1 Background

India's business and industrial sectors are witnessing rapid transformation fueled by globalization, technological advancements, and shifting demographics. In this context, the role of HR becomes paramount in addressing the unique challenges associated with managing a diverse and dynamic workforce.

1.2 Objectives

- To identify and analyze the challenges faced by HR in business and industry in India.
- To explore the impact of globalization and technological advancements on HR practices.
- To suggest strategies for overcoming HR challenges and fostering sustainable workforce management.

LITERATURE REVIEW:

The following is a review of key themes and findings from existing literature:

1.1. Talent Acquisition and Retention:

- Numerous studies emphasize the persistent challenges of talent acquisition and retention in India's competitive business environment. The scarcity of skilled talent, coupled with changing job preferences, poses significant hurdles for HR professionals (Agarwal & Bharti, 2018; Nigam & Ojha, 2019).
- Research highlights innovative recruitment strategies, such as leveraging social media and implementing employee referral programs, as effective solutions to address talent shortages (Krishnan & Jadhav, 2020).

2.2 Skill Development and Training:

- The rapid pace of technological advancements demands continuous skill development. Literature underscores the importance of investing in training programs to upskill the workforce, with a focus on digital literacy and adaptability (Sharma & Yadav, 2017; Verma & Gupta, 2021).
- E-learning platforms and cross-functional training initiatives are recognized as essential components of HR strategies aimed at addressing the skills gap (Roy & Biswas, 2018; Gupta & Kaur, 2020).

2.3 Workplace Dynamics and Diversity:

- Managing a diverse and multi-generational workforce emerges as a critical challenge. Studies emphasize the need for HR to create inclusive workplace policies and address issues related to generational diversity (Gupta & Sharma, 2019; Yadav & Kumar, 2020).
- The impact of gender disparities and the importance of implementing diversity and inclusion initiatives are explored, shedding light on the role of HR in fostering an equitable work environment (Puri & Budhiraja, 2019; Singh & Dey, 2021).

2.4 Globalization and Technological Integration:

- Globalization's influence on HR practices is evident in the literature, with a focus on talent management across borders and the challenges of cross-cultural communication (Kumar & Singh, 2018; Jain & Yadav, 2020).
- Technological integration is a recurring theme, emphasizing the need for HR professionals to adapt to emerging technologies, including artificial intelligence, data analytics, and HR information systems (Mukherjee & Ghosh, 2019; Anand & Mittal, 2021).

2.5 Regulatory Compliance:

- The complex and dynamic nature of India's labor laws is well-documented in the literature. HR professionals face challenges in navigating the intricate regulatory landscape, necessitating a proactive approach to compliance management (Mishra & Singh, 2018; Pande & Sharma, 2020).
- Regular compliance audits and collaborations with legal professionals are suggested as effective strategies for ensuring adherence to labor laws (Verma & Tyagi, 2019; Sharma & Gupta, 2021).

2.6 Employee Engagement and Well-being:

- Employee engagement emerges as a critical factor for organizational success. The literature emphasizes the role of HR in implementing flexible work policies, wellness programs, and effective communication strategies to enhance employee satisfaction (Dwivedi & Sharma, 2018; Yadav & Sharma, 2020).

2.7 Leadership Development and Succession Planning:

Leadership development programs and succession planning are recognized as essential components of sustainable HR practices. Studies highlight the importance of grooming talent from within the organization to ensure a robust leadership pipeline (Soni & Sharma, 2017; Singh & Verma, 2021).

2. CHALLENGES IN HR MANAGEMENT:

Talent Acquisition:

- **Skill Shortages:** The demand for skilled professionals often outstrips the supply, leading to intense competition among businesses for a limited talent pool.
- **Changing Job Preferences:** Evolving aspirations of the workforce, especially among millennials, make it challenging for HR to align job offerings with employee expectations.

- **Geographical Disparities:** Regional imbalances in educational infrastructure and job opportunities pose challenges in recruiting qualified individuals across different locations.

3.2 Employee Retention:

- **High Attrition Rates:** Frequent job changes and turnover rates are prevalent, particularly in industries such as IT and startups, making it challenging for HR to retain key talent.
- **Work-Life Balance:** Maintaining a healthy work-life balance is increasingly becoming crucial for employee satisfaction and retention, necessitating HR to implement flexible work policies.

3.3 Skill Development and Training:

- **Rapid Technological Advancements:** Frequent changes in technology require continuous upskilling of the workforce, placing a burden on HR to design and implement effective training programs.
- **Budget Constraints:** Limited financial resources often constrain the ability of organizations, especially small and medium enterprises, to invest in comprehensive training and development initiatives.

3.4 Evolving Workplace Dynamics:

- **Generational Diversity:** Managing a workforce comprising multiple generations, each with distinct work styles and expectations, poses challenges in creating inclusive policies.
- **Remote Work Challenges:** The shift towards remote work, accelerated by global events like the COVID-19 pandemic, requires HR to adapt policies and practices to support a distributed workforce effectively.

3.5 Regulatory Compliance:

- **Complex Labor Laws:** The intricate web of labor laws and compliance requirements in India adds complexity to HR functions, necessitating a deep understanding of legal frameworks.
- **Changing Regulatory Landscape:** Frequent changes in labor laws and regulations require HR professionals to stay updated and modify policies accordingly.

3.6 Diversity and Inclusion:

- **Gender Disparities:** Gender imbalances persist in various industries, requiring proactive measures from HR to promote diversity and inclusion.
- **Cultural Sensitivity:** India's diverse cultural landscape poses challenges in creating inclusive workplaces that respect and accommodate different cultural backgrounds.

3.7 Globalization and Cultural Integration:

- **Cross-Cultural Management:** As businesses expand globally, HR faces the challenge of managing diverse teams and ensuring effective communication and collaboration across different cultural contexts.
- **Global Talent Management:** Identifying and integrating international talent into the workforce brings challenges related to visa regulations, cross-border employment laws, and cultural assimilation.

3.8 Technological Integration:

- **HR Technology Adoption:** While technology can streamline HR processes, the integration of new HR technologies poses challenges related to employee adaptation, data security, and system compatibility.
- **Data Privacy Concerns:** Handling sensitive employee data in compliance with data protection regulations is a growing concern for HR professionals adopting advanced technologies.

Overcoming the challenges faced by Human Resources (HR) in India requires strategic planning and innovative approaches. Below are key strategies that HR professionals can adopt to effectively navigate and address these challenges:

TECHNOLOGICAL ADVANCEMENTS AND HR PRACTICES:

Recruitment and Talent Acquisition:

- **Digital Platforms:** HR leverages digital platforms and artificial intelligence (AI) tools for streamlined recruitment processes, including resume screening, video interviews, and online assessments.
- **Data-Driven Decision-Making:** Analytics and big data enable HR to make data-driven decisions in talent acquisition, predicting workforce trends and optimizing recruitment strategies.

Employee Engagement and Communication:

- **Collaboration Tools:** HR integrates collaboration tools, such as instant messaging and project management platforms, to facilitate effective communication in a globally dispersed workforce.
- **Employee Feedback Platforms:** Technology enables real-time employee feedback mechanisms, helping HR to gauge employee satisfaction and promptly address concerns.

Training and Development:

- **E-Learning Platforms:** HR utilizes e-learning platforms for continuous skill development, offering employees flexibility in accessing training materials.
- **Virtual Reality (VR) Training:** Emerging technologies like VR are employed for immersive training experiences, particularly in industries with complex skill requirements.

1.1.1 Performance Management:

- **Automated Performance Metrics:** Technology automates performance evaluation processes, utilizing key performance indicators and data analytics to assess employee productivity objectively.
- **360-Degree Feedback Systems:** HR adopts 360-degree feedback systems, incorporating input from peers, subordinates, and managers for a comprehensive performance assessment.

1.1.2 Data Security and Privacy:

- **Protecting Employee Data:** HR is tasked with ensuring the security and privacy of employee data, complying with data protection laws and safeguarding against cyber threats.
- **Ethical Use of Technology:** HR develops policies to govern the ethical use of emerging technologies, addressing concerns related to surveillance and employee privacy.

2. Strategies For Overcoming Hr Challenges And Fostering Sustainable Workforce Management.

5.1 Integrated Talent Management:

- **Strategic Workforce Planning:** Develop a comprehensive workforce plan aligned with organizational goals to identify current and future talent needs.
- **Succession Planning:** Implement succession planning programs to identify and groom high-potential employees for leadership roles, ensuring a continuous pipeline of skilled professionals.

5.2 Employee Engagement and Well-being:

- **Flexible Work Arrangements:** Offer flexible work options, including remote work and flexible hours, to enhance work-life balance and boost employee satisfaction.
- **Wellness Programs:** Implement wellness initiatives that focus on physical, mental, and emotional well-being, creating a healthier and more engaged workforce.

5.3 Continuous Learning and Development:

- Skill Development Programs: Invest in ongoing training programs to upskill employees, ensuring they stay relevant in a rapidly changing business environment.
- Cross-Functional Training: Facilitate cross-functional training opportunities to broaden employees' skill sets and encourage versatility.

5.4 Diversity and Inclusion Initiatives:

- Inclusive Hiring Practices: Develop inclusive recruitment practices that promote diversity, ensuring a workforce that reflects a broad range of backgrounds and perspectives.
- Diversity Training: Implement training programs to raise awareness about diversity and inclusion, fostering a culture of respect and equality.

5.5 Technology Adoption for HR Efficiency:

- HR Information Systems (HRIS): Implement advanced HRIS to streamline HR processes, including recruitment, onboarding, performance management, and payroll.
- Data Analytics: Leverage data analytics for evidence-based decision-making, enabling HR to identify trends, predict workforce needs, and measure the effectiveness of HR initiatives.

5.6 Employee Feedback Mechanisms:

- Regular Surveys: Conduct regular employee surveys to gather feedback on job satisfaction, work environment, and overall employee experience.
- Anonymous Channels: Establish anonymous channels for employees to express concerns and provide suggestions, encouraging open communication.

5.7 Leadership Development Programs:

- Leadership Training: Provide leadership development programs to enhance the skills of managers and executives, fostering effective leadership within the organization.
- Mentorship Programs: Implement mentorship initiatives to facilitate knowledge transfer and professional development at all levels.

5.8 Performance Management:

- Continuous Feedback: Move towards continuous feedback mechanisms, replacing traditional annual performance reviews with regular check-ins and constructive feedback.
- Goal Alignment: Ensure that individual and team goals align with organizational objectives, fostering a sense of purpose and accomplishment.

5.9 Promote a Positive Organizational Culture:

- Clear Communication: Establish transparent communication channels to keep employees informed about company goals, values, and any changes in policies.
- Recognition Programs: Implement employee recognition programs to acknowledge and reward outstanding contributions, reinforcing a positive culture.

5.10 Adaptability and Change Management:

- Change Readiness: Foster a culture of adaptability and resilience, preparing employees for changes in technology, processes, and industry trends.
- Communication Strategy: Develop a clear communication strategy during periods of organizational change, addressing employee concerns and maintaining transparency.

By implementing these strategies, HR professionals can navigate challenges, build a sustainable workforce, and contribute to the long-term success and resilience of organizations in the Indian business landscape.

3. Conclusion and Recommendations:

In conclusion, this research paper provides a holistic understanding of the challenges faced by human resources in the Indian business and industrial context. By addressing these challenges, businesses can enhance their HR capabilities, contributing to sustained organizational growth and success in the dynamic Indian business environment.

Recommendations for addressing these challenges include fostering a culture of diversity and inclusion, investing in continuous employee training, developing robust retention strategies, staying abreast of regulatory changes and embracing technological innovations in HR practices.

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A STUDY OF DIGITAL TRANSFORMATION IN RETAIL: NAVIGATING THE EVOLVING LANDSCAPE

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Abstract:

This paper is focused on transformation of digital marketing in retail sector. The retail industry has undergone a profound metamorphosis in recent years, spurred by the relentless pace of technological advancement and shifting consumer expectations. The advent of digital technologies has not only reshaped the way consumers engage with brands but has also prompted a fundamental re-evaluation of traditional retail practices. This transformation, often referred to as "digital transformation," represents a paradigm shift that extends beyond the mere adoption of digital tools; it encompasses a comprehensive reimagining of business models, processes, and customer interactions.

Digital transformation has become a pervasive force reshaping industries globally, and the retail sector is no exception. This research paper delves into the multifaceted realm of digital transformation in retail, exploring the technological advancements, strategic shifts, and implications for businesses. The study examines how retailers are leveraging digital technologies to enhance customer experiences, optimize operations, and stay competitive in an ever-evolving market.

Keywords: Digital Transformation, Digital Transformation, Retail Industry, Evolving Landscape

Technology Integration, E-commerce Trends, Customer Experience, Artificial Intelligence in Retail

1. Introduction:

The rise of digital transformation in retail can be attributed to the confluence of several key factors. Firstly, the ubiquitous penetration of smartphones and high-speed internet has empowered consumers with unprecedented access to information, enabling them to make informed purchasing decisions anytime, anywhere. Concurrently, advancements in data analytics, artificial intelligence, and the Internet of Things (IoT) have provided retailers with powerful tools to understand consumer behavior, personalize experiences, and optimize operational efficiency.

Against this backdrop, traditional brick-and-mortar retailers are navigating a complex and rapidly evolving landscape, characterized by the convergence of physical and digital realms. Online marketplaces, e-commerce platforms, and mobile applications have become integral components of retail strategy, challenging established norms and reshaping the competitive landscape. As consumers demand seamless and personalized experiences, retailers are compelled to embark on digital transformation journeys to stay relevant and competitive in an industry marked by innovation and disruption.

1.1 Rationale for the study:

The rationale for undertaking a comprehensive exploration of digital transformation in the retail sector stems from the critical need to understand, dissect, and strategize amidst the profound changes reshaping the retail landscape. Several compelling reasons underscore the significance of this research endeavor.

- Dynamic Nature of Consumer Behavior:
- Strategic Imperative for Retailers:
- Technological Disruption and Innovation:
- Adaptation to Changing Market Dynamics:

1.2 Objectives of the Research

The primary objectives of this research are designed to provide a structured and comprehensive investigation into the various facets of digital transformation in the retail sector. The following objectives delineate the specific areas of focus and inquiry:

- To Examine the Technological Enablers of Digital Transformation
- To Assess the Impact of Digital Transformation on Customer Experience

- To Identify and Analyze Challenges and Risks Associated with Digital Transformation
- To Propose Strategies for Successful Implementation of Digital Transformation
- To Showcase Case Studies
- To Anticipate Future Trends and Prospects

2. Literature Review:

2.1 Historical Context and Evolution of Digital Transformation:

Tracing the historical evolution of digital transformation in retail unveils the incremental shifts and transformative moments that have shaped the industry. The seminal work of Brynjolfsson and McAfee (2014) explores the impact of digital technologies on various industries, including retail, highlighting the accelerating pace of change and the implications for businesses.

Moreover, the evolution of e-commerce and the rise of online marketplaces have been pivotal in shaping the retail landscape. Case studies by Smith and Brynjolfsson (2001) showcase the early stages of e-commerce adoption, illustrating the challenges faced and lessons learned by pioneering retailers.

2.2 Key Technologies Driving Digital Transformation in Retail:

A wealth of literature delves into the role of specific technologies driving digital transformation in retail. Artificial intelligence (AI) and machine learning (ML) are acknowledged for their potential to enhance customer experiences, optimize operations, and enable predictive analytics (Chen et al., 2018; Verhoef et al., 2015).

Augmented Reality (AR) and Virtual Reality (VR) are emerging technologies with transformative potential in the retail sector. Kim and Forsythe (2008) examine the influence of AR on consumer perceptions and purchasing behavior, revealing its capacity to enhance in-store experiences.

2.3 Success Stories and Case Studies of Digital Transformation in Retail:

Numerous case studies and success stories offer insights into how leading retail organizations have navigated digital transformation. Amazon's evolution from an online bookstore to a global e-commerce giant (Helft, 2013) serves as a compelling case of strategic adaptation and continuous innovation. Similarly, the transformation of traditional retailers like Walmart into omnichannel powerhouses (Marr, 2020) illustrates the importance of integrating online and offline channels. Examining these success stories provides valuable lessons for retailers seeking to emulate or adapt their strategies.

3. Technological Enablers of Digital Transformation:

This section explores the key technological enablers shaping the landscape of digital transformation in retail.

3.1 Artificial Intelligence and Machine Learning:

Artificial Intelligence (AI) and Machine Learning (ML) have emerged as transformative technologies with the potential to revolutionize various facets of the retail ecosystem. AI-powered algorithms analyze vast datasets to derive actionable insights, facilitating personalized customer experiences and predictive analytics.

Research by Verhoef et al. (2015) highlights the role of AI in understanding customer behavior, predicting preferences, and tailoring marketing strategies. Machine learning algorithms enable retailers to dynamically adjust pricing, optimize inventory, and enhance demand forecasting (Chen et al., 2018). The implementation of chatbots and virtual assistants powered by natural language processing is reshaping customer interactions both online and in-store, offering personalized recommendations and support.

3.2 Internet of Things (IoT) Applications in Retail:

The Internet of Things (IoT) plays a pivotal role in connecting physical assets and devices, creating a network of interconnected elements within the retail ecosystem. In the retail sector, IoT applications extend from supply chain management to in-store experiences, providing real-time visibility and data-driven insights.

3.3 Big Data Analytics for Customer Insights:

Big Data analytics serves as a foundational element of digital transformation in retail, harnessing the power of large and diverse datasets to extract meaningful insights. Retailers leverage Big Data analytics to understand customer behavior, preferences, and purchasing patterns, enabling them to tailor marketing strategies and enhance customer engagement.

Chen and Zhang (2014) emphasize the role of Big Data in personalization, allowing retailers to offer targeted promotions and recommendations. The analysis of customer data also facilitates the creation of customer segments, enabling retailers to develop more effective and personalized marketing campaigns.

3.4 Augmented Reality (AR) and Virtual Reality (VR) in Retail Experiences:

Kim and Forsythe's (2008) study on AR in retail highlights its potential to influence consumer perceptions and purchasing behavior. AR applications allow customers to visualize products in their own physical space before making a purchase decision, bridging the gap between online and offline shopping experiences.

VR, on the other hand, is utilized for creating virtual showrooms and immersive product experiences. Retailers leverage VR to offer customers the ability to virtually try on clothing, explore products in a simulated environment, and even participate in virtual events or product launches.

3.5 Mobile and E-commerce Platforms:

Mobile technologies and e-commerce platforms are fundamental components of digital transformation in retail, providing consumers with seamless access to products and services. The proliferation of smartphones has catalyzed a shift towards mobile commerce, reshaping the way consumers discover, research, and make purchases.

4. Impact on Customer Experience:

This section explores the multifaceted impact of digital transformation on customer experiences within the retail landscape.

4.1 Personalization and Targeted Marketing:

The study by Verhoef et al. (2015) emphasizes the role of AI in predicting consumer behavior, allowing retailers to tailor marketing messages based on individual preferences, purchase history, and online interactions. Personalized shopping experiences extend beyond recommendations to encompass personalized pricing, discounts, and promotions.

4.2 Omnichannel Retailing:

Digital transformation has facilitated the seamless integration of various retail channels, giving rise to the concept of omnichannel retailing. Consumers now expect a consistent and cohesive experience whether shopping online, in-store, or through mobile applications. This integrated approach recognizes that customers often transition between channels during their purchasing journey.

4.3 Enhanced In-Store Experiences Through Digital Technologies:

In-store experiences have undergone a significant transformation with the infusion of digital technologies. Augmented Reality (AR) applications, for instance, allow customers to visualize products in a physical space before making a purchase. This not only aids in the decision-making process but also creates an engaging and interactive shopping experience.

Smart mirrors, equipped with AR technology, enable customers to virtually try on clothing items, accessories, or cosmetics, enhancing the traditional in-store fitting room experience. The study by Kim and Forsythe (2008) demonstrates the positive impact of AR on consumer perceptions and the overall enjoyment of the shopping process.

4.4 The Role of Data in Understanding and Meeting Customer Expectations:

Data analytics, fueled by Big Data technologies, plays a pivotal role in understanding and meeting customer expectations. Retailers leverage data insights to anticipate trends, forecast demand, and tailor their product offerings to align with evolving consumer preferences. The study by Chen and Zhang (2014) emphasizes how Big Data analytics contributes to the creation of customer segments, enabling retailers to craft targeted marketing strategies.

Furthermore, customer feedback, both solicited and unsolicited, is harnessed through social media and other digital channels. Sentiment analysis and social listening tools enable retailers to gauge consumer sentiments, identify pain points, and swiftly respond to customer concerns. This real-time feedback loop ensures that retailers can adapt their strategies based on customer expectations and preferences.

5. Challenges and Risks:

While digital transformation in the retail sector promises substantial benefits, it also presents a set of challenges and risks that retailers must navigate to ensure successful implementation. Understanding and mitigating these challenges is essential for retailers aiming to harness the full potential of digital technologies. This section explores the key challenges and risks associated with digital transformation in retail.

5.1 Security and Privacy Concerns:

As retailers increasingly rely on digital technologies to collect and process vast amounts of customer data, security and privacy concerns become paramount. Cybersecurity threats, including data breaches and hacking attempts, pose a significant risk to sensitive customer information.

Compliance with data protection regulations, such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA), adds an additional layer of complexity. Failure to secure customer data not only jeopardizes customer trust but also exposes retailers to legal and financial consequences.

5.2 Legacy Systems and Integration Challenges:

Many traditional retailers grapple with legacy systems that were not designed to accommodate the demands of modern digital transformation initiatives. Integrating new technologies with existing legacy systems can be a complex and resource-intensive process.

Legacy systems may lack the flexibility and interoperability needed for seamless integration, leading to data silos, inefficiencies, and operational bottlenecks. The challenge lies in balancing the need for innovation with the constraints imposed by existing infrastructure.

5.3 Workforce Upskilling and Change Management:

The adoption of digital technologies necessitates a skilled workforce capable of leveraging and managing these technologies effectively. However, workforce upskilling poses a notable challenge for retailers, particularly those with a longstanding reliance on traditional skill sets.

Implementing digital transformation often requires employees to acquire new skills related to data analytics, AI, and other advanced technologies. Resistance to change, fear of job displacement, and a lack of training opportunities can hinder the upskilling process.

5.4 Consumer Resistance to New Technologies:

Despite the potential benefits of digital transformation, there is a risk of consumer resistance to new technologies, especially among those who are not accustomed to or comfortable with digital interfaces. The challenge lies in striking a balance between innovation and ensuring that technological advancements align with consumer preferences and expectations.

Introducing technologies such as automated checkout systems, AI-powered customer service chatbots, or augmented reality experiences in-store may face resistance from customers who prefer traditional methods or are

unfamiliar with these technologies. Overcoming this resistance requires effective communication, user-friendly interfaces, and a phased approach to implementation.

Retailers must prioritize user experience, provide clear guidance on the benefits of new technologies, and offer support to customers as they adapt. Educating consumers about the advantages and convenience of digital solutions can help mitigate resistance and foster acceptance of innovative retail experiences.

6. Strategies for Successful Implementation:

This section outlines key strategies for the successful implementation of digital transformation in retail.

6.1 Building a Digital Culture:

Cultivating a digital culture is foundational to successful digital transformation. This involves fostering a mindset of innovation, adaptability, and continuous learning throughout the organization. Leadership plays a pivotal role in championing the importance of digital initiatives and encouraging employees to embrace new technologies.

To build a digital culture, retailers can:

- Invest in training programs to upskill employees in digital technologies.
- Encourage cross-functional collaboration to break down silos and promote knowledge-sharing.
- Recognize and reward innovative ideas and contributions.
- Establish clear communication channels to convey the vision and objectives of digital transformation.

By creating a culture that values digital innovation, retailers can foster an environment where employees are empowered to contribute to and drive the success of digital initiatives.

6.2 Collaborations and Partnerships:

Collaborations and partnerships with technology providers, startups, and industry peers can accelerate the implementation of digital transformation initiatives. Retailers can leverage external expertise, access cutting-edge technologies, and share best practices through strategic alliances.

Key strategies include:

- Identifying and engaging with technology partners that align with the organization's goals.
- Exploring collaborations with startups to bring innovative solutions to market.
- Participating in industry forums and consortiums to share insights and learn from peers.
- Establishing strategic partnerships with technology providers to co-create solutions.
- Collaborations enable retailers to access resources and capabilities that may not be available in-house, facilitating a faster and more effective implementation of digital strategies.

6.3 Continuous Innovation and Adaptation:

Digital transformation is an ongoing process that requires a commitment to continuous innovation and adaptation. Retailers should create a framework for experimentation, testing new technologies, and iterating based on feedback and insights. This agility enables organizations to stay ahead of market trends and evolving consumer expectations.

Strategies for continuous innovation include:

- Establishing dedicated teams or innovation labs to explore emerging technologies.
- Implementing agile methodologies to iterate quickly and respond to changing requirements.
- Encouraging a mindset of experimentation and risk-taking.
- Incorporating customer feedback into the development and refinement of digital initiatives.
- By fostering a culture of continuous innovation, retailers can remain responsive to market dynamics and proactively address emerging challenges and opportunities.

7. Case Studies:

Examining real-world case studies provides valuable insights into how various retail organizations have approached and navigated the challenges and opportunities presented by digital transformation. The following case studies showcase diverse strategies, technologies, and outcomes, offering a nuanced understanding of the implementation of digital transformation in the retail sector.

7.1 Amazon: Redefining E-Commerce and Beyond

Background:

Amazon, founded in 1994 as an online bookstore, has evolved into a global e-commerce giant and diversified its business across various sectors. The company's success is intricately linked to its commitment to continuous innovation and customer-centricity.

Digital Transformation Initiatives:

E-Commerce Innovation: Amazon revolutionized online shopping by focusing on customer experience, offering a vast selection of products, personalized recommendations, and efficient delivery options.

Amazon Web Services (AWS): Amazon's cloud computing platform, AWS, emerged as a key player in the digital transformation landscape, providing scalable and cost-effective solutions for businesses globally.

Acquisitions and Diversification: Strategic acquisitions, such as Whole Foods Market, bolstered Amazon's presence in the grocery sector. The development of Amazon Go stores showcased the integration of physical and digital retail experiences.

● Outcomes:

Amazon's digital transformation initiatives resulted in unparalleled market dominance and customer loyalty. The company's ability to innovate, leverage data for personalized experiences, and expand into new markets illustrates the transformative power of a customer-centric digital strategy.

7.2 Walmart: Omnichannel Excellence

Background:

Walmart, a traditional brick-and-mortar retailer, recognized the importance of digital transformation in staying competitive in the rapidly evolving retail landscape.

● Digital Transformation Initiatives:

E-Commerce Expansion: Walmart invested heavily in its e-commerce capabilities, expanding its online product offerings and optimizing the digital shopping experience.

Omnichannel Integration: Walmart successfully integrated its online and offline channels, allowing customers to seamlessly shop, order online, and pick up in-store. The use of technologies like mobile apps and in-store pickup kiosks enhances the omnichannel experience.

Data Analytics and Supply Chain Optimization: Walmart leveraged data analytics to optimize its supply chain, reduce costs, and improve inventory management. The implementation of RFID technology improved real-time visibility into inventory levels.

● Outcomes:

Walmart's omnichannel strategy resulted in significant e-commerce growth and increased competitiveness with online retail giants. The integration of digital and physical channels enhanced customer convenience, illustrating the importance of a cohesive omnichannel approach in the digital era.

7.3 Starbucks: Brewing Digital Customer Experiences

Background:

Starbucks, a global coffeehouse chain, embraced digital transformation to enhance customer experiences and stay relevant in a tech-driven world.

Digital Transformation Initiatives:

Mobile Ordering and Payments: Starbucks introduced mobile ordering and payment capabilities through its app, allowing customers to order ahead, pay digitally, and pick up their orders without waiting in line.

Customer Loyalty Program: The Starbucks Rewards program leverages digital channels to reward customer loyalty. Personalized offers, free drinks, and exclusive promotions are tailored based on individual purchasing behavior.

Digital Innovation Centers: Starbucks established digital innovation centers to explore emerging technologies, test prototypes, and stay at the forefront of digital trends.

Outcomes:

Starbucks' digital transformation initiatives contributed to increased customer engagement and loyalty. Mobile ordering and the Starbucks Rewards program significantly impacted sales and customer satisfaction, highlighting the success of integrating digital innovations into the traditional retail experience.

These case studies demonstrate that successful digital transformation in retail requires a multifaceted approach, incorporating innovations in e-commerce, omnichannel integration, data analytics, and customer-centric strategies. The ability to adapt, innovate, and leverage technology to meet evolving consumer expectations is crucial for retailers aiming to thrive in the digital age.

8. Future Trends and Prospects:

The landscape of digital transformation in the retail sector continues to evolve, driven by advancements in technology, shifts in consumer behavior, and the ongoing quest for innovative solutions. Anticipating future trends is essential for retailers to stay ahead of the curve and proactively shape their digital strategies. The following explores key future trends and prospects in the realm of digital transformation in retail.

8.1 Artificial Intelligence (AI) Advancements:

Future Direction:

AI applications will become more sophisticated, enabling retailers to offer highly personalized and context-aware customer experiences.

Prospects:

Enhanced Personalization: AI algorithms will continue to refine personalized recommendations, product suggestions, and targeted marketing, creating more relevant and engaging customer interactions.

Conversational Commerce: The integration of AI-powered chatbots and virtual assistants will facilitate conversational commerce, allowing customers to interact, inquire, and make purchases through natural language conversations.

8.2 Augmented Reality (AR) and Virtual Reality (VR) Integration:

Future Direction:

AR and VR technologies are expected to become integral components of the retail experience, blurring the lines between physical and digital shopping environments.

Prospects:

Virtual Try-Ons: AR will be increasingly used for virtual try-ons of clothing, accessories, and cosmetics, allowing customers to visualize products in real-world settings before making a purchase.

Virtual Shopping Environments: VR will enable the creation of virtual shopping environments, offering customers immersive and interactive experiences, especially in industries such as furniture and home decor.

8.3 Blockchain for Transparency and Trust:

Future Direction:

Blockchain technology is poised to play a crucial role in ensuring transparency, traceability, and trust in the retail supply chain. Applications of blockchain will extend beyond cryptocurrencies to areas such as product authentication, ethical sourcing, and secure transactions.

Prospects:

Supply Chain Traceability: Blockchain will enable end-to-end traceability of products, allowing consumers to verify the authenticity and origin of goods, particularly in industries like food and luxury items.

Smart Contracts: The use of smart contracts on blockchain platforms will streamline and automate various aspects of retail transactions, from procurement to payments.

8.4 Contactless Technologies and Frictionless Shopping:

Future Direction:

Mobile payments, biometric authentication, and sensor technologies will become more prevalent.

Prospects:

Contactless Payments: The widespread adoption of contactless payment methods, including mobile wallets and NFC technology, will continue to grow, reducing the reliance on traditional payment methods.

Biometric Authentication: Biometric technologies such as fingerprint recognition and facial recognition will play a key role in securing transactions and personalizing the shopping experience.

9. Conclusion

In conclusion, the research paper has delved into the multifaceted realm of "Digital Transformation in Retail: Navigating the Evolving Landscape."

The exploration began by defining digital transformation as a strategic overhaul, extending beyond technological integration to encompass a cultural shift and customer-centricity. The research meticulously scrutinized the impact on customer experience, revealing how personalization, omnichannel strategies, and immersive in-store experiences redefine the consumer-retailer relationship.

Challenges and risks associated with this transformative journey were discussed candidly, recognizing security concerns, legacy system integration hurdles, workforce upskilling necessities, and the need to navigate consumer resistance. Strategies for successful implementation were outlined, emphasizing the importance of building a digital culture, fostering collaborations, continuous innovation, and establishing meaningful KPIs.

Case studies of industry leaders, such as Amazon, Walmart, and Starbucks, provided real-world insights into the diverse approaches and tangible outcomes of digital transformation initiatives. These cases illustrated the transformative power of customer-centric strategies, omnichannel excellence, and the infusion of digital innovations into traditional retail practices.

Looking toward the future, the research paper forecasted key trends and prospects, envisioning advancements in AI, the integration of AR and VR, blockchain's role in transparency, the rise of contactless technologies, and an increased focus on sustainable and ethical retail practices.

As retailers navigate this evolving landscape, those who strategically blend technology with a deep understanding of customer needs will be poised for sustained success in the dynamic and digitally transformed retail future.

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RECENT TRENDS IN INDIAN BANKING SECTOR

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Abstract

Finance and banking are the lifeblood of any business. Financial sector has been undergoing a drastic change and banking sector is a part of it. Banking sector has a well developed system of accounting with classified banks. The process of banking was stated in decade of the 18th century. The first bank were The bank of Hindustan and then the most of the banks were originated. In 1969 and 1980 the banks were nationalized due to poor workings of previous banks because there is a need of change in the banking industry. After that, banks came out with some innovations and new type of services to cater to the emerging needs of their customers. Technology has played a great role in responding to the growing needs of Indian economy. To improve their performance, banks have made a heavy investment in IT sector. This paper is basically focused on recent trends which are taking place in banking industry.

Key Words: : Banking sector, IT, Finance, Innovation

Introduction

The banking system in India is significantly different from other Asian nations because of the country's unique geographic, social, and economic characteristics. India has a large population and land size, a diverse culture, and extreme disparities in income, which are marked among its regions. There are high levels of illiteracy among a large percentage of its population but, at the same time, the country has a large reservoir of managerial and technologically advanced talents. Between about 30 and 35 percent of the population resides in metro and urban cities and the rest is spread in several semi-urban and rural centers. The country's economic policy framework combines socialistic and capitalistic features with a heavy bias towards public sector investment. India has followed the path of growth led exports rather than the "export led growth" of other Asian economies, with emphasis on self-reliance through import substitution. These features are reflected in the structure, size, and diversity of the country's banking and financial sector. The banking system has had to serve the goals of economic policies enunciated in successive five year development plans, particularly concerning equitable income distribution, balanced regional economic growth, and the reduction and elimination of private sector monopolies in trade and industry. In order for the banking industry to serve as an instrument of state policy, it was subjected to various nationalization chimes in different phases (1955, 1969, and 1980). As a result, banking remained internationally isolated (few Indian banks had presence abroad in international financial centers) because of preoccupations with domestic priorities, especially massive branch expansion and attracting more people to the system.[1] Moreover, the sector has been assigned the role of providing support to other economic sectors such as agriculture, small-scale industries, exports, and banking activities in the developed commercial centers (i.e., metro, urban, and a limited number of semi-urban centers). The banking system's international isolation was also due to strict branch licensing controls on foreign banks already operating in the country as well as entry restrictions facing new foreign banks. A criterion of reciprocity is required for any Indian bank to open an office abroad. These features have left the Indian banking sector with weaknesses and strengths. A big challenge facing Indian banks is how, under the current ownership structure, to attain operational efficiency suitable for modern financial intermediation. On the other hand, it has been relatively easy for the public sector banks to recapitalize, given the increases in nonperforming assets (NPAs), as their Government dominated ownership structure has reduced the conflicts of interest that private banks would face.

The Indian Banking Sector

The history of banking can be divided into three main phases:-

Phase I(1786-1969):-Initial phase of banking in India when small banks were setup

Phase II (1969-1991) :- Nationalization, regularization and growth

Phase III (1991 onwards) :- liberalization and its aftermath

With the change in phase III , banking sector has come out with a greater reach, maturity in supply and with banks having clean, strong, transparent, true and fair balance sheet and with the technological advancements.

Objectives of the study

To study the recent trends in banking sector

To figure out the technological developments in Indian Banking Field

To examine the emerging trends in banking technology

Methodology of study:

This study is based on the secondary source of data.

Secondary data: The secondary sources of data are banking books, annual reports of RBI, internet (websites) and research papers etc.

Data Collection

The study is descriptive in nature and is based on secondary data. The data are collected from various reports, journals, news articles, various bank portals, RBI portal and internet sources.

Research Methodology

The study is based on secondary data. The data is collected from banking books, magazines, research paper, annual reports of RBI, internet.

Recent trends in Banking sector

1) **Internet:-** internet is a network of computers. Through internet the process of dealing customer is getting very fast and banking can be used at anytime, anywhere. It works as global trend through which distance and time can be reduced to perform the transaction. IT services have enabled innovation and hi-tech services to make the complication and concern of original banking plan to much easier and easily accessible by the consumers and at present the trend has arise to carry out the transactions through mobile banking, direct bill payment, electronic fund transfer and the I-banking.

Most of the large banks in industry offers fully secure and functional online banking at free of cost. The public can now check and control their money in a safest way for customers it is the realization of their anywhere, anytime, anyway banking dreams

2) **ATM :-** An automated teller machine is an electronic banking outlet that allows customers to know about their basic transaction without any bank representative. Atms can access through a credit or debit card. There are 2 types of ATM functions. Basic type allows customers to withdraw cash and receive reports only and more complex type accept deposits and provide more advanced features.

The person who who is having account in any bank can use their bank's ATM at free of cost but through any other bank will incur a small fee. This facility is provided to the customers 24 hours a day. For use ATM facility customer should have a ATM card .this is a plastic card , magnetically coded. Each card holder can use their card through a secret personal identification number. This is issued for security purpose.

3) **Mobile Banking :-** it is a service provided by the particular bank to the customer to avail service through their registered mobile number. The facility only is available on registered number and the number which is linked to Aadhar number of the customer. it usually available on a 24 hour basis like ATMs. Transaction through mobile banking depends on the banking application provided by the particular bank. The services are electronic bill payment, remote cheque deposits, p2p payment etc.

Mobile banking services are:-

Mini statement & alert on account activity

Access to loan statement

Fund transfer

Bill payments

4) **Electronic payment and settlement system:** - payment & settlement system in India is mainly for financial transaction. These are covered by the act of payment & settlement system Act, 2007 and its regulated by RBI. In India, multiple systems are used for gross and net settlement. To provide safety and security to customers RBI is providing its best payment system & makes the whole process easier for banks. Through IT system the banking sector has been growing successfully and implements electronic payment to enhance the banking systems.

RTGS:- it stands for real time gross settlement . when settlement and transfer takes place on a real time and on gross basis then RTGS is used i.e. transfer of money from one bank to another bank on a real time & gross basis. Real time means there is not any waiting period in settlement and gross settlement means the transaction is settled on one to one basis without bunching with any transaction. Fee for RTGS differ from bank to bank. Customer can avail the RTGS facility between 9 AM to 4:30 PM on weekdays and 9AM to 2:00 PM on Saturday. However the timing for RTGS vary from bank to bank

NEFT:- this facility was provided in Nov. 2005. This system is a nationwide system that allows individuals, firms and corporation to transfer their funds electronically from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country. It is done through electronic message.

Electronic clearing service:- This system was introduced in 1990 by the RBI. ECS payment is used for bulk transfers and repetitive payments like salary, interest, dividend payments. This transfer takes place through a proper mechanism i.e. clearing houses. Settlement is done on a t+1 basis

o **ECS (credit):** This works on the principle of single debit multiple credit and is used for repetitive payments like salary

o **ECS (debit):** This service works on the principle of single credit multiple debit and is used by utility service providers for collection of bills and charges.

Conclusion

In the days to come, banks are expected to play a very useful role in the economic development and the emerging market will provide business opportunities to harness. As banking in India will become more and more knowledge supported, capital will emerge as the finest assets of the banking system. Ultimately banking is people and not just figures. To conclude it all, the banking sector in India is progressing with the increased growth in customer base, due to the newly improved and innovative facilities offered by banks. The economic growth of the country is an indicator for the growth of the banking sector. The Indian economy is projected to grow at a rate of 5-6 per cent³⁴ and the country's banking industry is expected to reflect this growth. The onus for this lies in the capabilities of the Reserve Bank of India as an able central regulatory authority, whose policies have shielded Indian banks from excessive leveraging and making high risk investments. By the government support and a careful re-evaluation of existing business strategies can set the stage for Indian banks to become bigger and stronger, thereby setting the stage for expansions into a global consumer base.

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INNOVATIVE PEDAGOGIES FOR TEACHING LANGUAGE AND LITERATURE: A REVIEW

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Abstract:

In the 21st century, the landscape of education has evolved significantly, with innovative pedagogies and curricula shaping the way individuals acquire knowledge and skills. Modern Education is a dynamic and personalized experience that caters to the diverse needs and abilities of learners. Virtual internships and apprenticeships provide students with opportunities to work with professionals worldwide. This global collaboration not only exposes students to diverse perspectives but also prepares them for a workforce that transcends geographical boundaries. Innovative pedagogies and curricula in English language and literature teaching aim to create dynamic and student-centered learning environments.

Key words: Innovative Pedagogy, Technological Integration, Virtual, technology etc.

Introduction

Pedagogy is a method of transacting a theme or conducting an activity to make every learner learn in stress-free environment. The pioneering ways of teaching along with an exploration of how the process of teaching is impacted in innovation.

Innovative Pedagogy is the process of proactively introducing new teaching strategies and methods into the classroom to improve academic outcomes and address real problems to promote equitable learning.

In the 21st century, the landscape of education has evolved significantly, with innovative pedagogies and curricula shaping the way individuals acquire knowledge and skills. This transformation has been driven by advancements in technology, changes in societal structures, and a deeper understanding of how individuals learn. In this comprehensive exploration, we will delve into the futuristic world of education, examining the cutting-edge pedagogies and curricula that define learning in 21st century. The NEP 2020 focuses on providing accessible, inclusive and equitable education. The pedagogy used in a classroom must reflect the inclusive approach so that learners can relate what is taught in the class with the multiple perceptions and realities they experience.

Modern Education is a dynamic and personalized experience that caters to the diverse needs and abilities of learners. Traditional boundaries between subjects have dissolved, and interdisciplinary approaches prevail. The fundamental shift from a one-size-fits-all model to tailored learning experiences has paved the way for innovative pedagogies and curricula. A new pedagogy is intrinsically linked to teaching practice and strategies for course design, delivery and assessment. What new factors do you take into account in your teaching and course design and what elements of classroom practice do you maintain

Technological Integration

In the educational landscape of present education, technology is seamlessly integrated into every aspect of learning. Virtual Reality (VR) and Augmented Reality (AR) have revolutionized the way students experience and interact with information. Immersive simulations provide students with realistic scenarios to apply their knowledge, fostering deep understanding and practical skills. Use of digital platforms, online resources, and educational technology to enhance language and literature instruction.

Virtual book clubs, online discussions, and collaborative writing projects can enrich the learning experience.

Artificial Intelligence (AI)

It acts as a personalized tutor, adapting to each student's learning style and pace. AI algorithms analyse data on student performance, identifying areas of strength and weakness to provide targeted interventions. This personalized approach ensures that no student is left behind, and each learner progresses at their optimal speed.

The use of holographic projections enables students to engage with historical figures, scientific phenomena, and cultural artefacts in three-dimensional space. This interactive learning experience transcends the limitations of traditional textbooks, making education a vibrant and engaging endeavour.

Interdisciplinary Learning

The rigid subject boundaries of the past have given way to interdisciplinary learning, recognizing that real-world challenges require a holistic understanding. Courses are designed to integrate concepts from various disciplines, encouraging students to approach problems from multiple perspectives. For example, a course on sustainable development might combine elements of environmental science, economics, sociology, and technology. This interdisciplinary approach not only enriches students' understanding of complex issues but also prepares them for the interconnected challenges of the future.

Project-Based and Experiential Learning

Education is not confined to classrooms and textbooks. Project-based and experiential learning play a central role in developing practical skills and critical thinking. Students engage in hands-on projects that mirror real-world challenges, fostering creativity and problem-solving abilities. Virtual internships and apprenticeships provide students with opportunities to work with professionals worldwide. This global collaboration not only exposes students to diverse perspectives but also prepares them for a workforce that transcends geographical boundaries.

Lifelong Learning and Continuous Upskilling

The concept of education as a finite period of formal schooling has become obsolete. Modern Teaching and learning is a lifelong journey, and the traditional model of education is replaced by a continuous upskilling approach. Individuals are encouraged to embrace change and adapt to new technologies and ideas throughout their lives. Micro learning modules, delivered through neural interfaces, allow individuals to acquire bite-sized pieces of knowledge on the go. These modules are tailored to specific skills or competencies, enabling learners to customize their learning paths based on their career goals and interests.

Social and Emotional Learning (SEL)

Recognizing the importance of emotional intelligence, the education system in 2500 places a strong emphasis on Social and Emotional Learning (SEL). Courses dedicated to mindfulness, empathy, and effective communication are integrated into the curriculum, preparing students not only for academic success but also for personal and professional fulfilment. Virtual reality environments are used to simulate social interactions, allowing students to practice and develop their interpersonal skills in a safe and controlled setting. This approach fosters a supportive and inclusive learning environment, nurturing well-rounded individuals.

Ethical and Cultural Literacy

In the globalized world of current scenario, ethical considerations and cultural literacy are foundational aspects of education. Courses on ethics, diversity, and cultural understanding are integrated into the curriculum to prepare students for responsible and respectful global citizenship. Interactive simulations challenge students with ethical dilemmas, requiring them to navigate complex moral landscapes. This immersive experience promotes ethical decision-making and prepares students to contribute positively to society.

Assessment and Credentialing

Traditional exams and grades have given way to a more holistic and dynamic assessment system. Continuous assessment through real-world projects, peer evaluations, and AI-based analysis of individual progress provides a comprehensive view of a student's abilities. Block chain technology is widely adopted for secure and transparent

credentialing. Decentralized digital portfolios capture a learner's achievements, skills, and competencies, allowing employers and academic institutions to assess an individual's capabilities beyond traditional credentials.

Inclusive and Accessible Education

In 21st century, education is accessible to all, irrespective of socio-economic background or physical abilities. Advanced assistive technologies cater to diverse learning styles, ensuring that every individual can participate fully in the learning process. Virtual classrooms with real-time translation capabilities break down language barriers, fostering global collaboration. Augmented reality tools assist individuals with disabilities in navigating physical spaces, making educational environments more inclusive. In this century, education in English language and literature has undergone significant transformations, with innovative pedagogies and curricula playing a crucial role in enhancing the learning experience. Here are some key trends and approaches:

Multimodal Teaching:

Integration of various modes of communication such as visual, auditory, and kinaesthetic elements to cater to diverse learning styles. Incorporation of multimedia tools, digital storytelling, and interactive presentations to make literature more engaging.

Project-Based Learning (PBL):

Emphasis on collaborative projects that encourage students to explore literature in real-world contexts. Projects can include creating multimedia presentations, organizing literary events, or adapting texts into different formats (e.g., film, graphic novel).

Inquiry-Based Learning:

Encouraging students to ask questions, investigate, and analyse literature independently. Fostering critical thinking skills by guiding students through the process of exploring literature and forming their own interpretations.

Global Perspectives:

Inclusion of literature from diverse cultures and regions to provide a global perspective. Connecting students with international authors, literature, and themes to promote cultural awareness and understanding.

Critical Literacy:

Teaching students to critically evaluate and analyse texts, considering cultural, social, and political contexts. Empowering students to deconstruct texts and understand the power dynamics within literature.

Personalized Learning:

Tailoring instruction to meet individual student needs and interests. Providing choices in reading materials, projects, and assessments to accommodate diverse learning preferences.

Real-World Application:

Linking literature to real-world issues and challenges, fostering connections between classroom learning and the outside world. Incorporating contemporary issues and texts that resonate with students' experiences.

Assessment for Learning:

Shifting towards formative assessment strategies that provide continuous feedback and support student growth. Assessment methods can include portfolio evaluations, self-reflections, and peer assessments.

Cultivating 21st-Century Skills:

Emphasizing the development of skills such as communication, collaboration, creativity, and critical thinking through literature studies. Preparing students for the demands of the modern workforce by integrating these skills into the curriculum.

Conclusion

The educational policy landscape is a testament to the human capacity for innovation and adaptability. Technological integration, interdisciplinary learning, project-based experiences, continuous upskilling, social and emotional learning, ethical literacy, and inclusive practices collectively shape a holistic and personalized education system. As we reflect on the innovative pedagogies and curricula that define education in today's world. It becomes evident that the evolution of learning is a continuous journey. Embracing change, fostering creativity, and prioritizing the development of well-rounded individuals are the cornerstones of education in this futuristic era. Education in NEP 2020 is not merely a means to an end but a lifelong pursuit of knowledge, skills, innovation and personal growth.

Innovative pedagogies and curricula in English language and literature teaching aim to create dynamic and student-centered learning environments that foster a deep appreciation for literature while equipping students with the skills necessary for success in the present century.

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ROLE DIGITAL INDIA IN FOSTERING INDIAN ECONOMY

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Abstract:

The program has a goal and a goal that is to move the country digitally and financially. The initiative will enable people to engage in innovative processes that are essential to the economy moving forward. But implementing it is a big challenge. There are many obstacles in the way of successful implementation of digital illiteracy, poor infrastructure, low internet speed, lack of coordination among various departments, taxation and so on. It is important to focus on these challenges in order to realize the full potential of this program. This requires a lot of hard work and dedication from all departments in the public and private sectors. Implementing this will provide new opportunities to the citizens of the country.

Key words: digital, infrastructure, opportunity, revolution, roadblock

Introduction:

One of the fundamental periods of transformation that we have seen to date is digitization. Digital India was a major program launched by Prime Minister Narendra Modi on July 1, with the aim of connecting rural areas with high-speed internet networks and improving digital literacy. The vision of this program is to transform India into a digitally empowered society and a knowledge economy. The biggest step of the Indian government is to inspire the citizens of the country and connect the Indian economy to the knowledgeable world.

Literature Review:

Midha (2016) concludes that Digital India is a major plan for developing India for the future of knowledge, but due to inadequacy and inaccuracy, its inaccurate implementation fails. Even though the Digital India program faces many challenges, it can lead to a better future for every citizen if implemented properly. Therefore, we Indians must work together to shape the meaning of knowledge. Gupta and Aurora (1) studied the impact of the Digital India project on rural India. Digital schemes have been launched in Digital India to promote agriculture sector and entrepreneurship development in rural areas. The Digital India Program has set a stage for empowering rural Indian women.

Research Methodology:

This paper is based on secondary data and retrieves information from the Internet through journals, research papers and expert opinion on the same topic.

Objectives:

1. To understand the concept of Digital India program.
2. To examine the importance of this program.
3. To find out the challenges to implement this program.
4. To find actual solutions and innovative ideas to make Digital India a possible.

Digital India

This includes providing high-speed Internet connectivity as the main utility for providing services to citizens. Providing a unique, lifelong, online, and genuine digital identity to every citizen. Providing mobile and bank accounts so that citizens can participate in digital and financial space. Easy access to the general service center. Private space to share on a public cloud for every citizen. Government and service on demand Seamless integration across departments or verticals ensures the availability of services in real-time from online and mobile platforms, making all citizens' rights available on portable and cloud, leverage geographical local information systems (GIS) to make decisions in digital transformed services for ease of doing business. Support systems and development

Pillars of Digital India program:

The broadband highway is intended to cover gram panchayats under the National Optical Fiber Network (NOFN) by December 5. Nationwide Internet Infrastructure (NII) will combine network and cloud infrastructure in the country to provide high speed connectivity and cloud platforms to various networks. Government Departments up to Panchayat level.

Unique access to mobile connectivity, Public Internet Program The Access Program will be provided to each General Gram Panchayat with a Common Service Center (CSC) and it is proposed to convert 100,000 Post Offices into multiple Service Centers.

Government IT will be used to make government administration more efficient. There will be integration of services and platforms through IT, UIDAI, payment gateway, mobile service platform, public redress etc. All information will be available electronically.

The purpose of a revolution is to provide people with services, electronic services, education, health, financial inclusion or justice. Information for All My Gov. in is a website that the government has launched to facilitate two-way communication between citizens and the government. Is a means of exchanging ideas or suggestions with the government? Citizens will have free access to information through an open data platform.

IT for the job.

IIT is aiming to train over 5 million people in cities and villages in the IT sector in five years. Providing IT services. The objective is to train three lakh service delivery agents as part of skill development to run viable businesses. It has also emphasized on training of five lakh rural labor force on telecommunication and telecom related services and establishing BPO in every northeastern state.

Harvesting Program:

The Government plans to set up Wi-Fi facilities in all the universities of the country. All books will be converted to e-books. Email will be the primary mode of communication between governments. A bio-metric attendance system will be installed in all central government offices where recording of attendance will be done online.

Benefits of Digital India Program:

- ❖ Digital India Mission will make all government services available in general service delivery shops in the country. This will promote comprehensive consolidation, enabling all citizens of the country to access education, health care and government services. People can get good advice about healthcare. Those who cannot afford schools / colleges can get the opportunity to study online.
- ❖ Even though there is more data transparency, they will be available to the citizens of the country.
- ❖ Governance will help reduce corruption and get things done faster.
D. The digital locker facility will help citizens to keep their important documents such as PAN card, passport, mark sheet, digital.
- ❖ It will help to do things easily. For example, when we need to open an account, we will provide the official information of our digital locker, where they can verify our documents. This will save you time and reduce the pain of standing in long queues to get our documents.
- ❖ It will help reduce paperwork and reduce paperwork, Cash. Digital India Mission is far from a cashless transaction.
- ❖ It can help small businesses. People can use online tools to grow their business.
- ❖ It can play an important role in GDP growth. According to analysts, Digital India can boost GDP by \$ 3 trillion by 5b. According to the World Bank's report, per capita GDP in mobile and broadband penetration in developing countries has increased by 8.88 and 0.31% respectively.

- ❖ This program will generate a large number of jobs directly or indirectly in the fields of IT, Electronics and Telecommunications

Challenges:

High level of digital illiteracy is one of the biggest challenges in the success of Digital India program. Low digital literacy is one of the main obstacles in the transformation of technology. According to the ASSOCHAM-Deloitte report on Digital India, November 5, nearly 50 million Indians are still not on the Internet.

- It is also a great challenge to know the Digital India plan and to raise awareness of its benefits in general.
- Connecting with each town, city and city is a big task. Connecting 250000 gram panchayats with national optical fiber is not an easy task. The biggest challenge is to make sure that every panchayat point of broadband is fixed and functional. It has been found that 67% of the NOFN points are not functional even at the experimental stage.
- This. The speed of the Internet is a key component of facilitating the online delivery of various services. In India, the Internet is slow. According to Akamai's report for the third quarter, 3K on internet speed, India is ranked 105th in the world on average internet speed. This category is the lowest in the entire Asia Pacific region.
- According to the ASSOCHAM-Deloitte report, issues related to taxation and regulatory guidelines have become a roadblock in identifying Digital India's vision. Some common policy barriers include the lack of clarity in FDI policies that have impacted e-commerce development.
- Digital. One of the biggest challenges facing the Digital India program is the development of slow and infrastructure. India's digital infrastructure is completely inadequate to withstand the growing growth in digital transactions. India needs more than 1 million hotspots compared to the availability of around 317 hotspots to reach the global reach, according to the ASSOCHAM-Deloitte report.
- Private participation in Government projects in India is low due to long and complex regulatory processes.
- Government. Many government-issued request proposals are not taken as competent private sector organizations are not commercially competent. The ASSOCHAM-Deloitte report shows that more than 55,000 villages are currently deprived of mobile connectivity due to the fact that it is not commercially viable for service providers to provide mobile connectivity services at such locations.
- There is a wide digital divide between urban and rural India. So far the funds have not been effectively deployed to cover the cost of infrastructure development in the rural areas.
- There are over 100 languages and dialects in India. The availability of digital services in local languages is a major barrier to digital literacy.
- Fear of cybercrime and a breach of privacy has become a barrier to digital technology. Most technology, including cyber security tools, is imported. We do not have the necessary skills to detect hidden malware. We currently have no top-level experts for this top job. According to NASSCOM, India needs 1 million trained cyber security professionals by 2025. The current number is 62000.

Suggestions:

- Digital literacy is the first step in empowering citizens. People need to know how to protect their online data.
- To make this program successful, a comprehensive awareness program will have to take place. In order to increase the use of the Internet, it is necessary to educate and inform the citizens about the benefits of Internet and service, especially in rural and remote areas.
- The digital division needs to be addressed. M. Product content is not the power of government. The mission requires content and service partnerships with telecom companies and other companies.

- Infrastructure. Sustainable development of digital infrastructure requires the exploration of PPP models.
- Rural. The private sector should be encouraged to develop the last mile infrastructure in rural and remote areas. Adequate taxation policies, rapid approval of projects, are needed to encourage the private sector.
- The success of the Digital India project depends on maximum connectivity with minimum cyber security risk. We need a strong anti cybercrime team that maintains the database and protects it around the clock.
- To enhance our skills in cyber security, we need to introduce cyber security courses at the degree level and encourage international certification organizations to launch different skills based cyber security courses.
- Various. There is a need for effective participation of different departments and demanding commitment and effort. Different policies in different sectors should support this goal.
- For successful implementation, various laws that have hindered the growth of technology in India have to be amended for a very long time.

Conclusion:

The vision of Digital India is grand. This is a big step towards building a truly strong nation. If successful, it transforms citizens' access to multimedia information, content and services. However, the target is still far away as most of the nine pillars of the Digital India Mission face serious challenges in implementation. Each pillar needs constant attention to ensure that the program does not fail. In fact, we should all be mentally prepared for this change and be prepared to face the challenges of implementing this policy, only then can this vision be realized.

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START-UP AND ENTREPRENEURSHIP PERCEPTION AMONGST COLLEGE STUDENTS IN LATUR DISTRICT

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Introduction:

The Start-up unrest has meaningfully impacted the perspective of many individuals across the world in the new couple of many years. The consistently developing information and information with the innovative unrest has made positive conditions for the modern development across the globe. Development is the key of progress for each country. May it be in science, innovation, and medical services or in business or business; advancement has contacted and reformed each human action. It is assuming an imperative part in making human way of life more straightforward and better; and by giving openness, similarity to utilize time. Remembering it, the Service of Trade and Industry has zeroed in on advancing business, advancement and new companies in India beginning around 2016.

India has emerged as the third largest ecosystem for startups globally with over 62,200 Department for Promotion of Industry and Internal Trade (DPIIT) - recognized startups across 636 districts of the country till January, 2022. India ranks second in innovation quality with top positions in the quality of scientific publications and the quality of its universities among middle income economies (India, 2022). Off course, there are number of opportunities in the innovation and entrepreneurship sector in the next few years, but there are some challenges too. However, the students from science and technology background are getting multiple opportunities in medical, pharmacy and IT sectors; the commerce graduates are also seeking opportunities in entrepreneurship. But the major challenge is to create an innovation and startup ecosystem in the rural and backward regions of the country.

Latur is considered as an education hub in the Marathwada region of Maharashtra State. It has created its identity with its unique *Latur Pattern* across the country. But still, geographically and economically it is considered as one of the backward districts in the state. The problems like draught, lack of water resources and lack of industries are seen as major obstacles in the path of development of this educationally forward district. The Commerce graduate students from the district are hardworking and capable of getting good job opportunities in the Western part of Maharashtra in the cities like Pune, Mumbai, Nashik etc. But if this youth is provided with startup and innovation ecosystem in Latur District itself, then a number of good startups can be brought out from the semi urban area like Latur. Thus the present study is very important in understanding the opportunities and challenges for the commerce graduates in acquiring knowledge and skills for becoming good entrepreneurs.

Review of literature:

Mishra, in his article has focused on the opportunities and challenges for startups and entrepreneurship in India. The research paper concludes that the potential for startups and innovation in India is very huge. To accomplish the goals of faster economic growth, India needs to sow the seeds of entrepreneurship through its education system and focus on providing more skill based education across the nation (Mishra, 2017).

Jayanthi in her article has discussed the status of entrepreneurship in India and the potential for startups in the age of innovation and research. She finds that Concepts like Teach for India, Tata Jagriti Yatra etc. not only help in promotion of entrepreneurship among the youth, but also provide them with hands-on experience. There is a greater recognition that social enterprises could have a role in solving social issues. Further she suggests that, 'What we need to do is to create an environment where entrepreneurs feel confident that they will not face any obstacles if they develop business models for the benefit of the poor' (Jayanthi, May 2019)

Chandiok in her article writes about the startup ecosystem in India and its emerging issues. Further she has focused on social entrepreneurship and problems of women entrepreneurship in India. She concludes that, the promise of an initial capital of ten thousand crores over a period of four years from the government is capable of attracting tenfold

investment by 2022. Credit guarantee for startup lending is the booster dose required to galvanize Indian industry (Chandiok, 2016).

Gopalan *et.al* have studied the Startup Environment in India and the funding issues for new startups in their working paper series submitted to Asian Development Bank. They quote their major finding as, 'empirically, we have seen in this study that the increased competitiveness of states accounts for increased investments in startups within those states. This suggests that when states invest more in R&D, making it easier to file patents, and develop tie-ups with universities and industry by expanding the incubator/accelerator ecosystem, startups benefit from better funding and access to technology and expertise' (S. Gopalan, June 2020).

Singh in his article writes about the future of start-up and entrepreneurship in India seems very bright. Especially, the Government should focus of utilizing the potential of rural and semi-urban students and aspirant entrepreneurs. It is very important to provide infrastructural facilities in the rural and semi-urban areas to aspirant entrepreneurs along-with necessary guidance. Many start-ups have been introduced by rural students in semi-urban and urban areas in the recent past. This is evident that there is a huge scope for rural entrepreneurship in the country (Singh, 2018).

Significance of the study

India has been putting its large potential into startups and entrepreneurship in urban areas only, from last 5 years, but it is not a satisfactory in case of semi urban and rural areas. The reason behind this is lack of incubation centers, lack of appropriate infrastructure, lack of awareness in the educational institutions and the graduating students. Thus, to increase the number of innovations and entrepreneurs in semi urban areas like Latur, the present study is very significant.

Objectives:

The major objectives of the study are:

- a) To study the opportunities and challenges for startups and entrepreneurship in Latur District.
- b) To study the aptitude of commerce graduate students from rural colleges of Latur District towards entrepreneurship and startups.

Research Methodology:

The researcher has used Survey method of research for the present research paper. Analytical and descriptive method will also be used for detailed discussion.

Population and Sample Size:

There are near about 20 grant-in-aid colleges in Latur District which provide commerce education. Approximately there are more than 10000 students seeking commerce education at UG and PG level in Latur District. The researcher has taken 50% of these colleges from 5 Talukas i.e Latur, Nilanga, Renapur, Ausa and Chakur. There are 3 Grant-in-aid colleges and 2 Non-grant colleges in Latur City, 2 Grant-in-aid colleges in Nilanga Tehsil and 1 Grant-in-aid college each in Renapur, Ausa and Chakur Taluka catering commerce education. 100 students from each college are taken as sample. The researcher has used random sampling method for data collection.

Data Collection:

The researcher has collected data by using both primary and secondary sources. Structured questionnaire is used to collect primary data from the students. The researcher has also made use of reference books, research journals, periodicals, newspaper clippings and internet for acquiring secondary data. The collected data is presented with the help of charts, tables and graphs etc.

Results and discussion:

Table No. 1: Sample size and sample distribution

Sampling			
Tehsil	No. of colleges	Urban Students	Rural Students
Latur	5	250	250
Nilanga	2	100	100
Ahmedpur	1	50	50
Udgir	1	50	50
Shirur Anantpal	1	50	50
Total	10	500	500

The researcher has taken a sample of total 1000 students from 10 colleges of 5 tehsils in Latur District. The primary data is collected through online questionnaires and responses were recorded accordingly. Latur being the semi urban city in Marathwada region is known as an education hub. There is one autonomous college, three A grade colleges and 2 colleges on non-grant basis in Latur city itself. The other colleges are taken from other four tehsils namely Nilanga, Ahmedpur, Udgir and Shirur Anantpal.

Table 2: Students perception about startup and innovations

Students perception about startup and innovations		
Tehsil	Know what is startup?	don't know the concept of startups
Latur	410	90
Nilanga	35	65
Ahmedpur	25	25
Udgir	32	18
Shirur Anantpal	22	28
Total	500	500

The study reveals that about 82% students from Latur city are aware about the concept of Startup and innovation while the same ratio is significantly low in other tehsils. It is clearly because of the industrial development in urban area and industrial backwardness in other rural areas.

Table 3: Students interest in entrepreneurship

Students interest in entrepreneurship			
Tehsil	Interested in Entrepreneurship	Not interested in entrepreneurship	Percentage
Latur	260	240	52 %
Nilanga	45	55	9 %

Ahmedpur	21	29	4.2 %
Udgir	20	30	4 %
Shirur Anantpal	32	18	6.4 %
Total	500	500	100 %

Nearly 52% students from Latur tehsil were found interested in entrepreneurship from the total respondents. But there is a very low response from all other tehsil students. Only 9% students from Nilanga were interested in entrepreneurship while students from Ahmedpur, Udgir and Shirur Anantpal were found least interested in entrepreneurship.

Table 4: Students awareness about local industrial opportunities

Students awareness about local industrial opportunities		
Tehsil	Opportunities in organized sector	Opportunities in unorganized sector
Latur	321	179
Nilanga	61	39
Ahmedpur	29	21
Udgir	36	14
Shirur Anantpal	37	13
Total	500	500

Majority of the respondents seek opportunities in organized sector. They feel more secure in organized sector and hence prefer to start a venture in organized nature. Very few respondents were seen interested in unorganized sector. Therefore they don't feel comfortable in organized industries.

Table 5: Student's perception towards sectoral opportunities in entrepreneurship

Student's perception towards sectoral opportunities in entrepreneurship			
Tehsil	Agriculture and allied sector	Manufacturing sector	Service Sector
Latur	120	112	268
Nilanga	64	12	24
Ahmedpur	58	15	27
Udgir	54	08	38
Shirur Anantpal	72	05	23
Total	368	152	480

Students from Latur tehsil largely agree that they seek opportunities in service sector like banking, insurance, IT, communication and logistics etc. but in case of students from rural backgrounds the scenario is different. Students believe that they have better opportunities in agriculture and allied sectors for entrepreneurship. More than 50% students from each of the talukas seek potential for entrepreneurship in agriculture and allied sectors like dairy, poultry and so on.

Summary and Conclusion:

The study reveals that majority of the students exposed to urban areas are mostly aware about startup innovations and entrepreneurship opportunities while the students from rural background were not aware about these opportunities. At the same time students are more comfortable about organized sector than the unorganized sector. Therefore it can be said that there is a huge scope in promoting startup and innovation amongst students in rural areas.

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ARTIFICIAL INTELLIGENCE FOR BUSINESS TRANSFORMATION

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Abstract:

One of the rapidly expanding fields that is gaining greater attention in the corporate sector is Artificial Intelligence (AI). Artificial Intelligence is already being used in a wide range of industries, including business and daily life. The corporate sector may become dependent on quicker, less expensive, and more accurate marketing strategies as a result of the use of AI. By utilizing AI in their marketing strategies, an entrepreneur can increase audience reaction and establish a strong competitive advantage over other online firms. In addition to marketing, it can revitalize businesses through creative ideas. It also provides solutions for challenging jobs, which contributes to the rapid expansion of businesses. Therefore, we will talk about the expansion of the business sector and entrepreneurs using AI Technique in Marathwada Region of Maharashtra State.

Key words: AI, Business Management, Development.

Introduction:

The word "artificial intelligence" is becoming more and more common, yet it doesn't have a clear definition. It is the endeavor to imbue machines with intelligence, which is the attribute that permits an organism to act sensibly and preemptively within its surroundings. Artificial Intelligence can be defined technically as the process of integrating cloud computing, network devices, robotics, computers, and digital content generation with a variety of business processes, systems, and day-to-day activities. AI computing has existed in the past, is present, and will continue to do so. Future marketing initiatives must include the growth and development of artificial intelligence. Artificial Intelligence software is being used by businesses on a daily basis to streamline internal procedures, cut costs, shorten turnaround times, and increase productivity. The speed at which technology is developing is unparalleled.

AI and Business:

AI is quickly taking center stage in the daily digital world, and the marketing and advertising industries are no exception. From caustic and intelligent Siri to Tessa's self-driving vehicles to Google AI that can learn video games in few hours, Artificial Intelligence is transforming industries one by one. Artificial Intelligence can be used for a variety of tasks, such as identifying patterns in data to reduce market risks, improving customer service with virtual personal assistants, or even analyzing millions of documents on a company's computers to identify compliance issues. However, businesses have only just been able to foresee and imagine the potential that robotics and Artificial Intelligence may offer to the corporate sector in the future. Artificial Intelligence makes use of self-learning systems through the use of instruments such. Thus, among artificial intelligence's principal business advantages over human intelligence is its extreme scalability, which leads to enormous cost savings. Additionally, rule-based programming and consistency in Artificial Intelligence help businesses reduce errors. Its endurance, together with ongoing enhancements and process documentation capabilities, results in profitable company prospects. Artificial Intelligence applications leverage a range of technologies, such as computer vision, robotics, machine learning, speech recognition, and natural language processing. These technologies offer a multitude of commercial prospects. Artificial Intelligence can be obtained through machine learning, and one way to comprehend machine learning is through deep learning, which is one of its branches. Deep learning primarily focuses on algorithms that are powered by the structure and functions of the human brain. Similar to all other domains, marketing has been profoundly impacted by the arrival of AI.

AI and future of Business:

AI is anticipated to increase the impact in the near future, for example. Salespeople will be replaced by robots, and websites will be automatically updated and reformatted using data from eye monitoring. Without a doubt, as new marketing trends arise as a result of AI, research on marketing will change and lose significance. The field of

marketing is and will continue to undergo fast transformation due to advancements in artificial intelligence. The rate at which this shift is occurring will also completely alter the field of marketing in industry, research, and academia. It will be extremely difficult for the firms to change in response to the shifting marketing landscape. With the advent of new technology, businesses will need to continuously train their staff. Utilizing AI is seen as science fact rather than science fantasy.

AI for Business Management:

Artificial Intelligence (AI) is used in many business processes across a range of functional domains and business operations. One of these is marketing, which is thought of as the business's central component. The marketing environment is being altered by Artificial Intelligence (AI), and in the near future, it will undergo a full transformation. Although marketing is the key business applications inside AI nowadays and early adopters are attempting to produce value from it (Bughin et al. (2017), the literature on this aspect are sparse when both of the disciplines are merged (Wierenga, 2010). Additionally, Wierenga (2010) noted that there is a dearth of publications on AI in marketing and AI literature. As per Martínez-López & Casallas (2013), there were fewer than 50 papers on marketing and Artificial Intelligence in business-related journals on Scopus.

Goals of the Research:

The following objectives are the focus of the research:

- To determine how Artificial Intelligence affects business.
- Making suggestions for tactics or solutions for the efficient application of AI technology in the workplace.

Literature survey:

"Artificial Intelligence is the skill to make computers intelligent," according to Demis Hassabis, the founder of Deepmind, Google's AI company (Ahmed, 2015)." The most generally used definition is also the most appropriate given that Artificial Intelligence is a general phrase that can refer to a wide range of indications. Artificial Intelligence (AI) encompasses several subcategories, such as machine learning and deep learning that produce practical applications of AI, such as picture recognition, voice recognition, virtual assistants, and search suggestions. The term Artificial Intelligence (AI) describes the computer-assisted analytical process that aims to create automated systems that meet the definition of intelligence. It is an automated system that processes data so that intelligent beings can carry out jobs more successfully. As per the statement of Guruduth Banavar, IBM's supervisor of AI research, there exists a wider range of diverse kinds of Artificial intelligence. Although these technologies differ in terms of their functionality and cost, their overall goal is to imitate human intellect in technologies in order to give them intelligence. Advancements in AI and its applications across multiple fields have led to the development of AI solutions that are clearly advantageous and profitable for marketing professionals. Due to the increased focus on digital marketing over traditional marketing techniques, Artificial Intelligence (AI) technologies are being used with the abundance of data. Marketing managers can benefit from AI technologies in a number of ways, such as lead generation, market research, social media management, and customer experience customization (Sterne, 2017). In the realm of marketing, Artificial Intelligence (AI) technologies can be broadly categorized as vendor-provided software and customized AI systems for personalized utilization.-as-a-service.

Research Techniques:

The researcher used a qualitative research approach to carry out this investigation. The main purpose of the qualitative technique is exploratory research, which is modified to understand the motivations, viewpoints, and opinions in order to address the study topic. Qualitative research is the ideal option because the goal of the study is to understand the influence of Artificial Intelligence on marketing from the perspective of marketing experts. Primary and secondary sources are included in the search for data collection. In order to address the research problem, the researcher first obtained primary data, which was obtained through the interview method. A variety of books, journals, articles, websites, and blogs are also included as secondary data sources. Professionals in marketing from the Marathwada -based companies are interviewed. Ten people make up the sample size.

Categorization based on the Knowledge about AI

Introduction to AI	No. of respondents	Percentage
Yes	10	50
No	10	50
Total	20	100%

Source: Primary Data

The survey analysis and table results indicate that a mere 5% of participants reported using Artificial Intelligence (AI) in their organization. Therefore, additional research on the application of AI in business was done on ten respondents.

Advantages of AI in business:

AI would be beneficial in boosting productivity and saving time in the marketing operations, and it is now clear that AI assisted the business in streamlining its marketing procedures. It contributed to higher conversion rates, a clearer grasp of customer data, and more practical marketing decisions. Above all, it contributed to raising the ROI. The AI-based software's findings can be applied to a variety of tasks, such as developing new products and setting prices. The primary benefit of implementing AI-based software in marketing is that it allows the business to offer clients better services and greater value, ultimately resulting in the highest possible degree of customer happiness. As a result, 40% of businesses used AI to develop their marketing strategies. Improved data analysis and efficient management of marketing procedures are other advantages; as a result, 30% of businesses concentrated on using AI for decision-making.

AI and Business Challenges:

Seventy percent of the respondents (fig. 5) stated that the biggest obstacle to AI integration is technological compatibility. In order to address the compatibility issue, the company worked on making it simple to integrate their system with the main CRM system. It continues to be a significant burden for the business, despite constant efforts to improve the procedure. According to 30% of respondents, the biggest obstacle for team functions following AI integration is a lack of technical expertise. A company's adoption of new technology is undoubtedly a process of change, and it's critical to recognize and successfully navigate any obstacles ahead of time. Companies that want to gain a competitive edge shouldn't be hesitant to adopt new technologies.

AI and Marketing:

In fact, the application of AI in marketing alters the general dynamics of the company. In a similar vein, it modifies the company's strategies. Prior to implementing AI in marketing, the main tactics were to expand product offerings and boost marketing budgets. Following the adoption of AI, marketing managers were drawn to business intelligence, which provided them with a greater grasp of patterns in sales, marketing, and operations. They created predicted algorithms based on the data to identify potential future tactics. It contributed to increased efficiency and responsiveness. Additionally, the business is choosing which AI investments to make in the future. The organization began concentrating on social media reach, personalization, better data collection, SEO, payment processes, and improved sales after implementing AI, and all initiatives are now directed toward these goals.

Conclusion:

The purpose of the article was to investigate the effects of Artificial Intelligence on business from the standpoint of a Marathwada entrepreneur. Several procedures were taken in order to accomplish the research's goal and provide answers to the research questions. Initially, a thorough literature analysis was emphasized, providing a thorough grasp of Artificial Intelligence (AI) and its application in business by including the viewpoints of various academics. Secondly, the investigator employed the qualitative research approach, conducting semi structured interviews with ten distinct entrepreneurs from ten distinct Marathwada enterprises. The main conclusions of the study indicated

that competitive pressure, media attention, digital maturity, and customers are the main influencing variables in incorporating AI in the business sector. A variety of responses were obtained from the respondents regarding the findings of the advantages of incorporating AI in marketing.

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RURAL AGRICULTURAL ECONOMICS

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A) Abstract: India is majorly agriculture based country. As per 2022-23 economic survey of India around 58 % of its population works in agriculture industry and the sector contributes nearly 18 % of nations G.D.P. India ranks 2 nd in the worldwide agriculture production. Agriculture also contributing vital role in the development of state of Maharashtra. As per 2022-23 economic survey of Maharashtra nearly 50 % of population involves in agriculture sector. The state economy is growing 6.8 % and agriculture industry is contributes 10.20 % growth rate. Overall it shows that since agriculture plays key role in the India as well as Maharashtra economy.

India has 69 % of its population living in rural area as per 2011 census. In the state rural population is nearly 55 %. Rural population of country is mainly working in agriculture sector. As a conclusion both rural population and agriculture sector are directly inter-dependant and playing important role in Indian economy.

This research paper presents the importance of rural agriculture economics , aiming to identify the challenges faced by farmers, the present opportunities for growth and proposes strategies for sustainable (environment protection based) development. It includes both quantitative and qualitative analyses, utilizing data from agricultural information and government reports.

B) Keywords: Rural Agriculture, Economy, Development, Production Factors, Market views, Government Policies, Sustainable growth, Challenges, Opportunities.

C) Introduction: Agricultural economics is the deep study of the allocation, distribution and utilization of the resources used with the commodities produced in the agriculture. According to Prof. Hibbard agriculture economics is the study relationship arising from the wealth-getting and wealth-using activity of man in agriculture. The agricultural sector plays a vital role in India as well as Maharashtra's economy, with a significant portion of the population dependent on rural agriculture. This reserch paper provides an overview of the importance of agriculture in the country and the state. Agriculture economics is a multidimensional field encompassing the economic aspects of agricultural production, distribution, and consumption in rural areas. It involves the study of various factors influencing the economic well-being of rural farmers. The overall agricultural sector, and the rural population depends on agriculture sector. In the context of Maharashtra, a state with a significant agrarian base, understanding rural agriculture economics seeking needs for sustainable growth.

This study also focussing on present challenges and opportunities in the the rural agriculture sector. It shows the needs for the development of infrastructure facilites. It inclues power supply with cheap rate, availability of water, supply of graded seeds and fertilisers. Financial support plays important factors in the development of rural agriculture. The government policies provides backbone to the agricultural development. Farmers subsidies, financial assistance, crop insurance, supply of agriculture inputs are the government tools to boost the speed of agriculture development. In short rural agriculture economy has a good potential to support India's overall growth.

Rural agriculture in India is diverse, encompassing a wide range of crops and farming practices. Major crops include rice, wheat, pulses, sugarcane, and cotton. Farming is often small-scale, with a significant portion of the population engaged in subsistence agriculture. Traditional farming methods coexist with modern techniques, and factors like monsoons heavily influence crop yields. Irrigation challenges persist, and farmers face issues such as water scarcity and erratic rainfall patterns. Government initiatives aim to support farmers through subsidies, credit facilities, and technology adoption. Additionally, rural communities often practice mixed farming, integrating livestock rearing with crop cultivation for sustainable livelihoods. Despite challenges, agriculture remains a crucial part of India's rural economy, providing employment to a substantial portion of the population. Ongoing efforts focus on enhancing productivity, sustainability, and the overall well-being of farmers.

D) Importance of the study : Agriculture economics and rural developments both are closely related to each others. Hence the study of rural economics is largely depends on the agriculture. Agriculture economics is the applied field which concerns with the application of economic theory regards with production and distribution of agriculture production. If we refers the history of the developed countries, one can observe that agriculture has played an important part in the process of their welfare and development. If development is to occur, agriculture must be able to produce a surplus of food to maintain the growing non- agricultural population in the economy.

Since food is more essential for life than are the services provided by merchants or bankers or factories, an economy cannot shift to such activities unless food is available. Unless food can be obtained a country cant develop industrially until its farm areas can supply its towns with food in exchange for the products of their factories. Economic development requires a labour force. In an agricultural country most of the workers needed must come from the rural areas. Thus agriculture must not only supply a surplus of food but it must also be able to produce the increased amount of food with a relatively smaller labour force.

Objectives :

Following objectives considered while preparing the research paper

1. To study the Importance of rural agriculture economy of India and Maharashtra.
2. To study the challenges and opportunities in the agriculture sector.

Details about rural agriculture economy :

While discussing the agriculture economy of rural areas it is necessary to following points which shows the importance of the agricultural economics of India:

3. **Small holding Farming:** A significant portion of agriculture in India is characterized by smallholder farming, where farmers own relatively small plots of land. This poses challenges related to economies of scale, mechanization, and technology adoption.
4. **Crop Diversity:** India is known for its diverse agro-climatic zones, leading to a wide variety of crops being cultivated. The economic dynamics vary across regions and crops.
5. **Government Policies:** The Indian government plays a crucial role in shaping agricultural policies. Subsidies, minimum support prices (MSP), and various schemes aim to support farmers, enhance productivity, and ensure food security.
6. **Market Access:** Issues related to market access, transportation, and infrastructure can impact farmers' ability to sell their produce at remunerative prices. Initiatives like the National Agricultural Market (eNAM) aim to create a unified market platform.
7. **Technology Adoption:** The adoption of modern agricultural practices and technologies, such as precision farming, genetically modified crops, and improved irrigation methods, can significantly impact productivity and incomes.
8. **Rural Credit and Finance:** Access to credit is crucial for farmers, especially smallholders. The availability and affordability of credit influence agricultural practices, input usage, and investment in technology.
9. **International Trade:** India's agricultural sector is influenced by global markets and trade policies. The country both imports and exports various agricultural commodities, and international prices can impact domestic farmers.
10. **Sustainability and Environmental Concerns:** Sustainable agricultural practices, including organic farming and agroecology, are gaining attention due to concerns about environmental degradation and climate change.
11. **Farm Income and Livelihoods:** Improving farm incomes and rural livelihoods is a central goal. Diversification into allied activities such as dairy farming, poultry, and fisheries is common to supplement income.

12. **Challenges and Solutions:** Challenges like water scarcity, soil degradation, and the impact of climate change require innovative solutions. Research and development in agriculture are essential for addressing these challenges. Efforts are ongoing to address these factors and promote a more sustainable, efficient, and inclusive agricultural sector in India. Government policies, technological advancements, and community initiatives play pivotal roles in shaping the future of agricultural economics in the country.

key aspects of the agriculture sector's economy:

The agriculture sector plays a significant role in the Indian economy, contributing to employment, food security, and rural livelihoods. Here are key aspects of the agriculture sector's economy in India:

Contribution to GDP: Although the share of agriculture in India's Gross Domestic Product (GDP) has been decreasing over the years due to the growth of other sectors, it remains a crucial contributor. Agriculture is 18% of India's G.D.P.

Employment: Agriculture is a primary source of livelihood for a large portion of the population, particularly in rural areas. The majority of farmers in India are smallholders, and agriculture provides employment to a significant percentage of the workforce.

Crops: India is a major producer of various crops such as rice, wheat, pulses, sugarcane, cotton, and fruits and vegetables. Crop patterns vary across regions due to diverse agro-climatic conditions.

Livestock: Livestock farming, including dairy and poultry, is an integral part of the agriculture sector. It contributes to both agricultural and rural economies.

Production Factors:

- a. **Land Use and Ownership:** The distribution of land holdings and land tenure systems impact agricultural productivity. Land consolidation and efficient land-use policies contribute to increased yields.
- b. **Labor Dynamics:** Availability, skills, and migration trends influence the labour dynamics in agriculture. Mechanization and skill development programs play roles in optimizing labor use.

Income and Livelihood:

- a. **Income Disparities:** Variations in farm size, crop choices, and access to markets contribute to income disparities. Diversification and value addition strategies can enhance farmers' income.
- b. **Non-Farm Income Sources:** Examines the role of non-farm activities, such as agro-processing and rural enterprises, in supplementing household income. Government policies supporting diversification and entrepreneurship.

Market Dynamics:

- a. **Market Access:** Challenges related to transportation, market infrastructure, and market information. Strategies for improving market access, including infrastructural development and digital platforms.
- b. **Price Volatility:** Analyzes factors contributing to price fluctuations in agricultural commodities. Examines interventions like price stabilization mechanisms and futures markets.

Government Policies and Interventions:

- a. **Subsidies and Support Programs:** Evaluates the impact of subsidies, credit facilities, and insurance schemes on farmers' economic stability. The effectiveness of targeted support programs for different crops and regions.
- b. **Technology Adoption:** Examines policies encouraging the adoption of technology, precision farming, and sustainable practices. The role of research and extension services in disseminating agricultural innovations.

Environmental and Sustainability Considerations:

- a. Resource Management: Sustainable practices for water management, soil conservation, and biodiversity preservation. Policies promoting agro-ecological approaches for long-term sustainability.
- b. Climate Change Impact: Assessing vulnerabilities to climate change and developing adaptive strategies. Government initiatives for climate-resilient agriculture.

Challenges and Future Prospects:

- a. Water Scarcity: Strategies for efficient water use, watershed management, and rainwater harvesting. Technological solutions to mitigate the impact of water scarcity.
- b. Market Linkages: Enhancing market linkages, promoting value chains, and improving farmers' bargaining power. Encouraging cooperatives and farmer producer organizations
- c. Land Fragmentation: Explores the challenges posed by small and fragmented land holdings on productivity and income levels.

Opportunities for Growth:

- a. Technological Interventions: Discusses the role of technology in enhancing agricultural practices, including precision farming, smart irrigation, and use of advanced machinery.
- b. Diversification of Crops: Explores opportunities for crop diversification and the cultivation of high-value crops to increase farmers' income.
- c. Government Initiatives: Analyzes the impact of government policies and schemes on rural agriculture, with a focus on subsidies, credit facilities, and insurance.

H) Agriculture economy of Maharashtra :

Maharashtra is one of the leading states in India in terms of agricultural production and major contributor to the country's agricultural economy. Here are key aspects of the agriculture economy of Maharashtra:

1. Diverse Agro-climatic Zones: Maharashtra has diverse agro-climatic conditions, allowing for the cultivation of a wide variety of crops. The state has regions suitable for growing cereals, pulses, fruits, vegetables, sugarcane, oilseeds, and more.
2. Major Crops: Some of the major crops cultivated in Maharashtra include sugarcane, cotton, soybeans, pulses, oilseeds, fruits (such as grapes, oranges, and mangoes), and vegetables. The state is known for its production of cash crops like sugarcane and cotton.
3. Horticulture and Floriculture: Maharashtra is a significant producer of horticultural crops. The cultivation of fruits, vegetables, and flowers is an essential component of the state's agriculture.
4. Irrigation: The state has made considerable progress in irrigation infrastructure. Major dams and canal networks contribute to efficient water management, especially during the crucial Kharif and Rabi seasons.
5. Cooperative Movement: Maharashtra has a robust cooperative movement in agriculture. Agricultural cooperatives, especially in the sugar and dairy sectors, play a crucial role in supporting farmers and ensuring fair prices for their produce.
6. Pulses and Oilseeds Production: Maharashtra has been focusing on increasing the production of pulses and oilseeds to achieve self-sufficiency and reduce dependence on imports.
7. Livestock and Dairy Farming: Livestock farming, including dairy production, is an integral part of Maharashtra's agriculture. The state has a significant dairy industry, with cooperatives like Amul having a presence.

8. **Challenges:** Like other states, Maharashtra faces challenges such as water scarcity, uneven distribution of rainfall, land degradation, and the need for sustainable agricultural practices.
9. **Agro-processing Industry:** Maharashtra has a well-developed agro-processing industry, contributing to value addition in agricultural products. This includes sugar mills, food processing units, and wineries.
10. **Government Initiatives:** The state government has implemented various initiatives to support farmers, enhance agricultural productivity, and promote sustainable practices. These initiatives include subsidies, financial assistance, and technology adoption.

Conclusion: Overall study shows the complex dynamics of rural agriculture economics in India and Maharashtra. This paper emphasizes the need for integrated policies addressing production, income, market, and sustainability factors. A liberal approach involving government, farmers, researchers, and communities is essential for strengthening and prosperous rural agricultural economies. This study concludes following

1. Agriculture sector is yet playing vital role in the Indian economy.
2. Rural economy facing several challenges but can convert in to opportunities.
3. Study shows the need of governments initiatives for development of agriculture sector.

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EXPLORING THE ENVIRONMENTAL AND CLIMATE CHANGE CONSCIOUSNESS IN "KADVI HAWA" (2017)

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Abstract:

In recent decades, the global concern over climate change and its catastrophic impact on both the environment and humanity has escalated, and ultimately being the realistic mirror of the current social culture Indian cinema, has actively engaged with this critical issue, presenting it through the lens of compelling narratives. A noteworthy addition to this cinematic exploration is the Hindi film "Kadvi Hawa" 2017 (Bitter Wind), skillfully directed by Nila Madhab Panda. Focused on a drought-stricken village in Bundelkhand, the film adeptly illustrates how climate change intensifies poverty, instigates migration, and sparks socio-economic upheaval in rural India. This paper delves into an analysis of the film's narrative, characters, and cinematic techniques, unravelling how "Kadvi Hawa" brings forth the human stories hidden within the climate crisis. Moreover, the film transcends its immediate narrative to offer a broader commentary on the development policies affecting rural India by all means. By intertwining environmental concerns with the intricacies of human experiences, "Kadvi Hawa" stands as a powerful cinematic testament to the multifaceted impact of climate change on society and development.

Keywords:

Indian cinema, climate change, environmental degradation, socio-environmental issues, socio-political climate change propaganda, water scarcity

1. Introduction:

In the present period, all over the globe civilians have been experiencing various political, social, economic and health-related dark situations making their survival critical and convinced and clarified the world of the cause of climate change by providing various scientific (real/logical?) and moulded historical data by many governments and research institutes to make them believe without any reasoning. The common human being is being manipulated to accept what the authority or sciences say to lead more confusion and havoc in the lives of the common. In the 21st century, heightened awareness of climate change's profound impact on the global ecosystem has spurred discussions on environmental issues, leading all the socio-political, geological, economical cultural issues encompassing health issues too. Cinema, as a powerful medium, plays a pivotal role in shaping and reflecting societal perspectives. India, with its diverse cultural heritage, has embraced this responsibility, with films like "Kadvi Hawa" making a significant mark in the environmental discourse. This film explores the harsh realities of climate change through compelling narratives and poignant characters. By delving into the struggles of communities affected by extreme weather conditions, "Kadvi Hawa" not only raises awareness but also sparks conversations on sustainable practices and societal responsibility. As Indian cinema continues to evolve, its role in addressing and influencing environmental consciousness becomes increasingly crucial, fostering a cinematic landscape that mirrors and impacts our collective understanding of ecological challenges.

2. Background:

Set in the drought-stricken, fictional north-Indian village of Mahua, "Kadvi Hawa" revolves around Hedu (Sanjay Mishra), a sightless father striving to rescue his debt-ridden farmer son Mukund (Bhupesh Singh) from the clutches of the pervasive "suicide-disease" afflicting the village. To alleviate Mukund's debts, Hedu enters into a pact with the ruthless loan recovery agent Gunnu Babu (Ranvir Shorey). In exchange for information about farmers' wages, crucial for coercing loan repayment, Hedu demands clearance of a haunting 42,580 rupee loan burdening his son's life. Embedded in the narrative of agricultural crisis and farmers' suicides in India, the film offers a poignant portrayal of the harsh realities of Global Warming and Climate Change, resulting in natural resource depletion and environmental degradation. The aridity plaguing Mahua and similar villages is a consequence of human callousness.

Despite the persistent anticipation, the government's neglect prevails, and farmers, pursued by relentless loan recovery agents such as Gunnu Babu, often referred to as "Yamaraj," succumb to the pervasive "suicide-disease" afflicting their village. Similarly, "Kadvi Hawa" positions nature at the narrative's core. Through the deliberate use of catastrophic visual imagery depicting scarcity and drought, the film purposefully guides the audience toward a realization of the immediate need for action. As the sightless Heddu navigates the parched land with a stick, devoid of any trace of greenery or water, the filmmaker unveils our collective "Ecological Blindness." The desolate, sombre landscape prompts an urgent awareness and compels us to take action to address the looming threat of Global Warming.

3. Thematic Exploration:

"Kadvi Hawa" goes beyond being a conventional portrayal of environmental crises, delving deep into the intricate web of socio-economic repercussions and the profound human impact of climate change. The film serves as a powerful critique, laying bare the flaws in agricultural policies laid by the government from time to time, that exacerbate the struggles of farmers like the protagonist Heddu in Bundelkhand. It scrutinizes the exploitative nature of the financial system through Gunu Babu's character, who personifies the burdensome loan recovery process that perpetuates rural distress. The narrative also shines a light on the urban elite's indifference to the plight of those grappling with environmental challenges in rural areas. Through its thematic exploration, "Kadvi Hawa" emerges as a compelling commentary on the interconnected issues of policy failures, economic exploitation, and societal apathy, providing a nuanced perspective on the broader implications of climate change on human lives and communities.

The filmmaker underscores the disastrous impact of Climate Change on the cycle of seasons through a classroom dialogue between Kuhu's classmate and the teacher in "Kadavi Hawa." While the teacher repeatedly asserts the existence of four seasons in a year, the boy from "Beehad Mahua" is bewildered, recognizing only summer and winter as the seasons he knows. The claims of rainfall being a full season by his classmates and teachers seem absurd, as in Beehad Mahua, "It only rains two or three times a year, occasionally in winters and sometimes in summer" (*translated*). Heddu, who can sense the devastating effects of Climate Change on the air, describes it as having a pungent smell and being perpetually dry. When Kuhu narrates the classroom incident to a distressed Heddu, he responds, "There used to be four seasons... Air brings clouds and seasons, the fragrance tells that something is wrong with the air; it has fallen sick" (*translated*).

As greenhouse emissions escalate, the mercury rises, rendering the earth arid and stripped of its natural greenery. Heddu's "office," his frequent meeting place with Gunnu Babu, becomes the sole shady spot in the village, standing out amidst a landscape devoid of color. The village, appearing despondent, seems to implore mercy from the Death God Gunnu Babu and the Rain gods. Ramanuj Dutta's cinematography skillfully captures the earth's desperation for rain, portraying a brown, barren, thirsty, and dusty landscape. Simultaneously, a farmer's struggle and yearning for rainfall are encapsulated in Heddu's words, "You are like rainfall in my life" (*translated*), spoken to Gunnu Babu as he transfers a portion of the profit earned using the information provided by Heddu.

Feared by farmers as "Yamraj," Gunnu Babu initially comes across as a malevolent loan recovery agent. However, as Gunnu's narrative unfolds, it becomes evident that he is not the true villain; rather, it is the collective human populace causing havoc on Planet Earth. Originating from Odisha, Gunnu himself falls victim to nature's wrath in the form of frequent cyclones striking his hometown, Kendrapara. Having suffered the loss of his father in a cyclone that wrought devastation in Odisha, he is compelled to move to Mahua to provide for his family—comprising his mother, wife, and two daughters—and to relocate them to Beehad Mahua, deemed a much "safer place" for someone who has witnessed the destruction and catastrophe that water and rains can cause.

The grim and despairing conclusion for both Heddu and Gunnu serves as a stark reminder of an impending doom for the masses. The mournful ending, where Heddu loses Mukund to the suicide epidemic and Gunnu loses his family in Cyclone 6B, mirrors our potential future—an era of complete loss and chaos, from which there is no possibility of return.

4. Cinematic Techniques:

In "Kadvi Hawa," director Nila Madhab Panda demonstrates a masterful command of cinematic techniques to vividly depict the profound impact of climate change. The cinematography, marked by sweeping wide shots, skillfully captures the desolation of the landscape, accentuating the vastness of the environmental challenges confronting the characters. These expansive visuals serve as a poignant visual metaphor, effectively conveying the overwhelming scale of the issue and underscoring the urgent need to address climate change. Panda's intentional use of a muted colour palette plays a crucial role in establishing the film's sombre tone. The subdued colours not only maintain visual coherence but also mirror the harsh and bleak reality faced by the characters as they grapple with the consequences of climate change. This nuanced approach to colour deepens the emotional resonance of the film, immersing the audience in the challenging world depicted on screen. Through these carefully chosen cinematic techniques, "Kadvi Hawa" transcends traditional storytelling, offering a visually compelling and emotionally resonant exploration of the gravity of climate change, effectively communicating the urgency of environmental action.

Besides the portrayal of rural desolated location, the move also adapted the tone and the dress of characters to highlight the very gloom of their survival due to the environmental crisis.

To illustrate the film's nuanced approach, specific scenes, sequences and symbolism are being deployed cleverly, as in the **opening scene and its following sequence, one can easily notice the** powerful visual metaphor – a group of blindfolded villagers walking towards a cliff, representing the collective ignorance and helplessness in the face of impending environmental disaster.

Besides, water is being mentioned frequently in the movie with the use of the flashback technique to highlight the issue and the impact of the climate crisis. The scarcity of water is a recurring motif throughout the film. The scene where Hedu attempts to find water in his barren fields serves as a visceral representation of the agrarian crisis exacerbated by climate change.

Economical crisis, one of the major impacts of the climate change also raised through the confrontation between Gunu Babu and Hedu and their clash for survival and corporate interests, encapsulating the complexities of the climate change narrative.

Another technique of realism is also employed in "Kadvi Hawa", as the movie is full of delineation for its realistic portrayal of climate change, depicting the struggles of farmers grappling with unpredictable weather patterns. The film serves as a wakeup call, urging society to confront the environmental challenges that jeopardize the livelihoods of millions.

The movie sheds light on the socio-economic implications of climate change, emphasizing the need for sustainable practices. By intertwining storytelling with environmental advocacy, "Kadvi Hawa" contributes to the broader dialogue on climate action.

Further the director also remarkably scened the psychological state of mind due to environmental crisis through their relationships within and outside of the family institution.

5. Cultural Context:

"Kadvi Hawa" achieves success by intricately weaving its narrative into the rich cultural tapestry of India. The film's strength lies in its profound connection to the rural realities of Bundelkhand, effectively bridging the gap between urban and rural perspectives. In grounding the storyline amidst traditional farming practices, folklore, and the symbiotic relationship between communities and their environment, the film transcends mere environmental discourse. It transforms climate change from an abstract global issue into a tangible, relatable concern for a broader audience. The cultural authenticity embedded in the film not only enhances its resonance but also fosters a deeper understanding of the challenges faced by rural communities. "Kadvi Hawa" thus emerges as a cinematic masterpiece that not only addresses environmental issues but also serves as a cultural mirror, reflecting the intricate ties between people, their heritage, and the evolving landscape.

6. Conclusion: A Cinematic Call to Environmental Action

Through its poignant storytelling, true-to-life characters and evocative imagery, "Kadvi Hawa" underscores how climate change intersects with and amplifies rural India's existing socio-economic challenges of agrarian distress, water scarcity, banking debt traps, political and financial propaganda and illusionary development. By humanizing the crisis, it makes an emotive appeal for stronger climate action and rational environmental policy to mitigate the sufferings of India's poor who bear the biggest brunt of ecological destruction. As India continues to reel under freak weather events and climate uncertainties, the film's commentary on building inclusive, climate-resilient communities becomes especially relevant. With its balanced storytelling and multidimensional perspective, "Kadvi Hawa" marks an important artistic contribution to the growing cultural discourse on climate change.

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ENVIRONMENTAL ISSUES

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ABSTRACT :

Environmental science is the study of interactions among physical, chemical and biological components of the environment. Environmental science provide an integrated. quantitative and interdisciplinary approach to the study of environmental systems.

Key Words :

Pollution, Atmosphere, Agriculture, Biological, Water, Industries, Human Health. Soil, Noise, Radiations.

MEANING OF ENVIRONMENTAL ISSUES :

Environmental issues are Defined as Harmful effects to earth and its natural systems due to the actions of humans. Although climate change can also occur from natural causes, human behavior has led to an increase in greenhouse emissions.

THE FOLLOWING ENVIRONMENTAL ISSUES ARE :

AIR POLLUTION :

Air is a natural resource and it is a fundamental element of human life as it makes breathing possible. It is the basis for all forms of terrestrial and two-third of all biological species, also one of the important sources for economic development like agricultural and industrial production, energy generation, heating, cooling and so on.

Air pollution can be categorized into two groups ; first kind of pollutants are released into the atmosphere from a specific source, and the second type of pollutants result from chemical changes that take place in the atmosphere. When the amount of such pollutants in the air exceeds a certain level, then the pollution of air is created. Pollutants may be in the form of dust, odours or water vapours. The quantities of pollutants which are dangerous to nature have been determined both by national and international organizations.

EFFECTS OF AIR POLLUTION :

Air pollution has both direct and indirect impact on human body, animal life, plant kingdom, construction materials, climate and entire ecosystem.

- 1) Human Health
- 2) Plants
- 3) Insect Pests
- 4) Materials
- 5) Climate

WATER POLLUTION :

Water is essential for every living body. Every kind of reaction taking place on this earth is dependent on the presence of water in one form or the other. Water covers more than 70 per cent of earth's surface ; 97.3 per cent is in ocean and 2.7 per cent is fresh water. The fresh water is held up in ice cap and glaciers (72.2%), ground water and soil moisture (22.4%), lakes and swamps (0.35%), atmosphere (0.04%) and stream channels (0.01%) (E1-Hinnawi and Hashmi, 1982). Water is considered to be an important factor for assured agricultural India is available in sufficient amount but various factors are responsible for the hindrance of its management, supply and

functions. The country gets about 1900 billion m³ of water every year, 86 per cent of which is surface run off in rivers and lakes.

CAUSES OF WATER POLLUTION :

- Water pollution is mainly due to the following causes.
- Industrial wastes
- Sewage water
- Agricultural wastes
- Release of superheated water
- Addition of waste and oil from refineries

STEPS USED TO CONTROL WATER POLLUTION :

- Sewage treatment
- Effluent Treatment
- Self Purification of Water
- Installation of Treatment Plants
- Enforcement of Standards

AGRICULTURAL POLLUTION

India has made a commendable progress in agricultural production after independence. The foodgrain production has shown a big jump from 2 million tonnes in 1951-52 to 200 million tonnes in 1998-99. The production level was 72.3 million tonnes in 1965-66 which increased to 99.5 million tones in 1969-70 and 108 million tones in 1970-71. Thus, during a short period of five years, production increased by 36 million tonnes at annual growth rate of 7.2 million tonnes per year. This abrupt and augmented jump, often referred as green revolution, was largely due to the increase in area under cultivation, without much use of the chemical inputs. In contrast, during the post high yielding varieties (HYVs) era, i.e. 1971, the net area virtually remained static. A spectacular rise of 67.8 million tonnes in foodgrain production from 108.4 million tonnes in 1971 to 176.2 million tonnes in 1991 has largely come from increased area under HYVs, intensive use of inputs and increased area under irrigation, which enabled farmers to adopt intensive cropping with selected crops (Dhaliwal and Singh, 1994).

The use of modern technology in agriculture has added many new sources of pollution (Dhaliwal and Kansal, 1994). The excessive use of pesticides and fertilizers have led to their accumulation in different components of the environment. The water run off from agricultural lands pollutes lakes and streams causing eutrophication. The burning of rice straw after harvest of the crop causes air pollution. In Punjab alone, more than 10 lac tonnes of paddy straw is burnt in paddy fields every year and it becomes difficult to travel through rural areas during end September to early October. The smoke causes several respiratory diseases like asthma and bronchitis. The dumping of agricultural waste and cattle dung in improper ways creates unhealthy environment around human dwellings. The increased need for industrial goods in agriculture adds to industrial pollution. Agriculture itself is likely to be affected by non-agricultural sources of pollution.

EFFECTS OF AGRICULTURAL ACTIVITIES IN POLLUTION

The following activities are the major source for pollution.

1. Increased agricultural land and field size
2. Use of pesticides
3. Use of Herbicides

4. Use of Fungicides use of Insecticides
5. Use of Organochlorines
6. Use of Organophosphates
7. Increased waste disposal

PESTICIDAL POLLUTION :

India is one of the foremost countries among the third world to start large scale use of pesticides for the control of insect pests of public health and agricultural importance. The use of pesticides in India commenced around 1948-49. Originally, some pesticides like DDT and HCH were imported but with the passage of time, the country progressed well and now there are 400 chemical factories manufacturing 55 basic pesticides. A total of 155 pesticides have been registered for use in India. Pesticide use in India is increasing at 2 to 5 per cent per annum. The consumption rate of pesticides in Indian agriculture stands at about 570 g/ha which is much below the average rate of consumption of over 2.5 kg/ha for USA, 12 kg for Japan and 17 kg for Taiwan.

The pesticides used, 80 per cent are insecticides, 11 per cent fungicides and 7 per cent herbicides. Upto 1971, the major portion of pesticide production as consumed for non-agricultural purposes. From 1972 onward, more than 67 per cent of total consumption has been used in agricultural sector. The consumption of pesticides in India has decreased from 80, 684 tonnes in 1994-95 to 54, 135 tonnes in 1999-2000. This is due to low dosage requirements of many new pesticides and a gradual shift to integrated pest management (IPM) approach.

- Cereals
- Pulses
- Vegetables
- Fruits
- Honey
- Vegetable Oils
- Milk and Milk Products

FERTILIZER POLLUTION

India is the fourth largest producer and consumer of nitrogenous and phosphatic fertilizers. however, the consumption of fertilizers in India stands only at 70 kg/ha, as compared to 236.5 kg in China, 422.4 kg in South Korea, 432.7 kg in Japan and 687.1 kg in Netherlands. The nutrient consumption in India increased very steeply during late 60s and mid 70s and slid down later. between 1972-73 and 1977-78, the nutrient consumption increased from 2.77 million tonnes to 4.29 million tonnes, i.e. nearly 55 per cent ; between 1977-78 and 1982-83, It increased from 4.29 to 6.40 million tonnes, indicating a 50 per cent increase. Furthermore, from 1982-83 to 1987-88, the increase was 40 per cent. Thus, the nutrient consumption in India is tending to become linear from a curvilinear position of the previous decades (Dhaliwal and Singh, 1994)

SOIL POLLUTION

Soil pollution results from excessive use of insecticides, herbicides and fertilizers which adversely affect the physical, chemical and biological properties of the soil. Radioactive substances resulting from explosion of nuclear devices also penetrate the soil from where they enter into food chain and become concentrated in body tissues causing many harmful effects. Ionising radiations bring about genetic changes through mutation and can cause death of many organisms including man. Soil pollutants bring about kill of soil dwelling animals that help in decomposition through consumption of plant debris. many microorganisms involved in nitrogen and phosphorous cycles may be adversely affected.

CAUSES OF SOIL POLLUTION

The following are the main causes for soil pollution

Excavation of earth, especially in towns and cities for construction of new buildings.

Residues from the factories.

Indiscriminate use of pesticides.

Addition of non-degradable domestic wastes like plastic.

CONTROL SOIL POLLUTION ?

Following are some of the measures which can control soil pollution

Minimizing the usage of pesticides.

Periodic change of crops to increase the soil fertility.

Disposal of unwanted garbage created by clinics and hospitals properly either by burning or by burying into the soil.

Minimizing the usage of plastics.

Following the rules and regulations laid down by pollution control board.

NOISE AND RADIATION POLLUTION

Noise pollution is a direct result of technological development. The more technologically advanced a country is, the more acute the problem becomes. Noise, with its ever increasing effects on human health and on the environment, is defined as an acoustic fact which is unpleasant and arouses disturbing feelings or as the totality of unwanted and undesired sounds. The unit of measurement of noise is decibel (dB), which is one tenth of the larger unit called bel (B). A decibel is equal to the faintest sound that can be picked up and heard by the human ear.

Even if noise is not sufficiently loud to constitute direct threat to human health, continuous exposure to noise shortens human being's sleeping hours and reduces his productivity. The decrease in productivity affects both city dwellers and people who work in factories or in the industrial areas. In China, till the third century BC, noise was used as a method of torture instead of hanging men for dangerous crimes. The importance of noise as a pollutant having a deleterious effect on peace of mind and beauty of the environment is increasing every day. Privacy is an environmental value which is not easily measured and the invasion of this privacy by noise pollution constitutes a kind of human deprivation. In India, noise has not occupied a prominent place among the many problems of social and economic development or even among environmental problems. In recent years, however, the effects of noise on human health and the human environment have received more attention.

SOURCES OF NOISE

The main sources of noise are the various means of transport, including motorized vehicles, airplanes and railroads, and the diverse noise arising from the environment, such as the noise produced by factories, loudspeakers, places of entertainments, restaurants, radios, record players, tape recorders, television sets and human beings themselves.

THE EFFECTS OF NOISE POLLUTION

- It affects human nervous system leading to deafness, headache, blood pressure, brain disorders, etc.
- Harsh noise leads to uneasy feelings, short temper, heart disease, and other related problems.

THE MEASURES USED TO CONTROL NOISE POLLUTION

The following steps will be used to control noise pollution.

- Replacing very old machines by new ones.

- Providing labourers in industries with ear plugs and improved sound proof instruments.
- Parking for high sounding vehicles should be only outside the city limits.
- Regulation of loud speakers used in functions.
- Growing broad – leafed plants which can absorb sound.

RADIATION POLLUTION

One of the major sources of environmental concern now-a-days is the production of nuclear power which releases radioactive substances in the environment. Radioactivity is toxicant in the sense that it causes harm to living organisms. Accidents at Three-Mile Island in the United States and Chernobyl in the Soviet Union, both of which released radioactive rays, have increased the public concern world wide about the safety of nuclear power. The management and disposal of the accumulating radioactive wastes remain the key long-term problem facing the nuclear power sector. Wastes related to nuclear power generation occur in a variety of physical and chemical forms and in different class level based on the relative radioactivity of the radionuclides that they contain.

Radioactive wastes can be divided into two categories : High-level wastes and low-level wastes. Both these wastes are temporarily stored at production sites awaiting disposal.

High-Level wastes These wastes are predominantly used as fuel. Uranium oxide is fabricated into small pellets and sealed in metal tubes, which are then assembled in bundles. After about 18 months in the reactor, the fuel bundles need to be replaced. They are intensely radioactive, and some elements in them continue to emit radiation for tens of thousands of years (e.g. plutonium – 239 has a half-life of 24,000 years). Extreme caution must be exercised to ensure that such high-level wastes do not contaminate the air, water and food materials. High level wastes are stored mainly in deep, water – filled pools at the reactor sites to cool them and shield their radiations, and a small fraction is stored dry in concrete containers. Although on-site storage is an adequate means of dealing with these wastes over the short term, eventually long – term solution is required. For the disposal of nuclear fuel wastes on long-term, deep geological formations are required. The buried radioactive materials would have to be encased in non-corrosive (titanium or copper) containers to ensure safe and secure disposal so that radioactive wastes cannot seep into ground water.

Low – level radioactive wastes. These are related to the nuclear energy production and the wastes arising from uranium refineries and fuel fabrication plants. In low-level mines and mill wastes, low-level radioactive wastes are generated from the extraction of uranium from ores. To check the control of low-level radioactive wastes, monitoring of temporary sites is necessary to ensure the safety for the surrounding public.

RADIONUCLIDES

Radiation from human activities has increased since the invention of atom power and introduction of nuclear energy. Different sources produce radiation with different energies and have different biological effects. Ionizing radiations occur when uncharged chemicals are changed into charged ion pairs. There are more than 1000 different nuclides in the atmosphere. Some of them are stable in nature while other can split up into parts and give off radiation, which are known as radionuclides. The radionuclides are the products of the natural decay of uranium and are not extracted during milling process. In addition to acid precursors and heavy metals, uranium tailings also contain a variety of radioactive forms of atoms, or radionuclides, including radium-226, thorium-230, lead-210 and polonium-210. Some of these radionuclides have long half lives. Thorium-230 has a half-life of about 80,000 years, which means that radioactivity from thorium will be present in the tailings for hundreds and thousands of years (Steffen et al., 1987). The pH of the tailing plays a significant role in determining how soluble some of these radionuclides become. Thorium, in particular becomes more available when pH drops to below 4 (Constable et al., 1987). Radionuclides with short-half lives, i.e. upto a few days, may be very dangerous when produced, but the danger does not last,

MAJOR SOURCES THAT LEAD TO RADIOACTIVE POLLUTION TO THE FOLLOWING CATEGORIES :

nuclear power plants

nuclear weapon

Transportation

disposal of nuclear waste

uranium mining

EFFECTS OF RADIATION

The impact of radioactive rays are very crucial. Numerous studies of radiation have revealed some interesting generalizations : (i) Foetuses are more sensitive to radiation than children who, in turn, are more sensitive than adults. (ii) Cells undergoing rapid cellular divisions appear to be more sensitive to radiation than those that are not. (iii) Most, if not all, forms of cancer can be increased by ionizing radiation. The radiation having a high energy can harm the genetic material, especially the chromosomes of the living organisms. Entrance of 500 rads (radiation absorbed dose) of radiation for few days to few weeks can damage the human body. The rad is a unit to measure the amount of radiation energy absorbed per unit of material One rad of alpha – radiation is about four times as damaging as one rad of X-rays. It can also be measured in term of biological effect and the unit is the rem, which is biologically equivalent to one rad of X-rays. Biological effect of radiation leads to birth defects and gives rise to cancer, when the dose of radiation is below 15 rems (Kuphella and Hyland, 1989).

Natural sources of radiation include the rocks, soil, water, air, and even the distant sun and stars. Rocks and soil contain tiny amounts of radioactive substances such as carbon-14, uranium-238, radium-226 and potassium-40. Anthropogenic radiation sources are many and include the entire nuclear fuel cycle, combustion of coal, accidents at nuclear power plants and weapon facilities, medical therapy and diagnosis, scientific research, detonation of nuclear weapons in testing and war, television sets and pacemakers.

CONCLUSION :

It is the responsibility of everyone to protect our environment. Let us fulfill our responsibilities in environmental protection, creating a quality ecological environment and sharing wonderful green living together.

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INNOVATIVE PEDAGOGIES AND CURRICULUM IN EDUCATION

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Abstract:

This research paper critically examines the current state of pedagogies and curriculum frameworks in India, with a specific focus on innovative approaches to teaching and learning. Against the backdrop of a rapidly changing global educational landscape, the study seeks to identify challenges and opportunities within the Indian education system, offering insights into the adoption and impact of innovative pedagogies. The paper draws upon a comprehensive literature review, analyzes existing pedagogical practices, and investigates curriculum frameworks such as the National Curriculum Framework (NCF). Through case studies and best practices, the research highlights successful models that have effectively integrated innovative pedagogies and curriculum changes, emphasising their positive impact on student engagement and learning outcomes. Additionally, the study addresses challenges and barriers hindering the widespread implementation of innovative approaches in Indian education, including resistance from stakeholders and infrastructure limitations. The paper concludes by proposing actionable recommendations for policymakers, educators, and institutions to facilitate the seamless integration of innovative pedagogies and curriculum models, fostering a holistic and dynamic learning environment in India.

1. Background:

The educational landscape in India has undergone significant transformations over the years, shaped by societal changes, technological advancements, and global trends in pedagogy. However, despite progress, the traditional rote-learning approach persists in many educational institutions, limiting the development of critical thinking, creativity, and problem-solving skills among students. The need for innovative pedagogies and curriculum models is increasingly recognized as a means to align education with the demands of the 21st century.

Historically, India has followed conventional teaching methodologies that prioritize memorization and standardized assessments. As the global workforce evolves, there is a growing realization that the education system must adapt to prepare students for a rapidly changing world. Innovative pedagogies, including experiential learning, project-based approaches, and technology integration, have demonstrated success in fostering a deeper understanding of concepts and nurturing essential life skills.

The advent of the National Curriculum Framework (NCF) brought about a shift towards a more holistic and learner-centric approach. However, challenges persist in translating these frameworks into effective classroom practices, necessitating a critical evaluation of the current state of pedagogies and curricula in India.

2. Objectives:

This research paper aims to achieve the following objectives:

2.1 Investigate Current Pedagogical Practices:

- Analyze the prevalent teaching methods in India, emphasizing their strengths and limitations.
- Examine emerging pedagogical practices, including technology integration, collaborative learning, and student-centred approaches.

2.2 Assess the National Curriculum Framework (NCF):

- Evaluate the impact and implementation of the NCF in shaping the curriculum at various educational levels.
- Examine how the NCF aligns with innovative pedagogies and its effectiveness in fostering holistic development.

By addressing these objectives, this research aims to contribute valuable insights to the ongoing efforts to transform education in India, fostering an environment that nurtures critical thinking, creativity, and holistic development among students.

Current State of Pedagogies in India

3.1 Traditional Approaches:

In India, traditional teaching methods have long been characterized by rote learning, memorization of facts, and teacher-centered instruction. While these approaches have proven effective in delivering content, they often fall short in promoting critical thinking, creativity, and problem-solving skills among students. The emphasis on exams and assessments tends to encourage surface-level learning rather than deep understanding. This section aims to dissect the limitations of traditional pedagogies, shedding light on the need for a paradigm shift in the education system.

3.2 Emerging Pedagogical Practices:

Recent years have witnessed a shift towards more innovative pedagogical practices in India. This section explores the integration of technology, collaborative learning, and student-centered approaches. Technology, in particular, has played a transformative role, offering interactive and multimedia tools that cater to diverse learning styles. Collaborative learning fosters teamwork and communication skills, while student-centred approaches prioritize individualized learning experiences. This section aims to provide insights into the promising trends that signify a departure from conventional teaching methods.

4. Curriculum Frameworks in India

4.1 National Curriculum Framework (NCF):

The National Curriculum Framework (NCF) serves as a guiding document for curriculum development in India. This section critically analyzes the NCF, exploring its principles, objectives, and impact on shaping the curriculum in schools and higher education institutions. It delves into the alignment of the NCF with contemporary pedagogical theories, evaluating its effectiveness in promoting a holistic and learner-centric education system.

4.2 Challenges in the Current Curriculum:

Despite efforts to reform the curriculum through frameworks like the NCF, challenges persist. This section identifies and discusses obstacles within the existing curriculum, such as the prevalence of rote learning, outdated content that fails to reflect real-world challenges, and an assessment system that often prioritizes memorization over understanding. By highlighting these challenges, the aim is to underscore the urgent need for curriculum reform that aligns with modern educational goals.

6. Challenges and Barriers to Implementing Innovative Pedagogies and Curriculum Changes in the Indian Education System:

6.1 Resistance from Stakeholders:

One of the primary challenges in implementing innovative pedagogies and curriculum changes is resistance from various stakeholders, including educators, parents, and policymakers. Traditional beliefs and a reluctance to deviate from established norms can hinder the acceptance of new teaching methodologies. Addressing this resistance requires effective communication, professional development programs, and a shared understanding of the benefits of innovative approaches.

6.2 Infrastructure Limitations:

Many schools and educational institutions in India face infrastructural challenges, including a lack of access to modern technology, insufficient classrooms, and limited resources for hands-on learning experiences. Integrating innovative pedagogies often requires adequate infrastructure, which may not be uniformly available across all regions. Bridging this gap necessitates strategic investments in educational facilities and technology, ensuring equitable access for all students.

6.3 Teacher Training Gaps:

Teachers play a pivotal role in the successful implementation of innovative pedagogies. However, there exists a significant gap in teacher training programs, with many educators needing to be adequately equipped to adopt and implement modern teaching methodologies. Addressing this challenge requires comprehensive and ongoing professional development initiatives that focus on enhancing teachers' skills, technological literacy, and adaptability to new pedagogical approaches.

6.4 Assessment System Constraints:

The prevailing examination-centric assessment system poses a significant barrier to the integration of innovative pedagogies. The emphasis on standardized testing often discourages teachers from adopting alternative teaching methods that may not align with traditional assessment formats. Realigning the assessment system to reflect a broader range of skills and competencies is crucial for encouraging innovative teaching practices.

6.5 Rote Learning Culture:

A deeply ingrained culture of rote learning persists in many Indian educational institutions. Students are often conditioned to memorize information for exams rather than develop a deeper understanding of concepts. Breaking away from this culture is challenging but essential for the successful implementation of innovative pedagogies that prioritize critical thinking, creativity, and practical application of knowledge.

6.6 Diverse Socioeconomic Contexts:

India is characterized by a diverse socioeconomic landscape, leading to disparities in educational opportunities and resources. Implementing innovative pedagogies uniformly across different regions and economic strata presents a challenge. Tailoring approaches to suit the diverse needs of students and addressing contextual variations is vital for ensuring the inclusivity and effectiveness of innovative teaching methods.

6.7 Resistance to Technology Integration:

While technology can enhance learning experiences, there is often resistance to its integration due to factors such as limited access to digital devices, concerns about screen time, and a lack of digital literacy among educators and students. Overcoming this barrier requires comprehensive strategies for providing equitable access to technology and fostering a positive attitude towards its integration in the learning process.

6.8 Policy Alignment and Implementation:

Ensuring alignment between educational policies advocating for innovative pedagogies and their effective implementation at the ground level poses a challenge. Clear communication, adequate training, and ongoing support are crucial to bridge the gap between policy intentions and the practical execution of innovative teaching methods.

Addressing these challenges requires a coordinated effort from policymakers, educators, parents, and the community at large. A holistic approach that considers the multifaceted nature of these obstacles is essential for the successful implementation of innovative pedagogies and curriculum changes in the Indian education system.

7. Conclusion:

In conclusion, the research has provided a comprehensive analysis of the current state of pedagogies and curriculum frameworks in India, shedding light on both traditional and emerging practices. The challenges and barriers identified in the implementation of innovative pedagogies highlight the complex nature of reforming an education system deeply rooted in traditional methodologies. The resistance from stakeholders, infrastructure limitations, teacher training gaps, assessment system constraints, rote learning culture, socioeconomic disparities, resistance to technology integration, and policy alignment challenges collectively underscore the need for a nuanced and multi-faceted approach to educational reform.

While there are notable efforts towards embracing innovative pedagogies, the journey towards a holistic and learner-centric education system is an ongoing process. Recognizing the challenges is the first step towards

overcoming them, and the insights gained from case studies and best practices provide valuable lessons for potential scalability and replication.

8. Recommendations:

Building on the findings, the following recommendations are proposed:

8.1 Comprehensive Teacher Training Programs:

Invest in robust, ongoing teacher training programs that focus on equipping educators with the skills needed to implement innovative pedagogies. Emphasize technological literacy, collaborative teaching methods, and strategies to foster critical thinking among students.

8.2 Infrastructural Development:

Allocate resources for the improvement of educational infrastructure, ensuring equitable access to modern facilities and technology across all regions. Bridge the urban-rural divide and address disparities in resource availability.

8.3 Curriculum Review and Reform:

Continuously review and update the curriculum to align with the National Curriculum Framework (NCF) principles and accommodate innovative pedagogies. Emphasize the application of knowledge, critical thinking, and skill development over rote memorization.

8.4 Community Engagement and Awareness:

Engage parents, communities, and policymakers in the educational reform process. Increase awareness about the benefits of innovative pedagogies and garner support for changes in teaching methodologies and curriculum frameworks.

8.5 Flexible Assessment Methods:

Revise the assessment system to include a more comprehensive evaluation of students' abilities, moving beyond traditional examinations. Encourage project-based assessments, portfolios, and other forms of evaluation that reflect a holistic understanding of student capabilities.

8.6 Technology Integration Strategies:

Develop and implement strategies for effective and equitable integration of technology in education. Provide digital literacy training for educators, students, and parents, ensuring a positive and inclusive approach towards technology in the learning process.

8.7 Policy Coherence and Implementation Support:

Ensure coherence between educational policies and their practical implementation. Establish support mechanisms at various levels to assist educators in adapting to new policies and methodologies effectively.

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SUSTAINABILITY CHALLENGE FOR AGRICULTURAL LIBRARIES: A CASE STUDY OF RAJ LAXMI FOUNDATIONS COLLEGE OF AGRICULTURE LIBRARY

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Abstract:

In the present era, agricultural libraries face a multifaceted sustainability challenge as they strive to support the evolving needs of researchers, farmers, and policymakers. This research paper delves into the complexities surrounding the sustainability of agricultural libraries, investigating key areas such as information technology integration, resource management, and community engagement. The study employs a mixed-methods approach, combining qualitative interviews with library professionals, stakeholders, and users, along with quantitative data analysis of library usage patterns and environmental impact assessments. Findings reveal a pressing need for agricultural libraries to adapt to the digital age by enhancing their technological infrastructure and information dissemination strategies. Concurrently, sustainable resource management practices, including the adoption of eco-friendly materials and energy-efficient systems, emerge as pivotal considerations in mitigating environmental impact.

Keywords:

Sustainability Challenge, Agricultural Libraries, Case Study

Introduction:

Raj Laxmi Foundations College of Agriculture, madadgaon is one of the primer Educational institute in the jurisdiction of the Mahatma Phule Krushi Vidyapith, Rahuri. It is part of the Society that runs a network of Schools, Colleges (Senior Colleges, Engineering Colleges and Agricultural Colleges), Polytechnics, at a number of places, occupying a significant place on the educational map of the state. As on date it is fully developed and accredited for excellence in quality education by Mahatma Phule Krushi Vidyapith, Rahuri. Raj Lakshmi Foundation College of Agriculture was established in 2009.

Methodology:

The paper is based on the Secondary data available on Internet, banking books, journals, newspapers, websites, research papers and various existing innovative products offered by banks. In the present work, the type of research is descriptive. Descriptive research is an in-depth study of an entity, individual, institution, etc. Descriptive research includes surveys and fact-finding inquiries of different kinds. The researcher used survey research methods, including questionnaires and interview techniques, to collect the primary data. Survey research is characterized by the selection of random samples from large and small populations to obtain empirical knowledge of a contemporary nature. This knowledge allows generalizations to be made about the characteristics, opinions, beliefs, and so on, of the entire population being studied.

Raj Laxmi Foundations College of Agriculture: Vision

- To meet global, local needs and challenges in agriculture sector through innovation and knowledge transformation between India and other countries.
- Development of farming community by adoption of advanced agricultural technologies with extension, demonstration, education and future researches.
- Making students not only educationally sound but also efficient in making decisions at policy levels in all sectors.

Raj Laxmi Foundations College of Agriculture: Mission

- To seek and gain worldwide respect and recognition as India's leader in the field of agriculture education and to become best resource for academic studies and competencies.
- Our intention to produce scientific leaders, work with world class institute and continue to grow and evolve in response to the changing the needs of society.

Review of Literature:

Library Philosophy and Practice (e-journal) (2008-2016) Bhanu Partap in their paper discusses the whole world faces technological challenges in every field of life. Research and Development particularly in science and technology affected the way of life. Still, research is in process especially in developed and developing countries to achieve the height of success in every part of society. Research is known as the structured enquiry that uses scientific methodology to solve problems and create new knowledge. In academia, research is also doing for advancement in knowledge in the form of variety of publications such as articles published in research journals, papers published in conference proceedings and in one other form.

Agricultural Research Institute in Nigeria Satisfaction in an Agricultural Research Institute in Nigeria Akinade A. Adewojo in their paper discusses the problem. The basic purpose of special libraries are to serve the teaching, learning, research, and community service missions of their parent institutions. Libraries are the repository of a school's knowledge and a location where information in print and other formats is gathered and organised to serve patrons of all ages and interests. It has been objectively discovered that library customers are dissatisfied in many ways, and the purpose of this research is to determine the causes for this unhappiness. Researchers have complained about the delivery and number of accessible resources, the difficulty to locate the book on the shelf, inadequate ventilation, entry areas, and the improper placement of the library. This study used Professor Mathew Daramola's Library in Nigerian Stored Products Research Institute as a case study, the research aims to investigate the relationship between library operations and services delivery and researcher's satisfaction.

Transforming agricultural libraries in india : a step towards digital india in this paper Dr. C. Murali Krishna discusses Agriculture has always been the back bone of India's livelihood and continues to play a major role in the Indian economy after the green revolution of 1968. While the population of our country is heading towards 1.25 billion, our agricultural scientists are engaged in increasing the food grain production to address the food security challenges. One of the major constraints faced by the Indian agriculture is dissemination of knowledge generated in the research laboratories to stake-holders, i.e. farmers and field workers. In others words, there is an 'information divide' between the farmers and agricultural scientists and extension agencies which needs to be 'bridged' for effective transfer of technology.

Agriculture college:

The college Library of college of Agriculture madadgaon is building to fulfill the academic needs of the students, faculties and extension staff of the college. The library has become an important center for learning with its unique status with respect to collection of text books, reference books, journals, periodicals, e-Resources and databases coupled with need base collection and development. The aim of University Library is to integrate library services and practices into the teaching and learning process and to increase ability to impart and facilitate knowledge acquisition, student learning and the attainment of lifelong learning skills. The University Library with its available resources is continuously trying to enhance student learning and to develop proficiency in information access, retrieval and integration.

Available Books:

Available books regarding competitive exam like banking upsc mpSC ssc etc we have various and vast collection of books written by various authors and mpSC aspirants we also have an contact with 3 competitive carrier academy of Ahmednagar.

Forum

Having fair environment is much more necessary which develop an extra in asparients Our techers provided a better forum with additional benefits which include books newspaper study notes etc. We have additional library and reading room for asparients and also a vast community group.

Lectures

Having a great teachers will help you to achieve your carrier as soon as possible Our staff provide lecture live classes and other important things for students Agricultural have additional benifits of their degree for agri banking, agri mpssc and other fie.

Library Service & Facility

Sr. No.	Collection/Services	Information
1	No. of Text Books	3429
2	No. of Reference books	2419
3	No. of News papers	06
4	No. of Peer Reviewed Journals subscribed	05
5	No. of back volumes of journals available from the year 2013	635
6	Agriculture related Magazines	10
7	No. of E-books	450
8	No. CD ROM database	35
9	Whether Library Management Software is installed in library	Yes
10	Accession Register available (Yes/No)	Yes
11	Students Entry Register	Yes
12	Staff/Students issue register	Yes
13	Whether internet facility is available (Yes/No)	Yes
14	No. of Computers available in library	20
15	No. of printers available in library	02
16	Wi Fi available (Yes/No)	Yes
17	Xeroxing facility (Yes/No)	Yes
18	Ratio of library books to number of students enrolled	16

Objectives:

1. To understand the inevitableness of sustainable development in the library and conduct practices with available resources and create openness in the library.
2. To present new ways to provide services without placing a monetary constraint on the library's finances/ budgets.

3. To maximize the usage of available institutional and ICT infrastructure for information literacy programmes on and off campus.
4. To fulfill the NEP 2020 mandate of campus-based learning activities and access to world knowledge.
5. To study the user type, frequency, and reason for visitation to the Agriculture Library over the last two years.
6. To analyze the preferred reading material, services, and activities, and Agriculture Library users' opinions.

Conclusion

In conclusion, the research findings provide valuable insights into the sustainability challenges faced by agricultural libraries, using the Raj Laxmi Foundations College of Agriculture Library as a case study. The recommendations and strategies proposed in this study can serve as a blueprint for other agricultural libraries seeking to navigate the complexities of sustainability in the rapidly changing landscape of information management and agricultural education.

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THE DYNAMICS OF INDIA'S PARTICIPATION IN THE G20: AN IN-DEPTH AND HOLISTIC ANALYSIS

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Abstract:

This comprehensive research paper delves deeply into India's multifaceted engagement with the Group of Twenty (G20) and explores its profound implications on India's economic, political, and social landscape. As a member since 1998, India's participation in the G20 has evolved, shaping its economic policies, diplomatic strategies, and responses to global challenges. This extensive analysis investigates the historical context, the impact of economic reforms, diplomatic considerations, challenges, opportunities, climate change initiatives, and the intricate linkages between G20 engagements and India's domestic policies. The paper concludes with reflections on future prospects and strategic recommendations for India's sustained and impactful participation in the G20.

Introduction

The introduction provides a historical context for India's entry into the G20, emphasizing the evolving dynamics of global economic governance. It traces the trajectory of India's engagement, highlighting key milestones, and outlines the overarching objectives and expectations associated with its G20 membership.

Economic Reforms and G20 Engagement

This section employs a comprehensive approach to analyze the intricate relationship between India's economic policies and its active involvement in the G20. It explores the evolution of India's economic reforms influenced by G20 discussions, examining areas such as trade liberalization, financial regulations, and development strategies. The section also considers the impact of global economic shifts on India's domestic economic landscape.

Geopolitical Considerations and Diplomacy

Examining the geopolitical dimensions, this section assesses India's diplomatic strategies within the G20 framework. It delves into the strategic alliances and partnerships forged through G20 engagements, evaluating their impact on India's global standing, soft power, and the resolution of geopolitical challenges. 4. Challenges and Opportunities

Challenges:

Alignment of Domestic Policies:

One of the primary challenges lies in aligning India's diverse and complex domestic policies with the consensus-driven nature of the G20. Balancing the varied economic, social, and political priorities of a nation as diverse as India with the expectations set by the G20 can be a delicate task. The challenge is to ensure that global commitments do not impede the nation's developmental trajectory or compromise on its unique policy imperatives.

Divergent National Interests:

The G20 comprises countries with divergent economic structures, political systems, and developmental stages. Negotiating and finding common ground amid these differences poses a significant challenge for India. Striking a balance that serves the nation's interests while contributing to global economic stability requires adept diplomatic maneuvering.

Global Economic Uncertainties:

The ever-evolving global economic landscape and uncertainties can pose challenges for India's policymakers. Economic shocks, trade tensions, and geopolitical crises can have ripple effects on India's economy. Navigating these uncertainties while participating in the G20 discussions demands a proactive and adaptive approach.

Opportunities:**Market Access and Trade Opportunities:**

India's participation in the G20 provides valuable opportunities for market access and enhanced trade relations. Engaging with other major economies opens avenues for increased exports, foreign investments, and technological collaborations. Leveraging the G20 platform, India can negotiate favorable trade agreements that align with its economic growth objectives.

Technological Collaborations and Innovation:

The G20 serves as a hub for technological exchange and innovation. India, with its burgeoning technology sector, can benefit from collaborations with advanced economies. The exchange of best practices, knowledge sharing, and joint research initiatives present opportunities for India to accelerate its technological advancements and address domestic challenges more efficiently.

Capacity Building and Skill Development:

Participation in G20 working groups and forums allows India to enhance its institutional capacities and promote skill development. Engaging with other member countries facilitates the exchange of expertise, best practices, and knowledge, contributing to the overall capacity building of India's institutions and workforce.

Global Leadership and Soft Power Projection:

Actively participating in the G20 provides India with a platform to assert its global leadership. By contributing constructively to international dialogues, India can enhance its soft power, influencing global narratives and shaping the agenda on crucial issues. This positions India as a responsible and proactive stakeholder in the global community.

Mitigating Global Challenges:

The G20 allows India to actively contribute to the resolution of global challenges such as climate change, pandemics, and economic crises. By collaborating with other nations, India can address common concerns collectively, fostering a sense of shared responsibility and demonstrating its commitment to global stability and sustainability.

In navigating these challenges and capitalizing on opportunities, India can strategically position itself within the G20, contributing to both its domestic development goals and the broader global agenda for sustainable and inclusive growth. This delicate balance requires adept policymaking, diplomatic finesse, and a proactive approach to maximize the benefits of G20 participation for India's comprehensive development.

Climate Change and Sustainable Development

As climate change and sustainable development assume global significance, this section scrutinizes India's role within the G20 in addressing these challenges. It evaluates India's commitments, contributions, and policy advocacy within the G20 framework, shedding light on its efforts to balance economic growth with environmental sustainability.

Implications on Domestic Policies

An in-depth analysis is conducted on how India's participation in the G20 influences its domestic policies. The section scrutinizes the direct and indirect impacts on economic reforms, foreign relations, and social policies, considering the nuanced interplay between global expectations and local imperatives.

Future Prospects and Recommendations

Anticipating future developments, this section outlines potential trajectories for India's engagement with the G20. It offers strategic recommendations for maximizing the benefits of participation, fostering inclusive and sustainable development, and positioning India as a key contributor to the global discourse.

Conclusion

The conclusion synthesizes the key findings from the extensive analysis of India's participation in the G20, underscoring the dynamic nature of its role and the profound implications on its economic, political, and social landscape. This concluding section encapsulates the essence of the research, highlighting the following key aspects:

Evolution of India's Role: The conclusion reflects on the historical evolution of India's participation in the G20, emphasizing how the nation has transitioned from a newcomer to a proactive contributor. It recognizes the adaptability and strategic foresight displayed by India in navigating the complexities of global governance within the G20 framework.

Impact on Domestic Policies: A comprehensive analysis of how G20 discussions have influenced India's domestic policies is reiterated. The conclusion elaborates on specific instances where global commitments have shaped economic reforms, diplomatic strategies, and responses to challenges, showcasing the interplay between international expectations and domestic imperatives.

Balancing Act: The conclusion emphasizes the delicate balance India must maintain in aligning its diverse domestic priorities with the expectations set by the G20. It acknowledges the challenges of negotiating divergent national interests while seizing opportunities for market access, technological collaborations, and global leadership.

Strategic Recommendations: Recognizing the dynamic nature of global challenges and opportunities, the conclusion offers strategic recommendations for India's continued participation in the G20. It underscores the importance of proactive engagement, adaptive policymaking, and sustained efforts to maximize the benefits derived from G20 membership.

Global Leadership and Responsibility: The conclusion reiterates the significance of India's role in the G20 as a responsible global stakeholder. It emphasizes how India, through active participation and constructive contributions, can assume a leadership position, shaping global narratives on crucial issues such as climate change, sustainable development, and economic stability.

Call for Ongoing Research and Adaptation: Concluding on a forward-looking note, the conclusion emphasizes the imperative for continued research and analysis. It recognizes that the global landscape is ever-evolving, requiring India to adapt its strategies, policies, and diplomatic approaches to effectively address emerging challenges and opportunities within the G20.

Impact on India's Trajectory: The conclusion circles back to the overarching impact of G20 participation on India's trajectory. It emphasizes that the nation's role in the G20 is not just a diplomatic exercise but a transformative journey that influences its positioning in the world and its ability to navigate complex global challenges.

In essence, the conclusion serves as a reflective summary, consolidating the multifaceted aspects of India's engagement with the G20 and highlighting the importance of strategic foresight, adaptability, and proactive participation in shaping a future where India can play a pivotal role in global economic governance and contribute meaningfully to global challenges.

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CLIMATE CHANGE AND ENVIRONMENTAL ISSUES

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Abstract:

Climate change and environmental issues have emerged as critical challenges in the 21st century, posing threats to ecosystems, biodiversity, and human well-being. Climate change, driven predominantly by human activities, is altering the Earth's climate system, leading to unprecedented shifts in weather patterns, rising sea levels, and extreme events. Concurrently, a spectrum of interconnected environmental issues. This research paper aims to provide a comprehensive understanding of the dynamics of climate change, its causes, and the far-reaching impacts on the environment. Additionally, the paper explores potential mitigation and adaptation strategies to address these challenges and foster sustainable development.

Key Words: Climate, Environment, Issues, Protection,

Aim of the Study: To address the various issues of environment due to the climate change.

Scope of the Study: This research paper focus on the environmental issues.

Methodology: in this study secondary data used, this data has been collected from various Publications of institutions reports, journals and web on climate change and environmental issues,

Introduction:

The 21st century stands witness to an epochal challenge that transcends borders, ideologies, and disciplines—the looming specter of climate change and escalating environmental issues. As the global community navigates an era marked by unprecedented scientific advancements and interconnected economies. Climate change, at its core, refers to the long-term alteration of the Earth's climate system, driven primarily by human-induced activities such as the burning of fossil fuels, deforestation, and industrial processes. The result is a discernible warming of the planet, accompanied by shifts in weather patterns, intensification of extreme events, and disruptions to ecosystems. Our planet is facing some big problems, and they're affecting the way our world works. One major issue is called "climate change." This means that the weather patterns we're used to—like how hot or cold it gets, or when it rains—are starting to shift in a way that isn't good for the Earth.

But climate change is just one part of a larger puzzle called "environmental issues." These are problems that happen because of what people are doing to the world around us. Imagine it like this: our Earth is like a giant home, and we need to take care of it. However, some of the things we're doing, like using a lot of energy or cutting down too many trees, are causing troubles for our home. Climate change is just one piece of the puzzle. We also have other issues, like when we do things that harm the air, water, and land around us. These are called "environmental issues." They happen when we use too much energy, create too much waste, or harm nature.

Definitions of Climate Change:

1. Intergovernmental Panel on Climate Change (IPCC):

"A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer." (IPCC Fourth Assessment Report: Climate Change 2007.)

2. Michael E. Mann:

"A human-caused disruption of the Earth's climate system, primarily due to the buildup of heat-trapping greenhouse gases like carbon dioxide in the atmosphere." (Mann, M. E. (2012). *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines.*)

3. Naomi Oreskes:

"The greatest market failure the world has ever seen." (Oreskes, N., & Conway, E. M. (2010). Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming.)

4. James E. Hansen:

"A human-made issue. We are not just observers, we are active participants, and we are doing it with full knowledge of what we are doing." (Hansen, J. (2009). Storms of My Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity.)

5. Bill Nye:

"The cycle of warming and cooling that the Earth goes through. It's a natural cycle, but now humans have sped it up." (Bill Nye's various public appearances and educational materials.)

6. Noam Chomsky:

Views climate change as "the most significant challenge humans have ever faced." (Chomsky, N. (2010). Hopes and Prospects.)

These definitions offer diverse perspectives on climate change, considering it from scientific, historical, economic, and philosophical viewpoints.

Year-wise damage due to natural extreme events in India

India is prone to various natural disasters, including cyclones, floods, earthquakes, droughts, and heat waves. The impact of these events can vary significantly from year to year. These natural extreme events are affect to the human beings which is shown in the below table.

Year-wise damage due to natural extreme events in India

Sr. No.	Year	Human Live Lost	Cattle Lost	Houses Damaged	Cropped Area Affected(in Lakh Hectares)
1	2012-13	946	24293	667319	14.44
2	2013-14	5677	102998	1210227	63.75
3	2014-15	1674	92180	725390	26.85
4	2015-16	1460	59057	1313371	31.09
5	2016-17	1487	41965	546518	25.49
6	2017-18	2057	46488	915878	47.44
7	2018-19	2045	123014	1557908	17.09
8	2019-20	2391	15729	800067	63.98

Source: Disaster Management Division, Ministry of Home Affairs

Central Sponsored Schemes for Protection of Environment

The Indian government has been implementing several central-sponsored schemes to address environmental issues and promote sustainable development. These schemes cover various aspects of environmental protection, conservation, and sustainable development. Below table reveals the central government run various scheme for protect environment.

Various Schemes for Protection of Environment

(Rs in Crore)

Sr. No.	Schemes	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
1	National Mission for a Green India	240.48	190.90	253.81	361.69	220
2	Integrated Development of Wildlife Habitats	473.22	319.21	357.88	510.00	491.80
3	Conservation of Natural Resources and Ecosystems	53.85	42.29	45.78	58.50	47.00
4	National River Conservation Programme	1331.89	899.87	708.12	258.18	308.50

Source: Expenditure Profile, Union Budget, M/o Finance

Government Expenditure:

Every year government of India allocate fund to the various department for the implement various schemes for the citizens. Below table shows the annual government expenditure on environmental protection.

Annual Government Expenditure on Environmental Protection

Sr. No.	Year	Amount Rs. In Crore.
1	2011-12	1676
2	2012-13	1366
3	2013-14	2296
4	2014-15	1656
5	2015-16	1791
6	2016-17	1545
7	2017-18	2390
8	2018-19	4116
9	2019-20	3510
10	2020-21	4166

Source: National Statistical Audit- 2022, NSO, M/o Statistics and Program Implementation, New Delhi.

Environmental issues:

Environmental issues encompass a wide range of challenges that arise from human activities and their impact on the natural world. These issues pose significant threats to ecosystems, biodiversity, human health, and the overall stability of the planet. Here is an overview of some prominent environmental issues:

1. Climate Change:

Perhaps the most pressing environmental challenge, climate change is driven by the accumulation of greenhouse gases (GHGs) in the atmosphere, primarily carbon dioxide from burning fossil fuels. This leads to global warming, rising sea levels, altered precipitation patterns, and more frequent and severe weather events.

2. Deforestation:

The clearing of forests for agriculture, logging, and urban development contributes to habitat loss, a decline in biodiversity, and disrupts the Earth's carbon balance. Forests play a crucial role in sequestering carbon dioxide and maintaining ecological balance.

3. Loss of Biodiversity:

Human activities, such as habitat destruction, pollution, and climate change, lead to the loss of plant and animal species. This loss of biodiversity has profound consequences for ecosystems, including reduced resilience, impaired ecosystem services, and potential impacts on food security.

4. Pollution:

Various forms of pollution, including air, water, and soil pollution, have detrimental effects on ecosystems and human health. Air pollution from industrial emissions and vehicle exhaust contributes to respiratory problems, while water pollution from chemicals and waste harms aquatic life and contaminates drinking water sources.

5. Resource Depletion:

Unsustainable exploitation of natural resources, including overfishing, deforestation, and extraction of minerals and fossil fuels, leads to resource depletion. This not only harms ecosystems but also jeopardizes the availability of essential resources for human societies.

6. Waste Management:

Improper disposal of waste, including plastic pollution, electronic waste, and hazardous materials, poses significant environmental challenges. These pollutants can persist in the environment for extended periods, causing harm to wildlife and ecosystems.

7. Land Degradation:

Activities such as improper agricultural practices, deforestation, and urbanization contribute to the degradation of fertile land. This diminishes soil quality, reduces agricultural productivity, and exacerbates the risk of desertification.

8. Ozone Depletion:

Human-made chemicals, such as chlorofluorocarbons (CFCs), contribute to the depletion of the ozone layer in the Earth's stratosphere. This allows harmful ultraviolet (UV) radiation to reach the Earth's surface, posing risks to human health and ecosystems.

9. Ocean Acidification:

Increased absorption of carbon dioxide by the world's oceans leads to ocean acidification. This has detrimental effects on marine life, particularly on organisms with calcium carbonate shells or skeletons, such as corals and some shellfish.

10. Overpopulation:

The increasing global population puts pressure on natural resources, exacerbating environmental issues. Overpopulation contributes to increased demand for food, water, and energy, leading to habitat destruction and environmental degradation.

Addressing these environmental issues requires collective efforts on local, national, and global scales. Sustainable practices, conservation efforts, policy interventions, and advancements in technology play crucial roles in mitigating the impact of human activities on the environment.

Conclusion:

Climate change and environmental issues are urgent challenges that affect our planet and everyone living on it. It is clear that human activities, like burning fossil fuels and deforestation, are causing the Earth's climate to change rapidly. We must work together to reduce our carbon footprint by using clean energy, protecting our forests, and adopting sustainable practices. Taking care of our planet is everyone's responsibility. By working together to combat climate change and protect the environment, we can ensure a healthier and more sustainable future for ourselves and generations to come.

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CLIMATE CHANGE AND SOCIAL DEVELOPMENT IN INDIA

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Introduction

The Climate change has the potential to undermine human development across many countries, including India, and may even lead to a reversal of current developmental progress. Actions taken, or indeed not taken, in the years ahead will have a huge impact on the future course of human development. India is confronted with the challenge of sustaining rapid economic growth amidst the increasing global threat of climate change. Evidence has shown that climate change will affect the distribution and quality of India's natural resources, which will ultimately threaten the livelihoods of the most poor and marginalised sector of the population who are closely tied to India's natural resource base. More than 56% of workers are engaged in agriculture and allied sectors, while many others earn their living in coastal areas through tourism or fishing; indeed most of the poorest people live in rural areas and are almost completely reliant on natural resources for their food and shelter. This paper seeks to explain the processes that are behind the change in climate and highlight the very real, human impact of climate change in India. Further this paper addresses ways to combat climate change and ultimately protect social development prospects for future generations.

Review of Literature

1. In India, over 40% of households are still without electricity. Research indicates that the demand for energy will increase across India over the 21 century, potentially to one fifth of the world's energy consumption by 2100. Presently India uses fossil fuels in abundance to provide cheap and reliable supplies of energy, especially to the rural poor. In fact around 80% of India's electricity generation comes from fossil fuels (Parikh, J. et. al. 2002.)
2. In many parts of rural India, solar energy is being used widely to meet the needs of the poor. For example the Ministry of New and Renewable Energy has introduced the Remote Village Electrification Programme in over 4000 villages and hamlets. This solar technology enables children to study after dark due to solar powered lighting and it can illuminate street lights. Furthermore, solar powered cookers emit no harmful gases during cooking and so women who traditionally cook everyday in the home are not exposed to the excessive carbon emissions expelled during cooking (UNDP 2007/8).
3. The main problem in getting the biodiesel programme up and running in India has been the difficulty in initiating the large-scale cultivation of Jatropha as farmers do not consider Jatropha cultivation rewarding enough. The Government needs to sponsor confidence-building measures such as establishing a minimum support price for Jatropha oilseeds and assuring farmers of timely payments. It is also important to note that bio fuel production should be based non-agricultural land, or at least on land that is not substituting agriculture, so as not to jeopardise food security (Venkateswarlu, B. 2009)

Objectives of the Paper

1. To examine the impact of climate change on social development.
2. To examine the various social issues which affected by climate change.

Research Methodology

The present study follows the simple method of analysis i.e. analytical method for analyzing problems of climate change and policy implementation in India. Thus, the study investigates the variations in Policy implementation in India.

Therefore, the used the methodology that, Descriptive, Analytical and Library methods of research will be used to complete the proposed research works. Both the sources of data collection secondary method, will be used to collect the data.

Data Source

The data collected from the International Monetary Fund (IMF), World Bank, Organisation for Economic Cooperation and Development (OECD) etc. United Nations Framework Convention on Climate Change the United Nations Framework Convention on Climate Change established an international environmental treaty to combat "dangerous human interference with the climate system", in part by stabilizing greenhouse gas concentrations in the atmosphere.

India's Climate by Different States

India's climate is both diverse and changing. The south experiences tropical climates, through to more temperate conditions to the alpine regions of the north where elevated areas receive sustained winter snowfall. The Himalayas provide a barrier to the cold winds of continental Asia and helps the development of the monsoon during the rainy season (June-September) when over 70% of the annual precipitation in India falls (World Bank 2008). This results in a warm climate across most of India throughout the year, where temperatures can exceed 40 degrees, but also fall below freezing in the deserts of the north and Kashmir.

The Map of India's Climate Change by Different States



The Impact of Climate Change on Social development

The effect of the rising temperatures across the Earth's surface will lead to changes in average temperatures, rainfall patterns and monsoon timings. Indeed the climate has already begun to change and if we do not act fast, it has the potential to undermine human development in India and across the world.

Health

As the climate changes, there is going to be an increasing impact on human health. Temperatures will rise and lead to an increasing frequency of heat waves, ultimately increasing incidences of illness and death in India. Food and

water supplies will be affected and the rate of disease will escalate, predominantly affecting the poor and marginalised who are often forced to live in overcrowded conditions with limited access to water and sanitation. As coastal populations are further displaced by rising sea levels, migration will increase, which will perpetuate levels of disease and infection due to the unstable living conditions with limited sanitation facilities and access to clean water and food (McMichael et. al. 2004).

Population Displacement

population will have grown by another 500 million (UN 2008). This increase in population will undoubtedly lead to a strain on resources, especially when coupled with the impacts of climate change. The widespread affect that climate change is expected to have on agriculture and rural livelihoods will lead to greater migration from rural areas to urban, further straining resources in these centres (Liggins 2008). The term 'environmental refugee' has now been coined for those populations who are displaced by environmental events/disasters which are linked directly with climate change. Whole communities are forced to migrate, often inland, from coastal areas. Indeed, according to the Intergovernmental Panel on Climate Change (IPCC), sea-level rise is the greatest threat and challenge for sustainable adaptation within South Asia. The consequences in terms of flooding of low lying deltas, retreat of shorelines, salinisation, and changes in the water table, cause very serious concern for the well-being of local pop

Women

Climate change will lead to increased hardship for India's poorest women. Women in India, especially in rural areas, are often responsible for providing daily essentials such as food and water. When climate change related disasters strike, research has shown that the workload of women and girls increases, thus leading to their exclusion from opportunities like education and a diminishment in their equal participation in development. For example, deforestation increases the time women need to spend looking for fuel. Research has further shown that women have fewer means to adapt and prepare for extreme weather conditions. Many poor women are also actively engaged in agricultural activities, including paddy cultivation and fishing, that will be affected by changing weather patterns in India; loss of livelihood will increase their vulnerability and marginalisation (UNDP 2007/8).

Conclusion

Finally the paper has been found is that, water supply, and health and emergency services. Climate change will lead to increased hardship for India's poorest women. Women in India, especially in rural areas, are often responsible for providing daily essentials such as food and water. When climate change related disasters strike, research has shown that the workload of women and girls increases, thus leading to their exclusion from opportunities like education and a diminishment in their equal participation in development.

The populations will also suffer greater heat stress. In urban areas, where child mortality is already high, extreme temperatures will lead to more deaths. Mental disorders and post-traumatic stress syndrome could also be seen in disaster-struck areas. Contaminated urban flood waters will increase exposure to disease and many toxic compounds.

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MIGRANT LABOUR CRISIS IN INDIA

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Abstract:

Migration is a historical phenomenon. Since ages people have migrated from one place to other in search of good life and better opportunities of employment and income. Migration can be either for long duration or short period (seasonal migration for sugarcane cutting in western Uttar Pradesh or western Maharashtra). Migration from rural to urban areas has always been predominant form of migration in India. In recent decades several factors have impacted internal migration in India. The uneven growth in agriculture and non-agriculture sectors, lack of opportunities and growing economic inequalities, rapid growth of tertiary sector, more employment opportunities in gig-industries and existence of opportunities for better living are some of the instrumental factors in present migration in India. The report on 'Migration in India 2020–21' released by the National Statistical Office shows that the migrant rate in India is 28.9%; a large number of men and women continue to migrate within the country looking for better employment and quality life. However, migrants are at the receiving end and many suffer severe violations of their human rights, including ill-treatment by law enforcement authorities, abusive or exploitative working conditions, low wages, lack of fundamental workplace rights and protections, limited access to social security, systemic discrimination and widespread prejudice. Migrant workers are the most vulnerable members of the communities in which they live and work. Migrant labours face the problems of economic and educational deprivation. They are socially and politically alienated and are ranked lowest in terms of majority of social and human rights indicators. A renewed policy framework addressing the reasons, challenges and outcomes of migrant labours is necessary for making them count and contribute towards progress and development of country.

Keywords: Agriculture, Deprivation, Human rights, Informal sector, Migration

Introduction:

Migration is a global phenomenon. Uneven economic development, inter-regional disparity and differences in living standards between socio-economic groups are some of the important reasons responsible for migration. Avenues of better employment and higher wages serve as pull factors for labour, where as non-availability of employment opportunities in backward regions, drought and scarcity conditions are push factors in the migration process. An inter-state migrant worker has been defined as one who moves to another state for employment and livelihood through a contractor or otherwise, by the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act of 1979. According to the 2011 census, the Hindi-speaking North Indian belt is the main source of migrants with Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh accounting for 50% of the total inter-state migrants.

Inter-state migrant workers can be primarily characterized as permanent migrants, semi-permanent migrants and seasonal/circular migrants (Srivastava, 2020). Semi-permanent migrants may lack the resources to make a permanent move yet reside in their receiving states (destination) for decades. They are likely to have sufficient resources in their sending states (source). On the contrary, seasonal/circular migrants are those who stay at a specific location to perform seasonal jobs that they may have procured there, only to shift to another place to look out for a new job at the end of the season. They still require social security and welfare measures at their place of stay, albeit for a short period of time. Usually each migratory movement is deliberately made though in exceptional cases this may not hold true. Thus migration is a response of human organisms to economic, social, political and demographic forces in the environment. Migration plays an important role in the distribution of the population of any country and determines the growth of labour force in any area. Migration is thus an important symptom of social change in society.

Flow of Migrants in India:

In recent few decades there has been constant increase in migrant labour in India owing to rapid urbanization and manifold increase in tertiary sector. India's total population in 2001 was 1.03 billion, out of which about 30% (309 million) were reported as migrants from the place of birth. It is pertinent to note that, Maharashtra state received the highest number of migrants (7.9 million) from other states and other countries, followed by Delhi (5.6 million) and West Bengal (5.5 million) (Census, 2001). In the first decade of new millennium process of LPG opened up vistas of opportunities in urban areas with rapid growth in transportation, construction, industries, service sector and emergence of new middle class with much more disposable income at their disposal. These 'pull' factors resulted in rapid flow of migrants to new towns and cities that had come up owing new to rapid industrialisation and urbanization. According to the Census of 2011, the total number of internal migrants in India was 45.36 crores which is 37% of the country's total population and 30 per cent higher than the 309 million internal migrants recorded in the 2001 Census. The key source states are Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Andhra Pradesh, Chhattisgarh, Odisha and the key destination states are Delhi, Maharashtra, Gujarat, Haryana, Punjab and Karnataka. Due to global pandemic the official census figures are unavailable, but Professor Amitabh Kundu estimates that in 2020 there were 65 million inter-state migrants in India, of which 33% are workers, 30% are casual workers and another 30% work on the regular basis in the informal sector.

The major sectors where migrants are employed are agriculture labour, construction, domestic work and other services like security guards and drivers, textile, brick-kilns, transportation, mines, quarries, industrial non-skilled workers and small and tiny road side businesses like tea shops and small eateries (Deshingkar & Akter, 2009). The traditional hierarchies of castes, inherent prejudices, rampant discrimination and lack of support in newly urbanized and industrialised cities offer no respite to migrants. Illiteracy, poverty, low skills and lack of awareness about their rights makes them easy target for exploitation. The migrants have to face long working hours, hazardous conditions at work and low wages that are barely enough for their survival. Due to all these factors, the remittances sent by them have a low threshold and provides only basic subsistence to families

Trends and Patterns in Internal Migration:

Migration has always been looked at as a livelihood issue. Poor households in backward regions migrate to big cities in search of better employment opportunities and living conditions. The primary motive of migration is an important indicator of how labour market conditions influences mobility of people from one place to another. The analysis of Census and National Sample Survey (NSS) data reveals that economic reasons such as employment or business were predominant as compared to others in migration. Also, the share of male migrants was more as compared to female migrants. Again, economic motives are more significant in urban migration streams, especially for males. While 49% of male migrants were in urban areas, 69.2% of such migrants migrated for employment (Srivastava, 1998). A majority of migrant workers are employed in production related activities or work in tertiary sector.

Distance in migration is important to understand the underlying reasons for migration. Migration in India is predominantly short distance, with around 60% of migrants changing their residence within the district of enumeration and over 20% within the state of enumeration while the rest move across the state boundaries. A large proportion of women migrate over short distances due to marriage. Evidence shows that there is dominance of short distance migration. However, it appears this trend is also slowly changing in the country at least among urban migrants. For 2007-08 in urban area male migration is higher in inter-district (39.31%) followed by inter-state (31.9%). Likewise, for female inter-district (42.51%) followed by intra-district migration (38.32%) dominate the migration flow. A decrease in intra-state mobility accompanied by an increase in inter-district and inter-state mobility is observed irrespective of sex. And the increase is found to be high in inter-state male migration in urban areas from 23.57% in 1999-00 to 31.9% in 2007-08. (Sanyal & Maity, 2018). It is important to note that in growing number of inter-state migration the primary reason has been better employment opportunities and good quality education. However, poverty, inequality, displacement due to development or natural exigencies is prominent reasons for migration for people belonging to under-developed states and lower socio strata. For such people, migration to developed states is an opportunity to earn better income and live good life.

Reasons for Migration:

The different strategies and process adopted for development has produced varied reasons for migration. Migration is shaped both by the pattern of development (NCRL, 1991) and the social structure (Mosse et.al.2002). The uneven economic development has lead regional imbalance with some states being more developed than others with respect to development. Even within the states there is regional disparity in terms of development. These developed states/districts attract large scale migrants from poor and backward regions owing their ability to provide opportunities for employment/livelihood and better income/wages. The attraction of urban amenities along with desire to get rid of debt pulls to migrants to urban and industrialized regions. The seasonal migration cycle is dominated by poor people belonging to underprivileged sections coming from backward regions. The seasonal migration provides them an opportunity for survival and sustenance. The availability of work during sugarcane cultivation season or crop-harvesting season leads to exodus of men and women from backward regions to such areas. This short duration of migration helps migrants to financially sustain themselves and also get rid of incurred debt.

Impact of Migration:

The impact of migration on both the migrant and the family is a matter of concern. The migrant has little personal assets and lives in a condition of deprivation at the place of migration. There is adverse impact on health, education and other economic needs of the family back home. The migrant, agricultural or non- agricultural, lives in very deplorable and unhygienic conditions. They either stay on pavements or shanties built on open spaces which lack clean drinking water and sanitation facilities. Their shanties/huts are easy targets for city administration. The unhygienic living and harsh working conditions make the migrant labourers susceptible to different physical and mental ailments. The temporary status of migrants makes them eligible for procuring ration cards which deprives them of state's welfare measures associated with food and health. This in turn increases the burden of food and health expenditure on migrants. As there is no provision of schooling for childrens of migrants at the destination area, the children are deprived of basic schooling from early age. The lack of school facilities to millions of migrant's children is a matter of worry and concern for society and the policy makers. In the case of male-only migration, the absence of men adds to material and psychological insecurity, leading to pressures and negotiations with wider family (Rogaly et al. 2002). Male out-migration has been seen to influence the participation of women in the directly productive sphere of the economy as workers and decision-makers and increase the level of their interaction with the outside world (Srivastava, 1999). It is important to note that migration has a major impact both at the source and destination areas with respect to labour market conditions, income and assets, changes in pattern of expenditure and investment. It is generally observed that the income and consumption level of migrant households is generally higher than that of similarly placed non-migrants (Sharma, 1997; Krishnaiah, 1997). The migrant household uses these remittances for consumption, clearing old debts and other social obligations.

Conclusion:

The phenomenon of labour migration is inherently linked to process of uneven development and regional backwardness. The 'push factors' at the sources areas and the 'pull factors' at destination areas compels the labour to move out in search for better employment and life chances. While the percent of migrant labour is nearly 40 percent but majority of them are employed in unorganized sector. The informal nature of employment in secondary or tertiary sector is characterized by low wages, harsh working conditions, no security benefits, unhygienic and insecure living conditions, exploitation and denial of basic rights. The migrant labour is subjected to discrimination and prejudices and is looked at as an outsider by the people facing several health and mental issues. Migration with family deprives their children of basic schooling and struggle for sustenance invariably pushes their women and children into work too. There is considerable socio-economic and educational impact on the migrant families back home. Though studies have revealed positive impact of remittances on consumption and investment, there is need to further investigate it. There is an urgent need of data of migrant labour for providing different welfare measures aimed at their skill enhancement, increase income and educational attainment. This will help in initiating steps in right direction for achieving demographic dividend of the country.

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DIGITALIZED PAYMENT GATEWAY IN INDIA

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Abstract:

Digital Payments Initiative was taken up by the Government of India on 8th November on the declaration of notation. Digital payments were introduced to bring transparency in transactions and eliminate black money. This was actually a move towards a cashless economy. Further, digital payments were encouraged to provide sufficient cash for banks to lend to people. So far, many sections of society have begun digital mode payments, but people are still scared to use internet banking, debit cards, e-cash etc. The government used to incentivize the government for digital payments but now it has declined. This paper seeks to understand the reasons behind the adoption of digital payments by people in India and also explores the problems that people face when making digital payments.

Keywords: Digital payments system, cash back system, promotion, etc.

Introduction:

Digital payments encouraged by the Government of India after the announcement of the notation on November 8, on. The basic goal behind the implementation of digital payments is to achieve a long term cashless economy. Increasing corruption and black money in India makes it difficult for people to obtain statements from other parties about transactions and transfers. The government had launched a digital campaign to increase transparency in operations and gain governance.

Objectives:

- To find out people's perspective on digital payments
- To know the problems people face in digital transfer
- Learn the most popular digital payment method.
- To have an idea about the expected future of digital payments in India.

Literature Review:

- **Code Roy, Dr. Review of Indrajit Sinha :**

India's e-payment system has grown tremendously, but still more has been done to increase its use. Yet 90% of transactions are cash based. The adoption model of the technology is used for the purpose of study. They found that innovation, incentives, customer convenience and legal frameworks are the four factors contributing to the strengthening of the e-payment system.

- **Rakesh HM and Ramaya TJ :**

"Factors affecting consumer adoption of the Internet Store on Internet Banking" tried to examine the factors affecting Internet banking adoption. Rirex Methodology For the purpose of our study, primary and secondary data were used. Primary data were collected from 110 people in a questionnaire manner It collects secondary information from various online sources such as websites, articles, journals, news, etc.

Paper Based payment Mode:

PM Narendra Modi has emphasized on cashless transactions as part of government reforms after the demonetization of rupee correctional value. Demonetization has introduced a unique platform for Indian consumers to adopt digital payments as an alternative to cash payments. Check-in has long been an option for cash payments. Non-cash payment modes have been widely acknowledged by government and BI due diligence initiatives. The check clearing system has been migrated to the Ifefe-based check system. CTS have provided banks with liquidity management and operational benefits.

Electronic payment mode:**Paytm:**

Transferring Money from Paytm Account to Bank Quickly the CVV number of the customer is safe. Paytm has introduced the App Password feature for Paytm Wallet to make sure that money is safe even if customers lose their phone or misdirect. Customers can use Paytm even without a Smartphone.

Rupay:

It is the hero of the two terms, rupee and payment. Rupay Card 2 Pay was launched by National Payments Corporation of India (NPCL) on March 7. These are linked to a personal bank account. Can be used for shopping in shops, ATMs, online wallets, micro-ATMs and e-commerce. In April 5, the Rupay card is issued to more than 3 savings accounts of the length and breadth of the country and to current account holders.

AEPS:

Aadhaar enabled payment system uses a 12-digit unique Aadhaar Identification Number to allow bank-to-bank transactions at POS. AEPS services include support for balance inquiries, cash withdrawals, cash deposits and Aadhaar fund transfers. Instead of paying cash, check, orchid card, the customer can use mobile to pay for various services and digital or hard goods. As of May 31, 2017, there were 1, 180,82 million wireless subscribers. The high level of access of mobile users provides immense opportunities for mobile banking. I

IMPS:

Interbank Mobile Payment Service was launched as a remittance product through mobile phones. This is an Interbank Electronic Funds Transfer service through mobile phones. IMPS makes it easy for customers to use mobile devices as a channel to access their bank account and send money. USSD: Mobile banking based on unstructured supplementary service data. The business is connected to a bank account of Rs. Used for payments of up to.

UPI:

The United Payments interface considers a system that empowers multiple bank accounts on a mobile application platform of a participating bank. Ensures merger of multiple banking features, intact funding paths and merchant payments. This facilitates P2P funds transfer. On December 30, the government launched mobile applications for Digital Banking (BHIM) for Bharat Bank. The app enables users to transfer money to another person's bank account using a virtual payment address (VPA).

Electronic / mobile wallets:

They are used by the Internet and smart phones. Money can be stored on the app through debit or credit card or recharge through Net-banking. Consumer wallet limit is Rs. 20,000 per month and the merchant wallet is limited to Rs. Self1,3 per month after self-declaration and Rs. After KYC Verification 10000 VI Top Five Mobile Payment Wallet of India

Digital wallet payment system:

Digital wallet payment system is loaded into the pocket on this platform. Likewise with the introduction of e-wallets you can add money using digital wallet apps. However, the problem is that you can only transfer funds to that wallet. This means that if you have a Paytm or SBI Buddy app on your phone, you can transfer the installed money to another person's Paytm Wallet or SBI Buddy App, respectively. There is no other way you can transfer money from Paytm Wallet to the SBI Buddy Wallet app. There are some e-wallets available in the digital marketplace like Mobi-wick, Free-Charge, Oxygen, Jio Money, PayPal, Buddy, Pocket-Set.

USSD Code Payment System:

You can easily complete your payment using the USSD (Unstructured Supplementary Service Data) code and a few instructions, even from your basic phone. It is a GSM-based technology where transactions occur through messages.

It is a platform that fully constitutes a medium between telecommunications and banking financial services. For each banking app, you have a separate dialing code that you must check with your service provider when transferring payment.

UPI based payments platform

UPI has introduced a Virtual Address Creating feature whereby you can transfer money by revealing your account number and IFS code to the recipient. UPI works on a real time basis, meaning that money is transferred immediately. UPI also helps in transferring funds to other media. UPI facility is available with all banking apps such as HDFC UPI, SBI UPI, ICICI UPI, IS XIS UPI and almost all other private and public banks. Now, most banks are embedding their UPI feature in their mobile banking app.

QR Code based payment system:

QR code is a separate payment transfer system where you only need to reduce the QR code of the merchant and do that, Payments Transfer is the easiest way to transfer payments through most digital payment apps such as BHIM, other banking apps The black square contains information about the item through which the code information is automatically transmitted via smart phone and upon payment, when payment is complete. You do not need to enter anything manually when using the QR Code feature. The government has introduced the India QR code to prevent digital payment activities everywhere

Major Challenges / Difficulties of Digital Payments

1. Lack of trust in people with digital payments.
2. Lack of knowledge among illiterate or less advanced people.
3. Low credibility due to scams and hacking cases.
4. Sometimes loss of internet connection.
5. Delay in cashback processing by e-commerce companies and e-wallet companies.
6. Payments are blocked from time to time and no confirmation is sent to the customer regarding the payment status.

Future of digital payments in India:

The future of digital payments in India means that it will take enough time. To be a fully cashless economy. This will require full support from the public and greater awareness and knowledge among the people. Lack of education and the problem of digital literacy need to be addressed first in order to become more digital. In addition, cashback offers are currently working well but India needs a committed, secure and highly reliable payment network to drive digital transactions, secure black-money, eradicate black money and build long-term economic development through a cashless economy. By doing so we can certainly have a grand future for digital payments in India.

Conclusion

Moving to a cashless economy is definitely good but I have a long way to go to fully cashless economy. Government and Paytm, Phone-Pay etc. These efforts are well underway by private sector companies with similar e-wallet apps. The biggest challenge facing the government is the lack of knowledge of the people and the fear of harm caused by the use. The risk of hacking digital payment methods. The government needs to address these challenges to create a cashless economy and provide sustainable economic development to the country in the long run to promote digital payments.

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IMPACT OF GST ON SERVICE SECTOR

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Abstract:

The new goods and service tax (GST), launched on July 1, 2017, will change how business is done in India. It is likely to have a significant impact on the service. As of March 2014, there were 12,76,861 service tax assesses in the country out of which only the top 50 paid more than 50% of the tax collected nationwide. Most of the tax burden is borne by domains such as IT service telecommunication services, the insurance industry, business support services, banking and financial services, etc. these pan-India businesses already work in a unified market, and will see compliance burden becoming lesser. But they will have to separately register every place of business in each state. India is a strong services-led economy with the sector generating a significant chunk of employment opportunities and contributing to the GDP. Joint Director of the French Tax authority Maurice on 10th April, 1954. There are around 160 countries till date that have implemented GST model including Dual GST has brought in 'one nation one tax' system, but its effect on various industries and services is slightly different. The first level of differentiation will come in depending on whether the industry deals with manufacturing, distributing and retailing or is providing a service. This paper examines the impact on GST on service sector after the execution of GST taxation and explores the effects on service sector.

(Keywords: GST, Service Sector, Impact. Manufacturing, Distributing and Retailing)

Introduction:

One nation one tax system beginning by GST in India. A wait of more than a decade came to an end on August 3, 2016, when the 122nd Constitution Amendment Bill, 2014 (popularly known as GST Bill) was passed by the Upper House of the Parliament of India. This is apparently the country's biggest tax reform since independence. The new tax regime, which subsumes all indirect taxes such as sales tax and excise tax, is expected to bring down tax rates in India, while converting the country into a big single market. In short, now, seamless flow of goods and services will occur across 29 states and 7 union territories. The GST council has decided in its 22nd meeting that presently, anyone making inter-state taxable supplies, except inter-state job worker, is compulsorily required to register, irrespective of turnover. It has now been decided to exempt those service providers whose annual aggregate turnover is less than Rs. 20 lacs (Rs. 10 lacs in special category states except for J& K) from obtaining registration even if they are making inter-state taxable supplies of services. Service sector contributes significantly in export as well as provides a large scale employment. India's services sector covers a wide variety of activities such as trade, hotel and restaurants, transport, storage and communication, financing, insurance, real estate, business services, community, social and personal services, and services associated with construction. This paper examines the impact of GST on service sector after the execution of GST taxation and explores the effects on service sector.

Services Sector in India: An Overview:

India is a strong services-led economy with the sector generating a significant chunk of employment opportunities and contributing to the GDP. It contributed around 66.1% of India's Gross Value Added (GVA) growth in 2015-16, is the biggest magnet for Foreign Direct Investment (FDI), and an important net foreign exchange earner. Some of the core areas of service are IT and ITES, banking and financial services, outsourcing, research and development, transportation, telecommunications, real estate and professional services accounting for Rs. 450 crore of tax revenue in 1994 to 120 plus services garnering Rs. 211,414 crore in 2016, the services sector has contributed substantially to the exchequer of the Central Government. The dominant sector per se with an array of establishments employing largely unskilled people, it also accounts for 53.66 percent of India's overall Gross Value Added (GVA) of Rs. 137.51 lakh crore.

Scope of Study

As we were seen as a liability towards the Service Sector since there was no contribution from our side towards, nobody actually paid any attention towards GST in Service sector

Objectives of the Study:

Effective management of working capital is means of accomplishing the firm's goal of adequate liquidity. It is concerned with the administration of current assets and current liabilities. It has the main following objectives-

1. To study sources and uses of GST in service sector
2. To maintain sufficient current GST in service sector.
3. To ensure adequate liquidity GST in service sector.
4. It protects the solvency GST in service sector.

Hypothesis

Hypothesis means a mere assumption or some supposition to be proved or disproved. But for a researcher hypothesis is a formal question that he intends to resolve. Thus a hypothesis may be defined as a proposition or a set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide some investigation or as highly probable in the light of established facts.

Research Methodology

This research "Impact of GST on Service Sector." is considered as an analytical research.

Analytical research is defined as the research in which, researcher has to use facts or information already available, and analyze these to make a critical evaluation of the facts, figures, data or material.

Source of Data

There are mainly two through which the data required for the research is collected.

Primary Data:

The primary data is that data which is collected fresh or first hand, and for first time which is original in nature.

In this study the Primary data has been collected from Personal Interaction with the Direct Interview Method and Questionnaire Method

Secondary Data:

The secondary data are those which have already collected and stored Secondary data easily get those data form records. Annual reports of the company etc. It will save time, money and efforts to collect the data/

In this study the Secondary data has been collected from various books, websites

Interaction with the Newspapers, Holdings.etc.

GST and Service Sector:

India's biggest tax reform is now a reality. A comprehensive dual Goods and Service Tax (GST) has replaced the complex multiple indirect tax structure from 1July 2017. In the current scenario, procurement of taxable services would be subject to the service tax.

Considering that service tax is levied by the Central Government, the tax would be the same, whether procured locally or interstate. In the GST regime, services procured from outside the State would be subject to IGST and services procured from within the State, would be subject to CGST and SGST.

Service sector scenario after GST implementation:

The author and economist of reports at HIS market, Ashna Dahiya said that after GST implementation, this is the first time when GST has shown some positive signs. In September, the Nikkei India composite PMI output has also increased to 51.1 from last month's index of 49 and it is an exceptional case for most of the economist. Even the core sector has shown the highest 4.9 percent hike in the August among last 5 months and the rate has growth rapidly in September also.

Positive Effects of GST on Service Sector:**1. No double taxation:**

This is one thing that was affecting many service providers. In the previous system of taxation, the works contract was complex, and this took a toll on many people. Here, the transfer of goods is a part of the service contract. This means that every invoice has the value of the goods used as well as the services supplied. These two attract a tax rate of 70% each bringing the total to 140% which is very high. With the implementation of GST, these two are considered to be one and thus taxed as 'supply of service.'

2. More Clarity for Software Industry:

For companies like Profit Books, that sell online software, it was not clear whether to apply VAT or Service Tax on the product. In GST regime, there is a clear distinction between products and services which will remove the confusion for service industry.

3. Repairs and maintenance:

The service providers that provide repair and maintenance services to companies will be able to claim both the credit of input and credit of input services as provided by the GST system. The current regime only offers the credit of input services which is a bit limiting. Now that they can claim both of the credit of input and credit of input services, they can offer their repair and maintenance services at lower prices and thereby attracting more clients.

4. Access to inputs held in stock:

The service providers will access CENVAT credit of input that is held in stocks. This is best applicable when a person is moving from one category of taxation to the next like the exemption category to the taxable one.

5. Check out this simple example:

Earlier, service providers used to charge service Tax to the clients and used to pay VAT on the goods purchased, like computers. It was not possible to take set off VAT against Service Tax. But in GST regime, you pay GST on both sales and purchases and hence it's easy to claim input tax credit on that.

6. It will bring equality in all states:

The previous taxation system did not cover Jammu and Kashmir. This presented a disadvantage to other places in India because taxation provisions did not cover these two places. However, GST now covers the whole land bringing all service sectors under the same taxation laws.

Negative Impacts on GST on Service Sector:

Other than the goods, there are also down sides to this system of taxation. These negative include :

1. Lack of a centralized registration:

With the previous taxation system, many service providers rejoiced over being able to register all their businesses in different areas from a central place. However, this privilege has been taken away. Now, they have to register their businesses in the respective state and pay the CGST tax.

2. Taxation for free Services:

If a business is going to supply services for free, they will still get taxed for it. Every supply that is made without consideration is taxed. This means you have to prepare yourself before you offer any free services.

3. Increased cost of service to end consumer:

Because the rate of taxation will go higher in the GST system, the end consumer will also feel a pinch of extra expenditure. The taxation is between 18% and 20% Because this rate is high, the cost of service will be higher.

4. Lack of centralized system of accounting:

Every business in every state has to have their accounting records because there is no centralized registration of businesses. Every business in every state is financially accountable to that state for taxation. This means that the accounts of the business will have to be separate.

5. Burdensome filling of returns:

As a business owner, you will have to file returns for all the businesses in all the different states separately. This is also because of decentralized registration. This can prove to be burdensome as many 37 returns in just a year.

Conclusion:

Services sector in India is a rapidly growing sector and significantly contributing to fiscal revenues. Ninety percent of the services are placed in the 18% bracket, which in absolute terms is a marginal increase, but is expected to reduce complexity in transaction and improve ease in availing of input credit. Thus, as compared to the current 15% service tax including cesses, the service viz. IT, telecom, insurance, banking etc. may witness negative impact due to increased cost of services.

By subsuming all these to provide the country with a single taxation level, we can say it is a great move that will propel the economy even further. In as much as there will be some challenges, it is a great thing to have a single taxation system for the service providers. GST implementation is bound to face hiccups during initial days but things will be much smoother once the issues are addressed.

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ENVIRONMENTAL SUSTAINABILITY THROUGH EMPOWERING YOUTH

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Abstract:

The youth play a crucial role in the sustainable development of India. The actions and attitudes of the youth today will shape the country's trajectory in terms of economic, social and environmental sustainability, working as the future leaders, innovators and decision-makers. The youth can act as ambassadors for sustainable practices by raising awareness about environmental issues, climate change and social inequalities. They can use social media, organize events, and engage with their peers to promote sustainable behavior and lifestyles. Young entrepreneurs can drive sustainable development by developing innovative solutions and technologies that address environmental challenges and contribute to economic growth of the county. Startups focused on renewable energy. Waste management and sustainable agriculture are examples of how youth-led initiatives can have a positive impact on environment.

The youth can actively participate in advocacy and engage with policy makers to promote sustainable policies and practices. By joining youth led organizations and participating in decision-making process, the youth can influence the development of policies that address climate change biodiversity conservation and social equity. Youth have the power to drive demand for sustainable products and services. By making conscious choices about what they buy and supporting companies with environmentally friendly practices, they can influence businesses to adopt more sustainable approaches.

Youth can initiate and participate in eco-friendly projects, such as tree planting drives, waste management campaigns, and sustainable transportation initiatives, which contribute to greener and cleaner cities and neighborhoods. The youth can take part in capacity building programs and skill development activities focused on sustainable practices. This would equip them with the Knowledge and tools to address environmental and social challenges effectively. Sustainable development is not only about environmental conservation but also about preserving cultural heritage and traditional Knowledge. Young people can play a role in safeguarding traditional practices and promoting culture diversity climate change poses significant threats to India, from rising sea levels to extreme weather events. The youth can engage in climate action campaigns, advocate for renewable energy adoption, and demand more ambitious climate goals from the government and Corporations.

Key Words – Environment, Empowerment, Sustainability, Youth, Management, Bio-diversity, Awareness discrimination, Challenge, Energy, Earth.

Our planet is our home, the place that sustains us but we the human being are marching a Path of self-destruction, destroying the very home that shelters us, by without living in harmony with nature.

"Ask not what your country can do for you - rather ask yourself what you can do for your country " John F. Kennedy.

The world is home to the largest generation of the important drivers of global change and innovation i.e. the youth. The empowered youth from diverse backgrounds like food to fashion to finance are the forerunners of assessment, awareness, action and advocacy for sustainable development. They are the main stakeholders, policy makers. These youth are the Powerful resources in handling responsibilities, revolutionizing fellow men and major role for change. They are the young leaders of tomorrow, having the passion energy and commitment to make a difference. They have the capacities to fly beyond the national boundaries. The youth is disproportionately affected by the world's challenges. Gender inequality, Poverty, illiteracy, terrorism unemployment and pandemics are a concern. Young women face violence and discrimination. Various environmental challenges such as climate change. solid waste management, deforestation, global warming, Political instability, degradation of ethics, rapid industrialization, unplanned urbanization, inability to employ costly eco-friendly technologies and lack of awareness are some threatening problems in the developing countries like India. Youth better knows the issues and the best way to respond the issues. So, it is necessary and

needful to tackle these huge challenges by promoting the rights and aspirations and increasing the active participation of youth in decision-making, with energy, voice and actions youth act as critical thinkers Youths are good communicators to their peers, and communities at the grass root level. They have the capacity to identify and challenge the existing powers and expose the barriers to change.

India has a dream of "Green prosperous India' which may relies heavily on its empowered Environmental practices like Swacha Bharat Abhiyan, green initiatives like "Each one, plant one'. Environmental campus champignon like Clean-India, Namami Ganga plan, Ganga River Basin Management plan and Youth Forums like youth ki Awaz aim to reduce consumption and eliminate waste, Organizing events and intercollegiate Competitions with posters, slogans and informative skits and promotion of such events in social media and celebration of Earth Day and Environmental Day can engage the society and each student imports Disaster Preparedness and eco-friendly strategies to face the problem of climate change to at least one individual of the society.

A modern Youthful India!!! United India is where. Poverty and illiteracy are history. education becomes the priority Agriculture and Health work in symphony women and children live in harmony wildlife, Heritage and Technology live with Integrity.

Our planet is at stake because of changing Global climate which is one of the most worrying issues mankind has ever faced so we need a broader awareness of the importance of sustainable development at the level of collective responsibility, involving both citizens and Companies according to their roles. It is time to take proper and decisire action to address this environmental, as well as social and economic crisis. The challenge for a better future requires that people, whether adults of youths, adopt more virtuous behaviors.

As Youths are the builders of the society and the personality of the individual develops through the experiences and the socio-cultural environment, so this awareness should begin et young age and continue to be one of the basic a principle in adulthood. During the childhood the family and the educational system Plays a crucial role in the formation of environmental sensitivity. Environmental education can nurture the awareness that the sustainable development of a society can be achieved if individuals adopt environmentally friendly behaviors and an environmentally oriented lifestyle. we should adopt environmentally conscious lifestyle such as using natural resources in order to preserve them and includes simple but effective everyday actions such as saving water and clericity, recycling, buying ecological goods, using environmentally friendly means of Transportation, as well as bike-sharing. Young people found a way a claim their concern about this complex problem by participating in protesting environmental movement which have gained increasingly attention by public opinion, Rather than throwing everything in the trash we can see separate yours plastic, paper and metal waste, and deposit it in a recycling bin because recycling helps to reduce landfill pollution, row materials and Fossil fuel consumption and generates a circular economy Youth can contribute for Environmental Sustainability by doing simple things like taking shooter showers, avoiding unnecessary use of water and Turing your tops off while brushing. you can save gallons of water. At the same time it is important to be mindful of your electricity consumption and make adaptations so that you can reduce the demand for energy production and thereby preserve fossil fuel resources, while public and private entities plan the transition to sustainable alternatives by doing our bit at homes and officers, wean reduce fossil fuel dependency.

We can contribute by buying local products and produce is a great way to minimize carbon footprint as goods don't have to travel longer distances and consume more fuel for Transportation. Supporting small businesses is also great for the local economy because you're sustaining the economic activity and job creation in your area.

And last but not list, think about your Purchasing habits, simply buying more because of tempting offers as discounts will actually cost us and the environment more. whether its groceries, clothes, accessories or home products, by purchasing only what you need, you reduce the amount of waste generated and thus pollution. As natural resources are limited our excessive consumption can be counter-productive and undermine our planet's biodiversity.

"The hopes of the world rest on-young People." Young people can play an active role in protecting the environment Stans with pollution control therefore youth can help to reduce by paying attention to minor details

in their daily lives for example: not to take plastic bag when we go shopping. Actually, there are many other tips for better environment Youth role is to implement recycling Programs for used computers.

To conclude youth should Strive for Environmental Sustainability because earth will not destroy, we will destroy Earth will continue for century after century. So every citizen of all G-20 century are responsible for his/her bit to improve the quality of the earth by using more eco-friendly means, we have remember "my garbage is any responsibility my Earth is my responsibility" so I conclude with the appeal that let's have cleaner, greener and healthier earth for the betterment of our Generation next so will be

"One earth, one family"

"वसुधैव कुटुंबकम्"

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ALIGNMENT OF INDIA'S NATIONAL ACTION PLAN FOR CLIMATE CHANGE WITH INTERNATIONAL POLICIES FOR CLIMATE CHANGE

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Abstracts:

The activities of human beings have degraded the environment. Human activities like industrialization, construction, agriculture, transportation, etc., have significantly impacted negatively on the environment. So, global warming has become a burning issue before the world. It also has led to the climate change and its impacts on the living things on the mother earth. To overcome this, various steps have been taken by the world. This is called, International Policies for Climate Change.

International policies for climate change are agreements and actions taken by countries and organizations to address the causes and effects of global warming. Some of the most important international policies for climate change are the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, the Paris Agreement, and the Intergovernmental Panel on Climate Change (IPCC). It is also the right of future generations, what we are enjoying today. That's what sustainable development concerns. We need development, but it should be sustainable, so, that can ensure the needs of future generations too.

As the concern of India to align with the International Policies for the climate change, India has framed Action Plan for Climate Change. In 2021, the Prime Minister of India in his talk at Glasgow, United Nations Climate talk, has announced the zero emission of greenhouse gasses by the year 2070. So, this shows India's concern with global warming and climate change and aligning the action with international policies for climate change.

In this research paper, the researcher has reviewed the international policies for climate change and India's National Action Plan on Climate Change. The researcher has also discussed the challenges and impact of the implementation of International Policies and the Impact of climate change on the Global Business World.

Keywords: International Policy, National Action Plan, Climate Change, UNFCCC, Kyoto Protocol, Paris Agreement, IPCC, etc.

Introduction:

Mother Earth is the only known planet where living things exist. It is due to the availability of favourable gasses, soils, and water for living things. The earth has its atmosphere where all the gasses play a vital role in a favourable and balanced condition for living things. If any of the unbalance happens in the atmosphere, it will lose the favourable conditions for living things. The environment is, where all the living and non-living things are existed.

Environment can be defined as a total of all the living and non-living elements and their effects that influence human life. An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life.

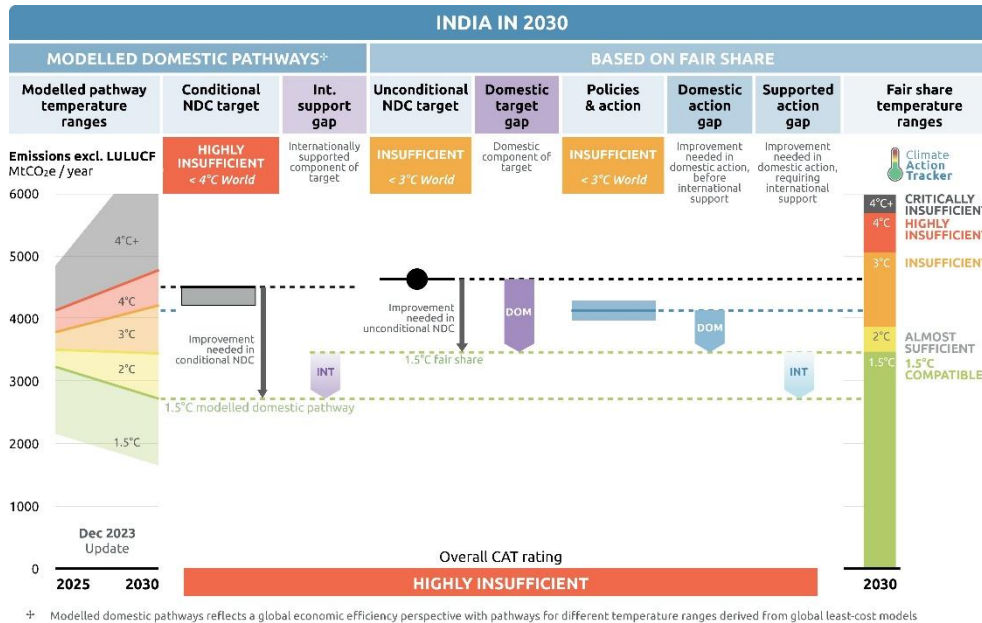
Human activities have great impacts on the degradation of the environment. Like industrialization, road and building construction activities, agriculture, extraction of energy sources of non-renewable energies and their use as a fuel, etc...

In a recent time, environmental scientists and environmentalists have raised the demand for the conservation of the environment due to the increase of greenhouse gasses. Green gasses are one of the significant causes of global warming and it has led to climate change. Due to the climate change

Warmer temperatures over time are changing weather patterns and disrupting the usual balance of nature. This poses many risks to human beings and all other forms of life on Earth. Like hotter temperatures, more severe

storms, increased drought, warming, rising ocean, Loss of species, not enough food, more health risks, poverty and displacement, etc. (www.un.org, 2023).

Figure 1: Overall CAT Rating



(Source: <https://climateactiontracker.org>)

Table No. 01

INDIA - Main Climate Targets

2030 unconditional NDC target	
Formulation of target in NDC	Emissions intensity of 45% below 2005 levels by 2030
Absolute emissions level in 2030 excl. LULUCF	4.6 GtCO ₂ e [103% above 2010]
Status	Submitted on 26 August 2022
2030 conditional NDC target	
Formulation of target in NDC	50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030
Absolute emissions level in 2030 excl. LULUCF	4.2-4.5 GtCO ₂ e [85-98% above 2010]
Status	Submitted on 26 August 2022

Net zero & other long-term targets

Formulation of target

India has pledged to become net zero by 2070

Absolute emissions level in 2050 excl. LULUCF

N/A*

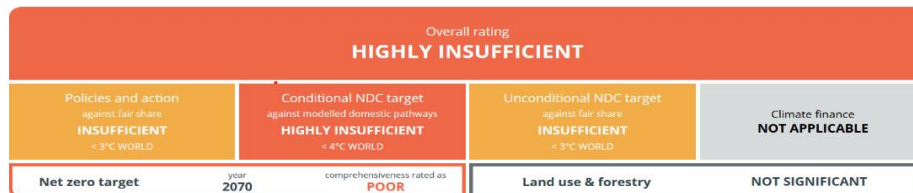
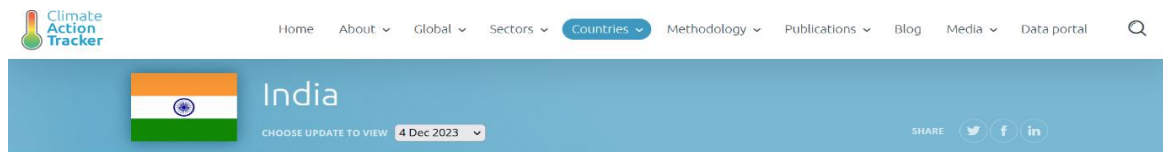
Status

Long Term Low Emissions Development Strategy (LT-LEDS) submitted in November 2022

* For details on what we do for our Optimistic Target global temperature estimate for India, please see the Assumptions tab. *NDC-Nationally Determined Contribution

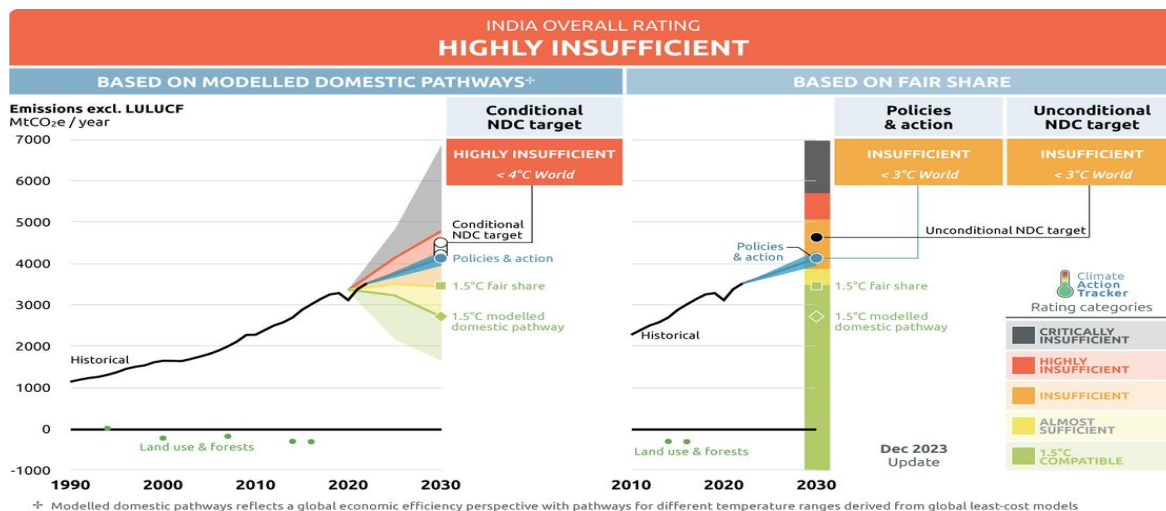
(Source: <https://climateactiontracker.org>)

Figure 2



Targets

(Source: <https://climateactiontracker.org>)



(Source: <https://climateactiontracker.org>)

Figure 3: bIndia Overall Rating for Climate Change Compliance

As per the climate action tracker i.e. shown in the above figures. It is stated that “India officially submitted two of the four targets for 2030 announced by Prime Minister Modi in 2021 (at COP26) as part of its August 2022 NDC update. These two targets are to reduce its emissions intensity by 45% below 2005 levels by 2030 (excluding LULUCF) and to increase the share of non-fossil power capacity to 50% by 2030.

On paper, both are stronger targets than the original NDC submissions, which had a 33-35% emissions intensity target and 40% non-fossil power capacity, but neither will drive real-world emission reductions. The other two targets, which were not submitted, were a 500GW non-fossil capacity target and a commitment to reduce emissions by one billion tonnes by 2030 – are also unlikely to drive real-world emission reductions in any substantial way.

The target of creating a cumulative 2.5-3 GtCO₂ carbon sink by 2030 is unchanged and was included in both the first and the updated NDC.” (climateactiontracker.org, 2023)

To conserve and maintain global warming/ temperature, various countries and entities have initiated legislative measures and policies. To face the threats of climate change. International policies for climate change are agreements and actions taken by countries and organizations to address the causes and effects of global warming. Some of the most important international policies for climate change are:

- **The United Nations Framework Convention on Climate Change (UNFCCC):**

This is the main international treaty that aims to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous human interference with the climate system. The UNFCCC was adopted in 1992 and has 197 parties (Budryk, 2024).

- **The Kyoto Protocol:**

This is an amendment to the UNFCCC that sets legally binding targets for developed countries to reduce their greenhouse gas emissions by an average of 5% below 1990 levels during the period 2008-2012. The Kyoto Protocol was adopted in 1997 and entered into force in 2005. It has 192 parties (unfccc.int, 2023)

- **The Paris Agreement:**

This is an agreement under the UNFCCC that aims to strengthen the global response to the threat of climate change by keeping the global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. The Paris Agreement was adopted in 2015 and entered into force in 2016. It has 191 parties (unfccc.int, 2023). Implementation of the Paris Agreement is essential for the achievement of the Sustainable Development Goals and provides a roadmap for climate actions that will reduce emissions and build climate resilience (un.org, 2023).

- **The Intergovernmental Panel on Climate Change (IPCC):**

This is a scientific body under the auspices of the United Nations that provides regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. The IPCC was established in 1988 and has 195 members (IPCC, 2023).

These are some of the major international policies for climate change. However, there are other policies as well, such as the Montreal Protocol, the Green Climate Fund, the Global Environment Facility, etc. that also contribute to the global efforts to combat climate change (un.org, 2023).

Some significant challenges in implementing these policies are (Ploeg, 2021):

- The lack of global coordination and cooperation among countries to reduce greenhouse gas emissions and share the costs and benefits of climate action
- The difficulty of balancing the short-term economic and social costs of climate policies with the long-term environmental and human benefits
- The uncertainty and complexity of the climate system and the impacts of climate change on different regions, sectors, and populations

- The resistance and inertia of the existing fossil-fuel-based energy systems and the vested interests that benefit from them.
- The low awareness and engagement of the public and the stakeholders in the climate change problem and the solutions

These are some of the major challenges that hinder the effective implementation of climate policies. However, some opportunities and innovations can help overcome these challenges, such as technological breakthroughs, behavioral changes, policy reforms, and international cooperation.

Impact of Climate Change on global businesses:

Climate change has a significant impact on the business world, as it affects the availability and cost of resources, the demand and supply of goods and services, the competitiveness and innovation of firms, and the risks and opportunities of markets. Climate change also poses challenges and opportunities for trade, as it alters the patterns of comparative advantage, the terms of trade, the trade policy environment, and the trade-related aspects of climate finance and technology transfer.

- **Emission instability:**

Climate change is driven by the accumulation of greenhouse gases in the atmosphere, mainly from the burning of fossil fuels. Reducing emissions requires a shift to low-carbon energy sources and technologies, which can affect the profitability and competitiveness of firms and industries (Boyles, 2022)

- **Cross-border pollution:**

Climate change is a global problem that requires collective action and cooperation. However, different countries have different levels of responsibility and capacity to address climate change, which can create conflicts and disputes over the distribution of costs and benefits (Trotsenburg, 2023)

- **Physical impacts:**

Climate change can cause extreme weather events, such as floods, droughts, heat waves, storms, and wildfires, which can damage infrastructure, disrupt supply chains, reduce productivity, and increase costs. Climate change can also affect the availability and quality of natural resources, such as water, land, and biodiversity, which are essential for many sectors and activities (WTO, 2022)

- **Regulatory uncertainty:**

Climate change requires governments to adopt and implement policies and regulations to mitigate and adapt to its effects. However, these policies and regulations can vary across countries and regions, creating uncertainty and complexity for businesses operating in multiple markets (Danae Kyriakopoulou, 2023).

- **Consumer preferences:**

Climate change can influence the demand and preferences of consumers, who may become more aware and concerned about the environmental and social impacts of their consumption choices. This can create opportunities for businesses that offer green and sustainable products and services but also challenges for businesses that rely on carbon-intensive or environmentally harmful activities (worldbank.org, 2021).

These are some of the major impacts of climate change on the business world. However, some strategies and solutions can help businesses cope with and benefit from climate change, such as investing in clean and renewable energy, enhancing efficiency and innovation, diversifying and adapting to new markets, engaging in corporate social responsibility, and participating in international cooperation and dialogue.

India's International Policies for Climate Change:

India's international policies for climate change are centered around its commitment to the United Nations Framework Convention on Climate Change (UNFCCC) and its associated agreements. Here are some key aspects of India's approach:

- **National Action Plan on Climate Change (NAPCC):**

Launched in 2008, the NAPCC outlines India's strategy to adapt to climate change and enhance ecological sustainability. It includes eight National Missions focusing on various sectors such as solar energy, enhanced energy efficiency, sustainable habitat, water, sustaining the Himalayan ecosystem, a green India, sustainable agriculture, and strategic knowledge for climate change (PIB_GOI, 2021)

- **Nationally Determined Contributions (NDCs):**

India has submitted its NDCs to the UNFCCC, which include short-term climate targets and strategies for meeting them. These commitments reflect India's efforts to reduce greenhouse gas emissions and increase the use of renewable energy (PIB_GOI, 2021).

- **Panchamrita Strategy:**

Announced at the 26th Conference of Parties (CoP26), this strategy includes ambitious targets such as achieving 500 gigawatts of non-fossil energy capacity and meeting 50% of energy requirements from renewable sources by 2030 (PIB_GOI, 2021).

- **International Collaboration:**

India recognizes the need for international support to implement all the necessary policies for climate change mitigation and adaptation. This includes technology transfer, financing, and capacity-building initiatives (PIB_GOI, 2021).

These policies and commitments reflect India's active role in the global effort to combat climate change while balancing its developmental needs.

Challenges in implementing India's climate policies (Sharma, 2023):

Implementing India's climate policies faces several challenges, including:

- **Institutional Bottlenecks:**

There are barriers within the institutional framework that can hinder the successful implementation of climate policies. This includes the need for better coordination among various government departments and agencies.

- **Lack of Political Will:**

Making climate change a priority requires strong political will, which can sometimes be lacking. This affects the allocation of necessary resources and the enforcement of policies.

- **Financial Constraints:**

Adequate funding is crucial for the execution of climate-related projects. However, there can be financial limitations and challenges in securing international climate finance.

- **Technical Challenges:**

The transition to cleaner technologies and practices often requires technical expertise and infrastructure, which can be a hurdle for rapid implementation.

- **Social and Economic Factors:**

India's high population density and diverse socio-economic landscape can make it difficult to achieve consensus on climate strategies and to implement transformative changes across the board.

- **Global Coordination:**

Climate change is a global issue, and international pressure and cooperation play a significant role in the implementation of domestic policies. Balancing international commitments with national interests can be challenging.

These challenges require concerted efforts from all stakeholders, including the government, private sector, civil society, and international partners, to overcome and ensure the effective execution of India's climate policies.

India has seen several successful climate projects that have made a significant impact. Here are a few examples:

- **Community Adaptation Initiatives:**

Communities across India, from Kerala to Rajasthan, have been adapting to climate change by reviving traditional crops, climate-proofing infrastructure, and embracing nature-based solutions using traditional wisdom (World_Economic_Forum, 2023).

- **Green Startups:**

A number of Indian environmental startups have emerged, working across various sectors to address climate challenges. These startups have shown significant potential for impact and success (changeadmin, 2021).

- **Climate-Smart Agriculture:**

Initiatives like Rythu Bandhu in Telangana have empowered small-scale farmers to adopt climate-friendly practices, helping to de-risk their livelihoods and mitigate climate change (Ashish_Chaturvedi, 2022).

- **Renewable Energy Programs:**

The KUSUM program has brought solar water pumps to hundreds of thousands of farmers, supporting livelihoods while mitigating climate change (Ashish_Chaturvedi, 2022).

These projects reflect India's commitment to combating climate change and its effects on the environment and society.

Businesses can contribute to climate action in India by:

- **Facilitating the Shift to Renewable Energy:**

Companies can support the transition to renewable energy sources to minimize CO₂ emissions. The International Solar Alliance offers many options for businesses to reduce emissions (Prakash, 2021).

- **Measuring Emissions and Making Climate Action Plans:**

Corporations should measure their emissions, create a climate action plan, and support policies that advance climate change mitigation (Kumar, 2019).

- **Integrating Climate Change and Corporate Social Responsibility:**

By optimizing supply chain sustainability and promoting eco-friendly products, companies can introduce green technologies and advocate for sustainable practices (Chhabra, 2021).

- **Supporting Government Initiatives:**

Indian businesses can back government efforts to create a carbon-free and healthy India, protecting the climate for future generations (Anjal_Prakash, 2021).

These actions can help India achieve its net-zero target and build resilience to climate change.

Several Indian companies have adopted sustainable practices and are recognized for their efforts in corporate social responsibility (CSR) and sustainability. The scholarly article written by the CSR Journal and Denews has taken the review of Top 100 companies in India for CSR and Sustainability in 2022

Here are some examples of it:

- **Reliance Industries Limited:**

Reliance has been a top CSR spender in India, focusing on areas such as rural transformation, education, disaster response, health, sports for development, and arts, culture, and heritage. They also extended aid to combat the COVID-19 pandemic (CSR_Journal, 2023).

- **Tata Consultancy Services Limited (TCS):**

TCS has invested in community initiatives, focusing on education, skilling, employment, and entrepreneurship, especially for women, youth, and marginalized groups.

- **Wipro:** Recognized as one of India's most sustainable companies, Wipro has made significant strides in sustainability and corporate governance (Tikoo, 2020).
- **Maruti Suzuki India Limited:** Maruti has been acknowledged for its sustainable practices, particularly in the automotive industry (Tikoo, 2020).

These companies have shown that integrating sustainability into their business models can lead to long-term benefits and positive impacts on society and the environment.

Conclusion:

The impact of global warming and climate change has become an alerting issue all over the world. The policies to overcome it are more important than the framing. As discussed above the Indian policy framing and promises are not enough. To tackle this implementation is more important. India's NDC performance is not as promising as the data and calculation of the climate trackers. So, more awareness and every step of the nation should be more conscious regarding development i.e. sustainable development. The current rate of performance of India's NDC is low and the prediction given by the climate tracker will be low as projected. The National Action Plan on Climate Change should be given more focus.

The strives of Businesses and Industries are not enough, the carbon footprint of their activities should be mapped and aligned with India's National Action Plan on Climate Change. The Proper Environmental Management System and Standardisation of their Environmental Performance. The EMS ISO 14001 can be adopted for the better environmental performance of industries. It should be more focused to the achieve of the promises that India has given till 2070. Dependencies on fossil fuel and use should be replaced with renewable, green, and sustainable energy sources.

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STOCK MARKET AWARENESS AMONG GRADUATE STUDENTS: A COMPREHENSIVE STUDY OF SHIRUR ANANTPAL TALUKA

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Abstract:

The purpose of this research paper is to investigate the level of stock market awareness among commerce graduate students of Latur District. It also focuses on the factors influencing their understanding of financial markets. The study employs a mixed-method approach, combining surveys and interviews to gather both quantitative and qualitative data. The research explores the current state of stock market knowledge, the sources of information and the potential impact of educational background on students' awareness. The findings are very much helpful in contributing the development of effective strategies for enhancing financial literacy among commerce graduate students.

Key words: financial literacy, stock market awareness and Graduate students

Introduction:

In the dynamic landscape of global finance, the stock market serves as a crucial nexus, influencing economic trajectories, corporate strategies, and individual wealth. As financial markets become increasingly interconnected and complex, the need for a well-informed and educated investor base becomes supreme. This research paper investigates into a critical side of this complex domain—exploring the level of stock market awareness among commerce graduate students.

Commerce graduates form a crucial role, as they are likely to become future business leaders, financial analysts, and entrepreneurs. The ability of these individuals to comprehend and engage with the stock market not only shapes their personal financial well-being but also has broader implications for the economic environment. Against this framework, this comprehensive study aims to analyze the depth and range of stock market awareness within the commerce graduate students.

To achieve a nuanced understanding, this study employs a multi-faceted approach, combining quantitative analysis of survey data with qualitative insights gathered through interviews and focus group discussions. By triangulating data from various sources, the research aims to provide a holistic perspective on the factors influencing stock market awareness among commerce graduate students.

The implications of this study extend beyond the realm of academia. Identifying areas of deficiency in stock market knowledge can inform educational institutions, policymakers, and industry stakeholders to design targeted interventions and educational programs. Moreover, the findings may offer valuable insights for financial institutions seeking to tailor their communication strategies to a diverse and evolving audience.

Objectives of the study:

- 1) To Assessing the current level of stock market Awareness
- 2) Identifying Factors influencing stock market Awareness

Hypothesis

- 1) There is no significant knowledge of stock market among graduate students
- 2) There is significant relation in educational courses and stock market awareness

Research Methodology:

This study uses both survey and interview method to reach appropriate results. The sample is finalized with the help of systematic sampling method. The data is collected through questionnaire and personal interviews of respondents. Analysis of data is done by using statistical tools.

Review of literature:

- 1) Akshit Gupta- in his study entitled “A study on Stock Market Awareness and Participation among students” he examined the level of stock market awareness and participation among students. He found that the students who has knowledge about the market tend to have better understanding of personal finance and they took smart financial decisions for future.
- 2) R. Siva Sakthi and P. Willian Robert- in their study entitled “A Study on Investors Awareness of Stock Market” they had investigated the impact of investors awareness on stock market. they revealed that the demographic profile of an investors has huge impact on their awareness.
- 3) Dr. K.R. Sowmya and Dr. K.S. Sridhar- in their research paper entitled “A study on stock market Awareness among college and university Students” they studied the financial literacy and investment education among students.

Data Analysis

In this research paper the primary data is collected as its an important for the understanding the awareness among the students of Shirur Anantpal Taluka. The analysis of the collected data is as follows:

Table: 01 Gender analysis of Respondents

Respondents		Percentage
Male	114	45.6
Female	136	54.4
Total	250	100%

The table -01 shows that there are 54.4% Female students and 45.6% Male students who has responded for the research.

Table: 2 whether the students know about stock market

Particulars	Male	Female	Total	Percentage		
				Male	Female	Total
Yes	84	65	149	73.70%	47.80%	59.60%
No	30	71	101	26.30%	52.20%	40.40%
Total	114	136	250	100%	100%	100%

Table no 02 analyses that there are 59.6% students are familiar with Stock Market where still there is a remarkable number i.e. 40.40% students are still not familiar with the activities undertaken in stock market. they only know that it deals with stocks or shares nothing else.

Here the first hypothesis is satisfied and accepted. That there is no significant knowledge of stock market among students.

Table : 3 factors influencing the awareness about share market

Particulars	Male	Female	Total	Percentage		
				Male	Female	Total
Social Media	73	83	156	64.03%	61.03%	62.40%
Education	36	49	85	31.57%	36.03%	34.00%
Friends and Relatives	5	4	9	4%	3%	4%
Other	0	0	0			
Total	114	136	250	100.00%	100.00%	100.00%

Table no 3 shows the deferent factors affecting and influencing the students regarding stock market information and investment related activities. There are 62.4% students (Respondents) agreed that they are highly influenced by the social media and financial influencers talks on social media such as YouTube, Instagram etc.

Further the students are expected to have sufficient knowledge about the share market from their curriculum about 34% students are still influenced with their Educational and curricular influence. Friends and relatives are not the key influencers for the students of Shirur Anantpal Taluka.

Findings:

- 1) There are about 73.7% male students and 47.8% Female students know about stock market.
- 2) Total 40.4% students need to provide knowledge regarding the stock market.
- 3) Social Media plays an important role in influencing the students and provides information regarding Stock Market the percentage is 62%
- 4) 34% students are influenced by Educational institutions towards stock market.

Suggestions:

- 1) The Government has to take initiatives to enrich these students by providing training and education.
- 2) Educational institutes has to provide special courses
- 3) Educational institutions should conduct an orientation program of there students regarding financial literacy.
- 4) Students who are pursuing commerce and management education should be equipped with certificate courses in stock market

Conclusion:

The stock Market awareness among graduate students of Shirur Anantpal Taluka is not satisfactory. The impact of social media is seen more than education of different stock market related concepts. The investigation regarding availability of Market knowledge is come to the conclusion that there is immense need to educate the students about financial terms. Educational institutions situated in this area has to offer some special courses related to Stock Market so it will help the students in improving their knowledge.

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NEW TRENDS IN BANKING

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A] Abstract- Today banking is known as pioneering banking. India is having a well developed banking system with different classes of banks: public sector banks, foreign banks, private sector banks, regional rural banks, co-operative banks. The use of technology has brought a revolution in the working style of the banks. Information Technology has had a positive impact on substitutes for traditional services. With networking and interconnection new challenges are arising related to security privacy and confidentiality to transactions .The study identifies challenges and opportunities for Indian banking The RBI's most important goal is to maintain monetary stability. Reducing inflation has been one of the most important goals for some time. There has been considerable innovation and diversification in the business of major banks. Some of them have engaged in the areas of consumer credit, credit cards, merchant banking, internet and phone banking, leasing, mutual funds etc. With the emergence of Privatization, Globalization and Liberalization in India, Banks are focusing on Research and Development and applying various innovative ideas and technology. There is a close relationship between the development of banking sector and the new innovations in technology and Electronic data processing. The present article focuses on the benefits and challenges of changing Banking trends and to study the performance of existing technology based products and services being offered by banks.

B] Introduction-

Indian economic environment is witnessing path breaking reform measures. The financial sector, of which the banking industry is the largest player, has also been undergoing a metamorphic change. Today the banking industry is stronger and capable of withstanding the pressures of competition . While internationally accepted prudential norms have been adopted, with higher disclosures and transparency, Indian banking industry is gradually moving towards adopting the best practices in accounting, corporate governance and risk management. Interest rates have been deregulated, while the rigors of directed lending are being progressively reduced. In 1991, the Government opened the doors for foreign banks to start their operations in India and provide their wide range of facilities, thereby providing a strong competition to the domestic banks, and helping the customers in availing the best of the services. The Reserve Bank in its bid to move towards the best international banking practices will further sharpen the prudential norms and strengthen its supervisor mechanism. Current banking sector has come up with lots of initiatives that oriented to provide a better customer services with the help of new technologies. IT has helped the Banking industry to deal with the challenges the new economy poses. Technology has opened up new markets, new products, new services and efficient delivery channels for the banking industry.

Few examples are such as Online Banking, Mobile Banking and Internet Banking. The progress of technology and development of worldwide have significantly reduced the cost of global fund transfer. The IT revolution has set the stage for unparalleled raise in financial activity across the globe. It is IT which enables the banks in meeting such high expectations of the customers. The Indian Banking has finally worked up to the competitive dynamics of new Indian market and its relevant issues concerning the various challenges of Globalization . Banks that employ IT solutions are perceived to be futuristic and proactive players capable of meeting the multifarious requirements of large customer base. Indian Banking industry is going through a phase of metamorphosis and has witnessed changing strategies by different banks to adapt to the embryonic competitive environment.

This shift from conventional social banking to profit banking, execution of prudential norms pertaining to Capital Adequacy norms, income appreciation, asset classification, exposure norms etc. have given rise to increased competition and thrown greater challenge in banking sector. looks at the deregulation--prudential re-regulation framework which has been adopted in Indian banking sector and its impact on competition and performance. Authors argued that deregulation induced competition should lead to efficiency and better performance in banking industry.

C] Trends in Banking -

In recent years, the Indian economic environment has seen a lot of changes because of reforms and measures taken by the banks. The largest change is seen in the financial sector where the banking sector is the largest player to notice this change. So, the banking sector is strong enough to withstand any sort of pressure and competition. Thus, these trends in banking have been very visible in the last few years. India, now, has a fairly stable banking sector with different classes of banks contributing to it. Thus, these include foreign banks, public banks, private sector banks, and others. Reserve Bank of India is head of all these banks.

Indian Banking Sector

The history of Indian banking can be divided into three main phases.

Phase I (1786- 1969) - Initial phase of banking in India when many small banks were set up

Phase II (1969- 1991) - Nationalization, regularization and growth

Phase III (1991 onwards) - Liberalization and its aftermath

D] METHODOLOGY USED -

The paper is based on the Secondary data available on Internet, banking books, journals, newspapers, websites, research papers and various existing innovative products offered by banks.

E] Trends in Banking-

The present banking scenario provides a lot of opportunities and challenges. India is being fundamentally strong supported by concrete economic policies, decisions and implementations by the Indian Government. Today, the service sector is contributing half of the Indian GDP and the banking is most fashionable service sector in India. The significant role of banking industry is essential to speed up the social economic development. To improve foremost areas of banking sector, Government of India, RBI and Ministry of finance have made quite a few efforts. Many of leading banks operating in market have made use of the changed rules and regulations such as CRR, interest rate, special offers to the customers such as to open account in Zero balance, non-banking products.

In recent years, there have been many changes in the banking industry. These trends in banking have made the whole process of banking very easy. These trends include the following:

Electronic Payment Services-

Coming across e-governance, e-mail, e-commerce, e-tail etc, a new technology is being developed in US for introduction of e-cheque, which will eventually replace the conventional paper cheque. India, as forerunner to the introduction of e-cheque, the Negotiable Instruments Act has already been amended to include; Truncated cheque and E-cheque instruments.

Real Time Gross Settlement (RTGS)-

Real Time Gross Settlement system, introduced in India since March 2004, is a system through which electronics instructions can be given by banks to transfer funds from their account to the account of another bank. The RTGS system is maintained and operated by the RBI and provides a means of efficient and faster funds transfer among banks facilitating their financial operations. As the name suggests, funds transfer between banks takes place on a 'Real Time' basis. RTGS was launched by RBI, which enabled a real time settlement on a gross basis. To ensure that RTGS system is used only for large value transactions and retail transactions take an alternate channel of EFT. The reach and utilization of RTGS has witnessed a sustainable augment since its introduction. In the year 2012-2013 to 2014-2015 transactions related to customer remittances have raised from Rs.68.5 million to Rs.92.8 million. This shows the increasing popularity of RTGS in Indian banking industry.

Electronic Funds Transfer (EFT)-

Electronic Funds Transfer (EFT) is a system whereby anyone who wants to make payment to another person/company etc. can approach his bank and make cash payment or give instructions/authorization to transfer funds directly from his own account to the bank account of the receiver/beneficiary. Complete details such as the receiver's name, bank account number, account type, bank name, city, branch name etc. should be furnished to the bank at the time of requesting for such transfers so that the amount reaches the beneficiaries' account correctly and faster. RBI is the service provider of EFT. The most widely used EFT programs is Direct deposits, in which payroll is deposited straight into an employee's bank account, although it transfer the funds through an electronic terminal including Credit card, ATM and Point of Sales (POS) transactions.

Electronic Clearing Service (ECS)-

Electronic Clearing Service is a retail payment system that can be used to make bulk payments/receipts of a similar nature especially where each individual payment is of a repetitive nature and of relatively smaller amount. This facility is meant for companies and government departments to make/receive large volumes of payments rather than for funds transfers by individuals. ECS introduced by RBI in 1995, parallel to Automated Clearing house system. ECS has two variants i.e. ECS Debit clearing services and Credit clearing services. ECS Debit operates on the principles of single credit multiple debits and is used by utility service providers for collection of electricity bills, telephone bills and other charges and also by banks for collection of principal and interest repayments. ECS Credit handles bulk and repetitive payment requirements of corporate and other institutions and is used for transactions like payment of salary, dividend, pension.

Automatic Teller Machine (ATM)-

Enables the customers to withdraw their money 24 hours a day 7 days a week. It is a device that allows customer who has an ATM card to perform routine banking transactions without interacting with a human teller. In addition to cash withdrawal, ATMs can be used for payment of utility bills, funds transfer between accounts, deposit of cheques and cash into accounts, balance enquiry etc. Introduced to the Indian Banking industry during 1987 by HSBC Bank in Mumbai. With the advent of ATMs, banks are able to serve the customers outside the banking halls. Now the ATMs are equipped with modern technologies and facilitate various features for its customers which includes Bill payments, ticket booking, Mobile recharges, Ubiquitous multifunction.

Phone Banking-

Customers can now dial up the bank's designed telephone number and he by dialing his ID number will be able to get connectivity to bank's designated computer. The software provided in the machine interactive with the computer asking him to dial the code number of service required by him and suitably answers him. By using Automatic voice recorder (AVR) for simple queries and transactions and manned phone terminals for complicated queries and transactions, the customer can actually do entire non-cash relating banking on telephone: Anywhere, Anytime.

Tele-Banking-

Tele banking is another innovation, which provided the facility of 24 hour banking to the customer. Telebanking is based on the voice processing facility available on bank computers. The caller usually a customer calls the bank anytime and can enquire balance in his account or other transaction history. In this system, the computers at bank are connected to a telephone link with the help of a modem. Voice processing facility provided in the software. This software identifies the voice of caller and provides him suitable reply. Some banks also use telephonic answering machine but this is limited to some brief functions. This is only telephone answering system and now Tele-banking. Tele banking is becoming popular since queries at ATM's are now becoming too long.

Mobile Banking -

Mobile banking facility is an extension of internet banking. The bank in association with the cellular service providers offers this service. For this service, mobile phone should either be SMS or WAP enabled. These facilities are available even to those customers with only credit card accounts with the bank

Electronic Data Interchange (EDI)-

Electronic Data Interchange is the electronic exchange of business documents like purchase order, invoices, shipping notices, receiving advices etc. in a standard, computer processed, universally accepted format between trading partners. EDI can also be used to transmit financial information and payments in electronic form. New and improved variant of EFT was implemented in November 2005 to facilitate one to one fund transfer requirement of individuals as well as corporate. It uses the Structured Financial Messaging Solution (SFMS) for EFT message creation and transmission from the branch to the banks gateway and to the NEFT Centre, so it can transfer the funds with more security. With the SFMS facility, branches can participate in both RTGS and NEFT System. Using the NEFT infrastructure, a one-way remittance facility from India to Nepal has also been implemented by the RBI since 15th May, 2008.

F] Innovative products and policies-

My Saving Rewards, the programme allow customers to accumulate reward points on a host of savings account transactions such as bill pay, online shopping, EMI payment etc.

24x7 fully electronic branches are opened to undertake real time transactions by the customer.

"E-Locker", an online service for storing important documents for privilege banking customers.

UID authentication for Aadhaar based payments and enabling corporate to pay taxes online.

Cash Deposit Machines (CDMs) are installed for cash deposits by customers at these machines by using their ATM cum Debit card.

E-trade SBI, a web based portal launched in March 2011 to access trade finance services with speed and efficiency.

To facilitate the Electronic Benefit Transfer (EBT) scheme for routing MGNREGA where all scheduled commercial banks were instructed to open Aadhaar enabled bank accounts of all the beneficiaries.

Know Your Customer (KYC) norms simplified to facilitate financial inclusion and customer services.

The RBI is replacing the existing RTGS with a new NGRTGS system which includes which includes few extra features like advanced liquidity management facility, Extensible Mark up Language (XML) based messaging system etc.

Recently launched scheme of government "Jan Dhan Yojana" with the motive that every family must have a bank account the banks installed Solar ATMs, windmills to fulfill their own energy needs, paperless banking etc. SBI is the largest deployed of Solar ATMs.

G] Challenges to be Faced Customer Satisfaction and Services-

Today, in banking sector customers are more value oriented in their services because they have alternative choices in it. So that each and every bank have to take care about pleasing customers satisfaction. Good customer services are the paramount brand ambassador for any bank for growing its business. Engagement with customer is an opportunity to develop a customer faith in the bank.

Global Banking-

It is practically impossible for any nation to exclude itself from world economy. for sustainable development, one has to espouse integration process in the form of liberalization and globalization .The impact of globalization becomes challenges for the domestic enterprises .The foreign banks operating in India are a major challenge for nationalized and private sector banks.

Managing Technology-

Acquiring the right technology, deploying it optimally and then leveraging it to the maximum extent is essential to achieve and maintain high service and efficiency standards while remaining cost effective and delivering sustainable return to shareholders.

Market Transparency-

According to Fernando transparency and disclosure norms as part of internationally accepted corporate governance practices are presumptuous importance in the emerging environment. Banks are expected to be more responsive and accountable to the investors. Banks have to unveil in their Balance sheets a plethora of information on the profiles of assets and liabilities, movements in NPAs, capital, shareholdings of the government, value of investment in India and abroad, the total investment made in the equity share, bonds, debentures, aggregate advances.

HJ Expansion-

Expansion of branch size in order to increase market share is another challenge to combat competitors. Therefore Indian nationalized and commercial banks must spread their wings towards global markets.

IJ CONCLUSION-

At present, Information Technology is used for two different avenues in banking- Communication and Business Process Re-engineering. According to studies about 250 million internet users are in India, which is among the top three in the world and this number will grow to 350 million by end of The E-banking, Mobile banking, Net banking and ATMs facility has gained the success among the customers. Customers are interested in adopting all such technology enabled banking facility. Payment settlement systems like RTGS, NEFT, EFT, ECS, and CTS have proved to be successful. The IT revolution has set the stage for overcoming the challenges the new economy poses keeping in view the extraordinary increase in financial activity across the world. Banks are striving to warfare the competition from global banks and technological innovation that has compelled to rethink policies and strategies. Finally the banking sector need to master a new business model by building management and customer services.

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A STUDY OF ENTREPRENEURSHIP IN RURAL DEVELOPMENT

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Abstract:

Villages are the backbone of a nation Two-thirds of India's population and 70 percent of its workforce live in rural areas. Rural people suffer from unemployment, poor infrastructure facilities, which can be solved by the development of rural entrepreneurs. Rural entrepreneurship can be seen as one of the solutions to poverty, migration, economic inequalities, unemployment, and the development of rural and backward areas. Rural entrepreneurs play an important role in the country's economy, especially in the development of rural life. But there are many problems in the development of rural entrepreneurship because rural entrepreneurs face many problems such as lack of basic services in rural areas, lack of education, financial problems, and insufficient technical and conceptual ability. The objective of this study is to examine the performance of rural industries in terms of production, sales, and employment during the ten-year period 2011-12 to 2020-21 in India. So, this article also aims to find out the problems and suggestions to solve the problems. Key words: rural entrepreneurship, village industry, activity, problems, rural development.

Keywords: Entrepreneurship, Rural Development, Performance, Problems

Introduction

India is a country of villages; Most of the country's population lives in rural areas. Rural people suffer from poverty, poor infrastructure, unemployment, which can be solved by developing rural entrepreneurs. According to a 2005 report by the Organization for Economic Cooperation and Development, rural areas are affected by major challenges such as reduced job opportunities in primary industries and an aging population due to migration of youth from Turban areas in search of work. It will also reduce rural migration to urban areas and reduce congestion in cities.

India is a predominantly rural country with two-thirds of the population and 70% of the workforce living in rural areas. The rural economy accounts for 46 percent of national income. Despite increasing urbanization, by 2050, 4,444 rural residents are projected to account for more than half of India's population. The economic development of our country largely depends on the progress of rural areas and the standard of living of farmers. Village or rural industry plays an important role in the national economy, especially in the development of rural life.

Rural entrepreneurship is based on the promotion of local entrepreneurial capacity and the subsequent growth of domestic companies. It recognizes the potential of rural areas and accelerates a unique pooling of resources, both within and outside agriculture. Rural entrepreneurship brings new production methods, new markets and new products, creating economic value for the rural sector and creates job opportunities, thus ensuring the continued development of rural life. Rural entrepreneurship has become a dynamic concept. It is usually defined as entrepreneurship born at the village level, which can take place in several fields of activity, such as commerce, industry, agriculture, and which plays a role as a powerful factor of economic development. Rural entrepreneurship can be considered as one of the solutions to reduce poverty, migration, economic inequalities, unemployment, and development of rural and backward areas.

Rural Entrepreneurship: Rural entrepreneurs are those who operate in the countryside using local resources. Rural entrepreneurs are increasing their purchasing power. and the standard of living of people by providing job opportunities for rural people..

Review of the Literature

Keeble et al. (1992) found in their research that UK rural SMEs outperform their urban counterparts in terms of employment growth.

In another article, Petrin (1994) concluded that rural development is now largely linked to entrepreneurship. It serves as a tool to improve the quality of life for individuals, families, and communities to maintain a healthy economy and environment.

Storey (1994) argued in his research that strategy initiatives can influence the level of entrepreneurship.

Lyson (1995) presented the potential of the Small Business Framework as a possible rural development strategy for economically disadvantaged communities.

Vaessen and Keeble (1995) showed that the external environment of the outermost rural areas presents challenges to SMEs to which they must adapt to survive and grow.

Sherief (2005) sought to understand the determinants of rural entrepreneurship and the enabling environment for its development. The study concluded that to accelerate the economic development of rural areas, it is necessary to promote entrepreneurship.

Objectives of the study

- 1) To study the various types of Rural Entrepreneurship.
- 2) To study analyse the performance of rural Entrepreneurship.

Research Methodology

This study is based on analytical secondary data found in nature. Statistical and mathematical tools such as simple growth rate and percentages are used. Data sources are annual reports of Udyog Bhavan, Ministry of Small and Medium Enterprises, New Delhi. To analyze the progress of the production, sales and employment of Rural Industries, percentages and simple growth rates are calculated.

Types of Rural Entrepreneurship.

The various types of enterprises in the rural areas can be broadly categorized under the following categories:

- 1) **Agro Based Enterprises:** These comprise direct sale or processing of agro- based products such as pickles, sugar industries, oil processing, fruit juice, dairy products, spices, etc.
- 2) **Forest Based Industries:** Such industries comprise wooden products, honey making, coir industry, eating plates from leaves, bamboo products, etc.
- 3) **Textile Industry:** These comprise spinning, weaving, bleaching, and coloring.
- 4) **Services:** There is a wide range of services including mobile phone repair, agriculture related machinery servicing, etc. are comes under this category.

Table No.1 Performance of Rural Entrepreneurship

Year	Production (Crores)	Growth Rate in %	Sales (Crores)	Growth Rate in %
2015-16	33424	25	40384	26
2016-17	41110	23	49991	24
2017-18	46454	13	56672	13
2018-19	56255	21	71113	26
2019-20	65343	16	84664	19
2020-21	76582	17	101307	19

Source: Compiled from various issues of MSME annual reports.

The above table shows the production and sales of village or rural industries. The village industry has shown growth compared to last year. Production and sales grew steadily from a total production of Rs. 33424 crores in

2015-2016, that figure was Rs. 76582 crores in 2020 - 21. Similarly, sale of products manufactured by Village Industries showed an increase of Rs. 40384 crores in 2011-2012 Rs. 101307 crores in 2020 - 21. The annual growth rate has also significantly increased in the production of Village Industries from 25% to 17% and in sales from 26% to 19%

Table No.2 Employment under Rural Ent.

Year	Employment (Lakh)	Growth Rate in %
2015-16	127	3
2016-17	132	4
2017-18	136	3
2018-19	142	5
2019-20	148	4
2020-21	154	4

Source: Compiled from various issues of MSME annual reports.

The table above shows the performance of village or rural industries in terms of employment. Village Industries Employment increased from 127 thousand Indians in 2015 - 16 to 154 thousand in 2020 - 21. However, the annual growth rate of employment decreased from 3% in 2016 to 4%. - 21.

Suggestions

- 1) The government should give special financial support to rural entrepreneurs.
- 2) Rural entrepreneurs should be provided with adequate and timely financial assistance from all financial institutions and banks.
- 3) The government should organize special training programs to improve the knowledge and skills of rural entrepreneurs.
- 4) Educated rural youth should be highlighted in the field of entrepreneurship.
- 5) Upgrading their technology is very profitable
- 6) Adequate funding must be allocated to modernize these outdated technologies, tools, and equipment to compete with large-scale industry.

Conclusion

The rural economy plays an important role in the national economy, especially the rural economy. The entrepreneur is the key to the birth of new businesses that refresh

the economy and rejuvenate the established businesses that make up the economic fabric. Therefore, rural entrepreneurship is an important tool not only to create job opportunities in rural areas with low capital costs and increase people's real incomes, but also as a contribution to the development of agriculture and urban industry. Without rural industrialization, it would not be easy to solve the problem of rural unemployment. Rural entrepreneurship can be seen as one of the solutions to poverty, migration, economic inequalities, unemployment, and the development of rural and backward areas.

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GST SLABS RATE: IMPACT ON SMALL BUSINESS IN INDIA

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Abstract:

GST is a major step towards creating a unified tax system to ensure efficient and effective tax administration in the Indian tax system. This comprehensive tax regime will add to India's appeal by reducing transport cycle times, improving supply chain decisions and improving ease of doing business, paving the way for India to be seen as a common national market.

The impact of GST on small business as well as the rates of GST levied on different goods and services have been surveyed here. The simplified tax structure and elimination of double taxation expected by businessmen will also benefit end consumers. As small businesses are faced with this changing tax system, the impact of this tax system on them is realized while studying this topic. Technology will play an important role in ensuring transformation of GST rates and related compliance obligations.

Key Words: Small Business, Goods and Service Tax (GST), Slab Rate etc.

Introduction:

The GST is seen as the Goods and Services Tax as one of the biggest reforms since India's independence. The Kelkar Committee recommended the GST tax as part of indirect tax reforms in the year 2003. Though the Union Finance Minister P Chidambaram announced on February 28, 2006 about the GST, the proposal of the GST was presented to Parliament for the first time on April 01, 2010. But in the Lok Sabha, the GST Bill was passed on May 06, 2015 and the Rajya Sabha passed the GST Bill on August 03, 2016 some modifications. The GST Bill, which was passed on September 01, 2016, was approved by President Pranav Mukherjee on the 122 amendment bill of the GST. Accordingly, the implementation of GST was actually implemented from July 1st, 2017. GST tax system has come into existence in many countries till now. The GST tax system was first introduced in France. Today, GST is the tax system in more than 150 countries.

On 1 July, 2017 at midnight, the President of India, Shri Pranav Mukherjee and Prime Minister Narendra Modi launched GST all over India, including Jammu and Kashmir. However, there have been many changes made to the rate of GST. The idea of introducing GST was first proposed by the Finance Minister P. Chidambaram in his budget for 2006-07.

GST is the indirect tax reforms of India. GST is a single tax on the supply of goods and services. It is a destination based tax. There is a saying, Kautilaya's Arthshastra, the first book on the economic world that the best taxation regime is the one which is 'liberal in assessment and ruthless in collection'. The proposed GST seems to be based on this very principle.

Objective of the Study:

- 1) To study the Slab Rate of GST in India.
- 2) To study the Existing Taxes under State and central Government.
- 3) To study the Positive and Negative impact of GST on Small Businesses.

Research Methodology:

The present research study is based on secondary data. The required data has been extracted from sources like research journal, Books and the authenticated websites.

- **Existing Taxes: (GST):** is as follows.

- 1) **State GST:** VAT/ Sales Tax, Purchase Tax, Entertainment Tax, Luxury Tax, Lottery Tax, State Surcharge and Cesses Liveable.
- 2) **Central GST:** Central Excise Duty, Additional Excise Duty, Service Tax, Additional Duty of Customs (ADC), Surcharge, Education and Secondary / Higher Secondary cess.
 - **Slab Rate of GST in India:** is as follows.

Sr. No.	Slabs Rate of GST	Goods and services items list
1.	0%	Goods: Essential Commodities like food grains, fruits, vegetables, milk, salt, earthen pots etc. Services: Charitable trust activities, transport of water use of roads and bridges, public library, agriculture, related services, Education and Health care services etc.
2.	5%	Goods: Commonly used items- LPG cylinder, Tea, coffee, oil, Honey, Frozen vegetables, spices, sweets etc. Services: Railway transport services, bus transport services, taxi services.
3.	12%	Goods: consumer goods: butter, ghee, dry fruit, jam, jelly, sauces, pickles, mobile phone etc. Services: Printing Jobwork, Guest house, Services, related to construction business.
4.	18%	Goods: Marble, Granite, Perfumes, Metal items, Computer, Printer, Monitor, CCTV etc. Services: Courier services, Outdoor catering, Circus, Drama, Cinema, Exhibitions, Currency exchange, Broker Services in share trading etc..
5.	28%	Goods: Luxury items, Motor Cycles and spare parts, Luxury cars, Pan-masala, Vacuum cleaner, Dish washer, AC, Washing machine, Fridge, Tobacco products, Aerated water etc. Services: Five star Hotel accommodation, Amusement parks, Water parks, Theme parks, Casino, Race course, IPL games, Air transport (business class) etc.

- ❖ **Impact on Small Businesses:** There are two types of Impact on Small Business. This is as follows.
 - **Positive Impact of GST:** Ease of starting business, Market expansion, Reduction of tax burden on new businesses and Removal of Multiple Taxation.
 - 1) **Ease of starting business:** Today, companies in other countries are needed Various tax rules in VAT registration Different states cause complications and Companies will receive higher processing Rewards GST provides centralized Records that make it easy to get started Give the business and the benefits of connecting As a result, the expansion of a small business.
 - 2) **Market expansion:** SMEs limit their customers within states as they will bear the ultimate burden of tax on interstate sales, which reduces their customer base. With implementation of GST, this will be nullified as tax credit will be transferred, irrespective of the location of the buyer and seller. This will allow startups, SMEs and MSMEs to expand their reach across borders.
 - 3) **Reduction of tax burden on new businesses:** As per the current tax structure, businesses with an annual turnover of over Rs 5 lakh need to pay a VAT registration fee. The basic exemption limit under GST is Rs 20 lakh and Rs 10 lakh for special states, which will bring relief to a large number of small dealers and traders.
 - 4) **Elimination of distinction between goods and services:** GST ensures that there is no ambiguity about how goods and services are made. This will facilitate various legal proceedings Related to packaged products. As a result, There will be no more distinctions Material and service components, Which will reduce tax evasion

- 5) **Removal of multiple taxation:** GST will facilitate the transfer of goods across the state And reduce the cost of doing business. The reforms will reduce many of the taxes imposed By the state and central government.
- **Negative Impact of GST:** Registration woes, Concept of ‘Casual Taxable, Composition levy mechanism is very restrictive, the draconian reverse charge mechanism and Working capital blockage.
 - 1) **Registration woes:** Under the GST Act, every state or union territory providing goods or services is required to register under the GST Act, where their turnover in the financial year is Rs. 3 lakhs or more (for the special category states in the northeast, this threshold is one lakh rupees). Thus, one would think that there is no need for younger players to register under GST. However, if small suppliers (goods or services or both) are supplying interstate supplies, they must register (their turnover is extremely complex). And the interstate supply shows supplies from Gurgaon to Delhi, the journey between which is a few hours.
 - 2) **Concept of ‘Casual Taxable:** This means that the person who occasionally deals in the supply of goods or services or both business or business of the two, that is, as a principal, agent or in any other capacity or state or union territory where he has no fixed place. Businesses also need to register. In addition to registering under the GST Act, the relevant taxpayer also has to pay tax when applying for registration on an estimated basis. Since there is no business location in that state or it does not have any excise tax, that state cannot be adjusted as GST input tax credit. To that extent, GST is a sinking price for such individuals.
 - 3) **Composition levy mechanism is very restrictive:** This is an alternative method of levying taxes for small taxpayers whose turnover is up to Rs.50 lakh. Those who choose this system are not allowed to receive input tax credit or collect any tax from the recipient. To some extent it is fair. Anyway, the rate of GST is lower under the design charge. In the case of the manufacturer this turnover is 50 lakh. 2.5 percent or 1 percent for sellers. But there are restrictions added (14) for example, once again interstate supplies are not allowed. Or in that case, if one opts for composition scheme then he cannot sell through e-marketplace (GST requires e-marketplace to collect source tax).
 - 4) **The draconian reverse charge mechanism:** If a small merchant (not required by the threshold limit for GST registration) provides goods or services to a customer registered under the GST Act, then the customer (buyer) will be liable to pay GST on such purchase. Not only this, the buyer has to walk by himself. In other words, the buyer must issue an invoice for his / her purchase from an unregistered seller. This invoice will be uploaded to the GST system.
 - 5) **Working capital blockage:** In GST, businesses have to maintain funds in the form of an electronic credit ledger with the tax department, which can result in a liquidity crunch. Also, a rigorous 'input tax credit' mechanism will lead to disruption of working capital.
- **Conclusion:**

In fairness, the GST rollout can open Impact of worms and across SMEs Different industries can vary greatly. It is Natural for widespread, nationwide widespread Tax reform, to mix it like GST Don't. Moreover, revolutionary taxes there will be acceptance that the rule will vary State to state. Overall, the new tax proposals under GST will have a mixed verdict. In essence, the GST's effect on the entire Indian economy will have to be scrutinized in totality to reach a widely accepted conclusion

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IMPACT OF TOURISM IN INDIAN ECONOMY

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Abstract.-

Tourism sector is considered as an engine of economic growth of the countries worldwide. India with its rich cultural and historical heritage and places with natural beauty has vast potentiality in tourism industry. Tourism sector becomes an important service sector in India as it generates employment opportunities, promotes foreign exchange earnings from tourism, upgrades the standards of livings of the people and leads to the overall economic growth in the country. Traveling and Tourism has been an integral part of Indian Culture & Tradition. Tourism Industry is the most vibrant tertiary activity and a multibillion industry in India. The potential and performance of India's tourism industry needs to gauge in terms of its socio- economic magnitudes.

It aimed to change the attitude and behavior toward foreign tourists by stressing on the aspect that a guest has been held in high esteem in India since ancient times. It also examines the impact of India's economic growth on tourism, Contributors to economic growth, Role of Tourism industry in India's GDP, Foreign versus Domestic Tourists. In this paper we discuss about tourism industry as well as tourism impact of economy in India because tourism contribution in GDP 9.2% (2022) and it help to developing country and tourism has both positive and negative distant coming to effect on financial, social, political . The paper is an attempt to discuss the impact of tourism on Indian Economy.

Keywords.-

Tourism, Contribution of Tourism to GDP in India, Impact of Tourism, positive and negative impacts on the Indian economy.

Introduction.-

Tourism emerged at the largest global industry of the 20th century. In the new millennium global economy will be governed by technology, telecommunication and tourism. Tourism has potential to create the minimum number of jobs. Tourism is an important, even vital, source of income for many reasons and countries. It's importance was recognised in as" an activity essential to the life of nations because of its direct effects on the social, cultural, educational and economic sectors of national society and on their International relations." the foundation of tourism rests on three key elements which from an equation.

$$\text{Tourism} = \text{Leisure Time} + \text{Discretionary Income} + \text{Positive Local Sanctions.}$$

There has been race among the developed and developing countries to expand tourism indiscriminately. Says that," Development does not mean increases in GNP and GDP alone. It must add to prosperity and happiness. An important feature of the tourism industry is its contribution to the national integration and creation of harmonious social and cultural environment. Today, tourism is a major source of income for many countries, and affects the economy of both the source and fast countries. "Tourism is one of the largest and fastest growing industries in the world. According to the world travels and tousles council, tourism generates 12% of the global gross national product and it around 200 million people worldwide.

In developing countries like India tourism has become one of the major sectors of the economy, contributing to a large proportion of the National Income and generating huge employment opportunities. It has become the fastest growing service industry in the country with great potentials for its further expansion and diversification. Nearly 39.5 million jobs are supported through tourism industry. Average growth rate of tourism industry is 7 to 8%. Tourism is one of the third largest net earners of foreign exchange for the country.

Definition of Tourism.-

Tourism is difficult to define because travelers and convention-goers can combine conferences with tourist-type activities, but in general, a tourist is a temporarily leisured person who voluntarily visits a place away from home for the purpose of experiencing changes.

The Macmillan dictionary defines, tourism as the business of providing services for people who are travelling for their holiday.

The World Tourism Organization defines tourism more generally, in terms which go "beyond the common perception of tourism as being limited to holiday activity only", as a people "travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes."

Significance of The study.-

Will help us to find out the impact of tourism on economic development in India. The tourism sector has 9.2% contribution in GDP and the regulation of the Indian society. The impact that find out throughout the study that more beneficial and effective in nature of the tourism industry in India. Development and growth are definite term of two factor which regulates of the impact of tourism on economic development in India and more developmental factor in the Indian country.

The Objective of the study.-

The objective of this study are as follows.

1. To know the significant role of tourism sector for Indian economy.
2. To enhanced the tourism industry for the wealth and employment creation.
3. To spread the awareness for the role of economy growth by tourism sector.

The Study area.-

The research has been conducted on Indian level tourism sector based on the secondary data where the study on the impact of tourism on economic development in India. The main motive is to know the significant role of tourism sector for Indian economy and spread the awareness for the role of economy growth by tourism sector where every sector will enhance the tourism industry for the wealth and employment creation.

Methodology.-

The present study is based on the secondary data published by various agencies and organizations which is based on secondary data. The present study makes use of data and information provided by, UNWTO, Ministry of Tourism, Ministry of Statistics and Programme Implementation, Newspapers, Research paper and Articles, Magazines, Books, Economic journals and Internet etc.

Contribution of Tourism to GDP in India.-

Tourism sector plays as a very vital sources of Indian Gross Domestic Product. The following table shows on contribution of tourism to Indian Gross Domestic Product period for the 2013 to 2023.

Year	GDP Contribution (Billion Dollars)	Share in GDP (%)
2013	172.91	7.2
2014	185.63	6.7
2015	201.43	6.6
2016	219.72	6.6

2017	232.01	7.0
2018	247.37	6.7
2019	191.03	7.0
2020	121.09	4.3
2021	178.09	5.8
2022	211.05	6.2
2023	268.03	8.5

Above the table presented share of tourism sector India contribution of travel and tourism to GDP (% of GDP) fluctuated substantially in recent years. Tourism contribution in GDP continually increased in year 2013 to 2018. It tended to decrease through 2019 - 2020 period. But next three years i.e. between 2021, 2022 and 2023, the tourism GDP contribution rate grown.

Impact of Tourism on Indian Economy.-

Impact of Tourism on India Tourism industry in India has several positive and negative impacts on the economy and society. These impacts are highlighted below.

1) Provoke Income.-

Tourism in India has emerged as an instrument of salary and work era destitution easing and feasible human advancement. Tourism sector plays very important role in every countries economy. It is growing field and every country have their own values cultures monuments and various places and etc. so the tourist attract for the other countries economy and things so we can increase and provoke income.

2) Source of Foreign Exchange Earnings.-

Tourism is an important source of foreign exchange earnings in India. This has favorable impact on the balance of payment of the country. The tourism industry in India generated about US\$100 billion in 2008 and that is expected to increase to US\$275.5 billion by 2018 at a 9.4% annual growth rate.

3) Employment Generate.-

In tourist sector employment generating is very firstly because of tourism provide small and big for services every invisible in every sector, Like- tourist, guide, travel, ticketing and handmade things, and lodging.

4) Contribution of GDP.-

The Indian government through the tourism department also collect money in more far-reaching and indirect ways that are not linked to specific parks or conservation areas. User fees, income taxes, taxes on sales or rental of recreation equipment, and license fees for activities such as rafting and fishing can provide governments with the funds needed to manage natural resources. Such funds can be used for overall conservation programs and activities, such as park ranger salaries and park maintenance.

5) Promoting Peace and Stability.-

Tourism industry can also help promote peace and stability in developing country like India by providing jobs, generating income & diversifying the economy.

6) Entrepreneur Develops.-

From tourism sector, we build or make an entrepreneur, because this sector provides employment and encourage a person to take initiative, innovation for a start-up. Tourism is a different industry and a growing field in every country.

7) Regional Development.-

The underdeveloped regions of the country can greatly benefit from tourism development. Many of the economically backward regions contain areas of high scenic beauty and cultural attractions.

8) International infrastructure Development.-

Tourism tends to empower the advancement of multiple-use framework that benefits the have community, counting different implies of transports, wellbeing care offices, and sports centers, in expansion to the inns and high-end eateries that cater to remote guests. The improvement of framework has in turn actuated the advancement of other specifically beneficial exercises.

9) Improve Forex:

Tourism is an important source of outside trade profit in India. This has favorable impact on the adjust of instalment of the nation. It is very helpful for forexes exchange convertibility every country attracts each other for their different kind of nature and environmental phenomena so for this money exchange is very important for forex exchange.

10) Economic Value of Cultural Resources.-

Tourism provides monetary incentives for the development of many local crafts and culture, thus it has an effect on the income of the local artisans and artists.

Negative Impacts.-

1) Undesirable Social and Cultural Change.-

Tourism sometimes led to the destruction of the social fabric of a community. The more tourists coming into a place, the more perceived risk of that place losing its identity. A good example is Goa. From the late 60's to the early 80's when the Hippy culture was at its height, Goa was a haven for such hippies. Here they came in thousands and changed the whole culture of the state leading to a rise in the use of drugs, prostitution and human trafficking. This had a ripple effect on the country.

2) Creating a Sense of Antipathy.-

Tourism brought small advantage to the neighborhood community. In most all-inclusive bundle visits more than 80% of travelers' expenses go to the aircrafts, lodgings and other worldwide companies, not to neighborhood businessmen and laborers. Additionally, expansive lodging chain eateries frequently consequence nourishment to fulfil outside guests and once in a while utilize neighborhood staff for senior administration positions, avoiding neighborhood agriculturists and laborers from harvesting the advantage of their nearness. This has regularly made a sense of aversion towards the sightseers and the government.

3) Increase Tension and Hostility.-

Tourism can increase tension, hostility, and suspicion between the tourists and the local communities when there is no respect and understanding for each other's culture and way of life. This may further lead to violence and other crimes committed against the tourists. The recent crime committed against Russian tourist in Goa is a case in point.

3) Adverse Effects on Environment and Ecology.-

One of the most important adverse effects of tourism on the environment is increased pressure on the carrying capacity of the ecosystem in each tourist locality. Increased transport and construction activities led to large scale deforestation and destabilization of natural landforms, while increased tourist flow led to increase in solid waste dumping as well as depletion of water and fuel resources. Flow of tourists to ecologically sensitive areas resulted in destruction of rare and endangered species due to trampling, killing, disturbance of breeding habitats. Noise pollution from vehicles and public address systems, water pollution, vehicular emissions, untreated sewage, etc. also have direct effects on bio-diversity, ambient environment and general profile of tourist spots.

5) Undesirable Social and Cultural Change.-

Tourism sometimes led to the destruction of the social fabric of a community. The more tourists coming into a place, the more the perceived risk of that place losing its identity

6) Seasonal Character of Job.-

The job opportunities related to tourism industry are seasonal in nature as they are available only during the tourist season.

7) Increase in Prices.-

Increasing demand for basic services and goods from tourists will often cause price hikes that negatively affect local residents whose income does not increase proportionately.

Conclusion and Suggestions.-

Tourism has origin as the world's biggest industry the tourism segment plays an imperative role in the way of economic life. Tourism industry in India is growing and it has vast potential for generating employment and earning large amount of foreign exchange besides giving a fillip to the country's overall economic and social development. Tourism is one of the most important income generating source. The conservation of historical, cultural and religious sites represents at all times, and notably in times of conflicts, one of the fundamental responsibilities of the State for which, the State need huge amount for its preservation and conservation. But much more remains to be done. Eco-tourism needs to be promoted so that tourism in India helps in preserving and sustaining the diversity of the India's natural and cultural environments.

Tourism in India should be developed in such a way that it accommodates and entertains visitors in a way that is minimally intrusive or destructive to the environment and sustains & supports the native cultures in the locations it is operating in. Moreover, since tourism is a multi-dimensional activity, and basically a service industry, it would be necessary that all wings of the Central and State governments, private sector and voluntary organizations become active partners in the endeavor to attain sustainable growth in tourism if India is to become a world player.

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NEW TRENDS IN BANKING SECTOR IN INDIA

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Abstract

The Financial sector, of which Banking sector is the largest player, plays a dominant role in building the economy of an individual as well as a nation. Banks have control over a large part of the supply of money in circulation. They are the main stimulus for the economic progress of a country. Indian banking system touches the lives of millions of people and it is growing at a fast pace. Banking industry in India is facing number of challenges like changing needs and perceptions of customers, new regulations from time to time and great advances in technologies. The pressure of meeting these challenges have compelled banks to change the old ways of doing business. With the emergence of Privatisation, Globalisation and Liberalisation in India, Banks are focusing on Research and Development and applying various innovative ideas and technology. There is a close relationship between the development of banking sector and the new innovations in technology and Electronic data processing. The present paper focuses on major technology trends and innovation in banking.

Key words: World economy, Indian Banks, Banking sector, India

I. INTRODUCTION

Today Indian banking Sector is a flourishing Industry; it's mainly focused on new Banking technological innovations. Banks created to use technology to provide effective quality and services to the customer and get high speed. Innovation in banking technology is driven by the constantly evolving customer expectations and internal business mandates. Customer behavior patterns have shifted over the last couple of years and the focus now is on instant fulfillment – be it for account opening, transactions (financial/nonfinancial) or problem resolution. Customers today demand a 24×7 consistent access to systems and services, with the fastest transaction processing possible. In the recent scenario has been changed, there are around 340 banks are working in India, in which are public and private banks. Today all the banks started with the different channels, like ATM, Credit Cards, Debit Cards, Mobile Banking,

II. OBJECTIVES OF THE STUDY

- To study the emerging trend of banking technology and innovation.
- To study the challenges faced by Indian banks in the changing scenario.

III. APPLICATIONS PROGRAMMING INTERFACE(API) :

An API (Application Programming Interface) is an interface that allows to synchronize, link and connect the database of service with any application. Their implementation in the banking system is basically the same: they link a bank's database (its customers' information) with different applications or programs, thus forming a network encouraging the promotion of services, payments, and products appropriate to each person. Its benefits range from cost reduction, optimization of services, reduction of time spent on transactions, increased revenue and facilitation in all the needs of those who accept it.

IV. Innovation Labs:

Many banks have adopted proactive strategy by establishing their own internal innovation labs. Innovation labs operate with the primary objective of evaluating and adopting emerging technologies and contribute to bank's motive of digitalization.

1. UPI :

National Payments Corporation of India (NPCI) launched Unified Payments Interface (UPI) in 2016 with 21

member banks. UPI is a system that powers multiple bank accounts into a single mobile application, merging several banking features and seamless fund routing. UPI has been considered as the revolutionary product in payment system.

Example : BHIM app,Google Tez,Paytm,SBI Pay,BOB UPI,Axis Pay

2. Digital Wallets :

Digital Wallets allow an individual to make electronic transactions using a smartphone. Awareness and use of e-wallets increased post demonitisation in India. It is indeed one step towards “less cash” economy. Example : mRupee, ICICI Pockets,HDFC PayZapp,

3. Wearable Technology :

“To wear your bank on your wrist” is a reality today. Smart watch banking helps the customers check their balance, get fraud alerts, carry out both financial and information transactions and offers many more services, all on their wrist.

In India, ICICI has launched an app named iWear for all smart watches. ICICI is among few global players allowing transactions using this app on both Apple and Android platforms. As technology is redefining banking, wearable banking and transactions via smart watches and smart glasses is gearing up as a key trend.

❖ The 3 Big B’s :

The 3 Big B’s prominently trending today in Indian banking sector are Biometrics, Blockchain and Big Data Analytics.

1. Biometrics :-

Biometrics technology makes use of biological data and behavioural characteristics that differentiates one human being from another. Biometrics is secure and cost effective method for authentication process of the customers of the bank. It eliminates the burden of remembering passwords, PINs and card numbers.

2. Biometrics application in banking sector

Biometrics type	Example
Fingerprint	DCB has set up ATMs in Bengaluru, Mumbai, Chennai that require fingerprints to withdraw money. The ATM operates using Aadhaar card data and links a customer’s fingerprint data with his Aadhaar biometric details. HDFC is reaching out to rural areas with micro ATMs (handheld device). Fingerprints are used for instant authentication.
Voice Recognition	ICICI Bank introduced voice recognition for its customers to transact smoothly through the bank’s call center. Voice of the customer acts as the password.
Face Reading	Federal bank has introduced zero balance selfie account which uses an app (Feedbook), scanned PAN, Aadhaar details and a selfie to open an account instantly. App gets converted into a passbook once the account is opened.

3. Blockchain:-

A blockchain is a data structure that is used to create a digital ledger of transactions and share it among a

distributed network of computers. The underlying principle used is cryptography, wherein each participant on the network is allowed to manipulate the ledger in a secure way without the need for a central authority.

4. Present day applications in India

In October 2016, ICICI Bank carried out India's first international trade transaction and overseas remittances using blockchain technology. ICICI partnered with Dubai's largest bank Emirates NBD for this project. AXIS Bank and YES Bank too are working on blockchain technology.

5. Big Data Analytics :-

Big Data are said to be extremely huge data set that has to be analysed, handled, managed and validated through typical data management tools. Indian banks have millions of customers. The data of these customers is stored in the database. Retrieving the data in meaningful manner becomes a complex process as many times the data collected is unorganized. Big Data Analytics helps in resolving this problem.

To achieve competitive edge in today's modern banking era, banks in India are using data analytics to attract new customers, retain them and make the entire process consumer centric.

❖ Real time gross settlement (RTGS):

Real time gross settlement is a fund transfer system. Settlement in "real time" means the transactions happen almost immediately "gross settlement" means transaction is settled one to one basis. This is mainly used for transaction which high in value and need to be cleared immediately.

Real Time Gross Settlement system, introduced in India since March 2004, is a system through which electronics instructions can be given by banks to transfer funds from their account to the account of another bank. The RTGS system is maintained and operated by the RBI and provides a means of efficient and faster funds transfer among banks facilitating their financial operations.

❖ National Electronic Funds Transfer (NEFT):

According to Reserve Bank of India, National Electronic Funds Transfer (NEFT) is a nation-wide payment system to facilitate one-to-one funds transfer. Under NEFT, individuals, firms and corporates can electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country participating in the Scheme. The funds under NEFT can be transferred by individuals, firms or corporates maintaining accounts with a bank branch. Even individuals not having a bank account can deposit cash at the NEFT-enabled branches with instructions to transfer funds using NEFT. However, such cash remittances will be restricted to a maximum of Rs.50, 000/- per transaction. Such walk-in-customers have to furnish full details including complete address, telephone number, etc. NEFT, thus, also help in transfer of funds even without having a bank account. This is a simple, secure, safe, fastest and cost effective way to transfer funds especially for Retail remittances.

❖ Electronic fund transfer:

It is a system of transforming money from one bank account direct to another without any paper money changing hands. Direct deposits are one of the most widely used EFT program. It refers transfer of funds initiated through on electronic terminal, including credit cards, ATM, and point of sale transactions. It used for both credit transfer and debit transfer. Electronic fund transfer transactions are processed through the automated clearing house network. The growing popularity of EFT for online bill payment in paying the way for paperless universe where checks, stamps, envelopes, and paper bills are obsolete. Through EFT administrative costs should be reduced, increase efficiency, simplified bookkeeping and greater security.

❖ Point of sale (POS):

Point of Sale Terminal is a computer terminal that is linked online to the computerized customer information files in a bank and magnetically encoded plastic transaction card that identifies the customer to the computer. During a transaction, the customer's account is debited and the retailer's account is credited by the computer for the amount

of purchase.

❖ **Electronic Clearing Service (ECS) :**

Electronic Clearing Service is retail payment systems that can be used to make bulk payments/receipts of a similar nature especially where each individual payment is of repetitive nature and of relatively smaller amount. This facility is meant for companies and government departments to make/receive large volumes of payments rather than for funds transfers by individuals.

V. CHALLENGES

- Automation and AI may lead to unemployment

AI and automation are the major breakthroughs of today's innovation era. Although the benefits are promising, technology revolution poses a great threat to many of the jobs which will be completely automated and opportunities for job seekers will shrink. Banking is no exception to this fact.

- **Voice Revolution will take over online banking**

As voice recognition and voice authentication mature, web traffic to banking sites and mobile applications may drop by 50% in next few years. Customers will simply TALK to an internet connected device and perform most common banking tasks within few seconds. Drop in web traffic due to voice recognition systems could pose a serious threat to banking industry. The customers who currently visit the websites for banking tasks, also go through the marketing promotions on the site. The banks may lose the opportunity to cross sell current customers with drop in web traffic.

- **Issues related to Biometrics**

Operational issues – A minor could change the voice quality and may pose problems in speech authentication. People who work in labour intensive jobs may have damaged fingerprints. Even the senior citizens may have problem in fingerprint authentication.

- **Security issues**

In its note on 'Digital Payments - Analysing the cyber landscape', KPMG mentioned, cybersecurity is one of the most critical challenges faced by stakeholders of the digital payment ecosystem. With more and more users preferring digital payments, the chances of getting exposed to cybersecurity risks like online fraud, information theft, and malware or virus attacks are also increasing. Lack of awareness and poor digital payment ecosystem are some of the primary reasons that have led to increase in these attacks.

- **Digital literacy in rural areas**

There has been considerable growth in the users of smartphone in rural India in last few years. But not many are aware and confident about online banking through smartphones. The primary usage of smartphone is restricted to entertainment and communication only. As the urban tech savvy customers adopt the changing landscape of ICT innovation in banking, Indian rural population yet needs to be educated about the concepts of AI, Biometrics, Blockchain, Big Data etc.

VI. CONCLUSION

An upgradation of technology banks are playing vital role in economic development. Banking sector in India is resulting with increased growth in customers. By providing innovative facilities of banks. The changes made by banks are mostly focused on financial inclusion for expansion into rural areas and bringing stability by boosting credit growth making banking services near to the customer directly and reducing customer valuable time.

The current trends in banking are building blocks of the "Cashless Economy". Though there are few challenges, technology will keep evolving and with collaborative efforts of Banks, Government and end users, overcoming these challenges will certainly be possible. The initiative of Government of India will very soon achieve its mission

and rural India too would be “digitally literate”. Banks will have to develop a strategy to bridge the gap of technology in rural banks and urban banks.

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FACTORS AFFECTING OFFLINE & ONLINE SHOPPING BEHAVIOR OF RESPONDENTS

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Abstract

Although the use of online modes for shopping has increased at phenomenal pace, still only 25% of market is penetrated with online stores, as a result a large number of people are still relying on traditional methods. Thus, there is a need to study those factors, which are resisting people to shop online. In fast expanding market, virtual marketplace practitioners are facing issues to understand the mechanisms of virtual shopping and the behaviour of the online consumer. The objective of this paper is to study the factors affecting online & offline shopping behaviour of Consumers. It has been concluded that there is a significant difference between the factors affecting online and offline shopping behaviour.

The Internet is increasingly becoming the most important instrument for communication and the ease of business[1]. The Internet in India has traditionally been used for the purpose of facilitating communication[2]. The number of people who shop and make purchases on the internet has increased dramatically in recent years[3]. Do people prefer to purchase offline or do they prefer shopping online? To put it another way, when it comes to making a purchasing choice, do individuals prefer to buy offline or online at conventional retail stores? When seen from the perspective of merchants and marketers, this is a very crucial concept to grasp.

Keywords: Offline Shopping, Online Shopping, Shopping behavior

INTRODUCTION

The Internet is increasingly becoming the most important instrument for communication and the ease of business . The Internet in India has traditionally been used for the purpose of facilitating communication . The number of people who shop and make purchases on the internet has increased dramatically in recent years . Do people prefer to purchase offline or do they prefer shopping online? To put it another way, when it comes to making a purchasing choice, do individuals prefer to buy offline or online at conventional retail stores? When seen from the perspective of merchants and marketers, this is a very crucial concept to grasp . The percentage of customers who choose to make their purchases online has seen a considerable uptick in recent years. It encourages retailers to offer items and services via online channels so that they may grow their markets in those ways. Marketers are always coming up with innovative ways to market their goods and services. Customers may also take advantage of new opportunities provided by traditional shops. Individuals make buying decisions based on their own preferences, which may be influenced by a variety of variables. Numerous research have been done in the past with the goal of understanding consumer behaviour and attempting to identify all of the components that are responsible for consumer behavior's influence. The speed with which new technology is developed in modern times has a direct and substantial impact on the buying choices of individuals

OBJECTIVES OF THE STUDY

The research has carried out with the intention of achieving the following goals: (i) To investigate the buying behaviour of consumers towards online and offline shopping. (b) To determine the major elements that impact consumer buying behaviour towards online and offline shopping .(c) To investigate the difficulties that consumers have while shopping offline and online.

LITERATURE REVIEW

Offline shopping, sometimes known as "traditional" shopping, refers to the practise of consumers making actual trips to physical locations, such as shops or retail stores, in order to make purchases. Buying and selling of products and services through the internet is referred to as "online shopping." The term "online shopping behaviour" or "buying behaviour" refers to the practise of making purchases of goods or services via the use of the internet. The method is comprised of five stages, each of which is analogous to stages often linked with shopping behaviour. Most of the existing research on consumers' willingness to shop online and offline has focused on determining the variables that influence this propensity. Male respondents are more inclined to shop for technology related items online, while female respondents are more likely to buy for clothing and accessories. Those above the age of 35 are less likely to make purchases from internet merchants owing to a general lack of comfort with new technologies. It was found that the desire of consumers to make the transition from traditional stores to online marketplaces was moderated by gender. There is a positive and statistically significant correlation between people's trust in online retailers and their propensity to avoid taking risks when making purchases. It was determined that reliability was the single most influential factor when it came to making online purchases. One aspect that might influence a customer's decision to make the switch from traditional to online purchasing is their perception of the inherent risks involved in making such a change. The delivery cost affects how seriously one takes the danger. Privacy, the firm's reputation, and accurate product information were found to be the three most important factors in a study of customers' opinions of online buying. Repurchase intent is correlated with consumers' evaluations of the product's value and assurances. When making a purchase at a brick-and-mortar store, consumers placed a high premium on the product's brand. One aspect that influences shoppers' decisions about whether or not to make the switch from in-store to online shopping in Indonesia is the perceived difference in delivery time. Internet purchases may be influenced by shoppers' reported levels of enjoyment. Cost considerations in making the transition from traditional to online shopping might influence final purchases. Factors like ease of use encourage online shopping. Researchers found that despite the convenience of online shopping, consumers remain reluctant to make purchases from these sites. Convenience is affected by the delivery fee. The respondents said that the ease of internet purchasing was the main reason they shopped there. The ease of use was ranked as the primary motivator for consumers to make online shopping (Jadhav & Khanna, 2016; Kanade & Kulkarni, 2018; Perea y Monsuwé et al., 2004). Consumers cited product availability as the factor that mattered most in online shopping. Many consumers now like shopping online because of the greater variety of products available. E-loyalty and e-satisfaction among consumers exhibited a positive correlation with technological adoption characteristics. Attitudes toward and intentions to shop online were shown to be influenced by previous online buying experiences. People are more likely to buy something online if it is priced cheaper than it would be in stores. Online shoppers were shown to care most about price. In online shopping the likelihood of making a repeat buy is correlated with how much that buy is thought to cost. Security is a major and unfavourable factor in consumers' choices to purchase online. When deciding whether or not to make a first online purchase, consumers are greatly impacted by the perception of safety associated with making such buying. After reading the relevant literature, we were able to identify a research gap, which assisted us in defining the requirements, scope, and goals of the current study. It has been found that little study work has been done on consumer buying behaviour towards online and offline shopping; nonetheless, such work is required to be explored in view of increasing difficulties. The majority of research in this field are connected to contexts other than the West Tripura district; as a result, there is a need to study shifting consumer habits, behaviours, and patterns towards online and offline shopping. It would seem that just a few studies have been conducted to evaluate the consumer buying behaviour towards online and offline shopping in the West Tripura area.

Heejin Lim and Alan F. Dubinsky (2018) analyzed "an expectancy value approach to study consumers' perception of e-shopping characteristics with reference to e-store factors viz., merchandise; convenience, interactivity; reliability; promotions, and navigation. The findings obtained demonstrated that consumers' attitude toward online shopping was positively related to their perceptions of Website merchandise and reliability attributes."

Pavlou (2017) evaluated "online transactions that can be considered to consist of three key steps such as information retrieval; information transfer, and product purchase. The information retrieval and exchange steps are regarded as intentions to use a website; however, product purchase is more applicable to an intention to transact with a website. Purchase intention has been defined as the situation which manifests itself when a consumer is willing and intends

to become involved in online transactions. Online transactions have three different characteristics from traditional transactions viz., Interactions use extensive technology; second the uncertain, temporal, impersonal character of the online transaction environment and third, Open, unpredictable, and technological infrastructures during the processes of online transactions”

Lopes & Tanaya (2016) in their study stated that Consumers are very particular about their products purchase irrespective of online or offline purchase. The eyewear industry has grown tremendously in India. The consumer preference is also changing as people now prefer to shop online rather than offline shopping for eyewear products. The factors such as awareness, willingness, average monthly spend on eyewear, preference amongst others are prominent factors considered while offline and online shopping of eyewear products.

Singhal & Shekhawat (2015) in their study did an extensive review of literature that has lead to the extraction of various factors affecting online purchasing of various products and services. The most motivating factors have been identified which encourage consumers to shop online. The study also unveils the various resisting factors, which act as barrier and divert the consumers towards traditional buying mechanism.

Riquelme, Isabel P., and Sergio Román,(2014) examined the role of several consumers' cognitive and psychographic traits in their perceptions of retailers' deceptive practices (perceived deception) and the different effects on perceived deception associated with online vis-à-vis in-store shopping.

RESEARCH METHODOLOGY

Data are the foundation of every research endeavour; without them, no study can get off the ground. Primary data make up the bulk of this investigation, with secondary data providing support. The primary data will be obtained via the use of a self-administered questionnaire, which will then be complemented by personal interviews and conversation with the consumers. Secondary data are being acquired from secondary data sources such as research studies, books, journals, magazines, newspapers, online journals, articles web links, and so on. The questionnaire was broken up into three components, which were intended to gather information on the demographics, attitudes, and behaviours of online shoppers, as well as to assess how they felt about buying online. The structured questionnaire had questions with one of two predetermined options. It was made available to the respondents a variety of different replies from which they might choose one. Standardized testing was made possible because to the questions with fixed-choice alternatives. The items were evaluated using Likert scales with five points, with 1 being a severe disapproval and 5 representing a strong agreement with the statement . In order to determine how effectively the questionnaire was comprehended, a pilot survey consisting of just 20 respondents was carried out. During the course of the interview process, a few flaws in the design were discovered. The responders voiced their dissatisfaction with the vagueness of a few of the questions.

OBJECTIVE:

The purposes of this research paper is to study the factors affecting online & offline shopping behaviour of Consumers.

HYPOTHESIS:

H0: There is no significant difference between the factors affecting online and offline shopping behaviour

H1: There is a significant difference between the factors affecting online and offline shopping behavior

Analysis & Interpretations

Respondents were asked to indicate factors influence them for shopping on 5 point scale ranging from 5 (Extremely Influential) to 1 (Not at all Influential). Final ranking is obtained with the help of arithmetic mean. The analysis of results is presented in further sub sections.

1. Factors affecting Offline Shopping behavior of Respondents

The Extremely Influential factor during offline shopping was Reliability of Manufacturers with a mean score of 4.22. The factors ranked from 2nd to 4th and Very much influence the offline shopping were After Sales Service (Mean Score = 3.91), Product Description (Mean Score = 3.55) and Store Ambiance (Mean Score = 3.55)

respectively. Mean score analysis revealed that factors which somewhat influence the online shopping behavior of respondents and ranked from 5th to 13th positions were Competitive Pricing (Mean Score = 3.28), Schemes & Offers (Mean Score = 3.25), Availability of Variety and brand of Products (Mean Score = 3.16), Product Return facility (Mean Score = 3.09), More Relaxing Shopping (Mean Score = 2.99), Saves Money (Mean Score = 2.8), Saves Time (Mean Score = 2.78), Convenient Delivery (Mean Score = 2.71), and Cash on Delivery facility (Mean Score = 2.66).

2. Factors affecting Online Shopping behavior of Respondents

Similarly respondents were asked to indicate the influence of the factors affecting their online shopping decision on five point scale starting from extremely influential to not at all influential (1). The Availability of Variety and brand of Products” was the most influencing factor affecting the respondents’ decision of online shopping with a mean score of 4.65 followed by Schemes & Offers (Weighted Mean score = 4.63). Convenient Delivery ranked 3rd with a Mean score of 4.46, followed by Competitive Pricing that ranked 4th with a weighted mean score of 4.44. Saves Time was the fifth influencing factor of online shopping with mean score of 4.40 trailed by Product Return facility at 6th rank with a weighted mean score of 4.36.

Saves Money graded at 7th place with a mean score of 4.26, trailed by More Relaxing Shopping at 8th rank with a mean score of 4.15. 24 X 7 Shopping facility ranked as 9th influencing factor affecting respondents’ decision of online shopping with a mean score of 4.07. The mean score of Website Design was 3.91 and ranked at 10th place followed by Product Description (rank=11) with a weighted mean score of 3.84. The last four ranked factor affecting the online shopping behavior of respondents were After Sales Service (Mean Score=3.75), Customer Care Facility (Mean Score=3.73), Cash on Delivery facility (Mean Score=3.65) and Reliability of Manufacturers (Mean Score=3.47).

HYPOTHESIS TESTING

H0: There is no significant difference between the factors affecting online and offline shopping behaviour

H1: There is a significant difference between the factors affecting online and offline shopping behaviour

t- test was used to measure the significant difference between the factors affecting online and offline shopping behaviour.

It can be observed that all the t-values are significant which leads to the rejection of hypothesis so it can be concluded that there is a significant difference between the factors affecting online and offline shopping behavior

CONCLUSION:

From this research following conclusions can be drawn:-

1. The Extremely Influential factor during offline shopping was Reliability of Manufacturers followed by After Sales Service.
2. Availability of Variety and brand of Products was the most influencing factor affecting the respondents’ decision of online shopping followed by Schemes & Offers.
3. There is a significant difference between the factors affecting online and offline shopping behaviour

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CLIMATE CHANGE AND MIGRATION IN INDIA: A POLICY ANALYSIS

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Introduction

There are many literature have been addressed on global environmental change and migration as a major challenge for adaptation. Since over recent decades many new theoretical and methodological framework for empirical study have been developed by many analysts. They posit people migration due to climate change as an effective adaptation strategy. From the interpretation of literature on environmental change and migration, this study seek to provides evidence from research on how such migration works as an adaptation strategy by government development policies which reduce its impact form climate change on people in India. The key challenge is to develop a policy that facilitates the adaptive capacity of migration rather than inhibiting it. Such an endeavour and subsequent shift in policy where it is sub-optimal is imperative in a warming globe, in which environmental and climatic features and natural hazard patterns are changing. Such changes may imply different forms of migration – whether proactive or reactive, forced or voluntary, free or restrictive. Anticipated and/or planned migration could be an effective adaptation strategy.

Review of Literature

International Monetary Fund (IMF), The humanitarian and/or human security issues surrounding climate change are the possibilities of mass migration and/or violent conflict as the result of biological or ecological disruptions associated with climate change. So, both of which are emerging as a key security concerns among national governments and international institutions are intricately tied to the vulnerability context that disaster risk reduction and climate change adaption are targeting .The human security broadly defined includes the mean to right, needs, demographic and technical change.

Planning Commission, Department of Family Wealfare, Government of India, (2000). At present, the climate change community offers a growing body of research and experience on adaptation a social process with an emphasis on strategies and measure vulnerability and enhance the capacity to adapt to shocks and stressors.

Department of Family Welfare, Ministry of Health and Family Welfare, Government of India. (1997). The Human Development Report 2007/08 elucidates clearly that the critical challenge facing humanity from climate change, particularly in developing countries, is to balance the objective of attaining a decent standard of living without compromising the same for future generations.

Statement of the Study

The vulnerabilities arising out of climate change are multidimensional and interlinked, with vulnerability in one sector compounding vulnerabilities in others.

Objectives of the Study

1. To explain the human security issues surrounding climate change are the possibilities of mass migration.
2. To analyse the Climate change Mainstreaming Adaptation Framework on Policy in India

Research Methodology

The present study follows the simple method of analysis i.e. analytical method for analyzing problems of climate change and policy implementation in India. Thus, the study investigates the variations in Policy implementation in India.

Therefore, the used the methodology that, Descriptive, Analytical and Library methods of research will be used to complete the proposed research works. Both the sources of data collection secondary method, will be used to collect the data.

Data Source

The data collected from the International Monetary Fund (IMF), World Bank, Organisation for Economic Cooperation and Development (OECD) etc. nited Nations Framework Convention on Climate Change The United Nations Framework Convention on Climate Change established an international environmental treaty to combat "dangerous human interference with the climate system", in part by stabilizing greenhouse gas concentrations in the atmosphere

Current Frameworks and Action on Climate Change Adaptation At International Level

The study have collected data from.

UN Framework Convention on Climate Change (UNFCCC): International efforts to tackle climate change are primarily pursued through the UNFCCC. The UNFCCC is an international environmental treaty produced at the United Nations Conference on Environment and Development knows as Earth Summit, held Rio de Janeiro in 1992. The parties to the UNFCCC meet annually; the December 2007 meeting in Bali is the 13th Conference of Parties. The UNFCCC acts as an umbrella for international dialogue, policy, funding on climate change. Its overarching mandate, stated in article 2 of the Convention, is to limit greenhouse gas levels to a "level that would prevent dangerous anthropogenic interference with the climate system". Under this framework, mitigation of climate change dominates the agenda, with most funding and policy attention geared towards the future of the Kyoto Protocol and a number of separate initiatives.

Intergovernmental Penal on Climate Change (IPCC): The IPCC is the most authoritative source of internationally accepted scientific assessments. These assessments feed into the UNFCCC process and constitute its scientific basis. However, though based on pure especially over the confidence with which features of climate change are caused. The Fourth Assessment Report (AR4) from the IPCC has come out during 2007 and is more far-reaching in its socio-political analysis of the impacts of climate change than its predecessors. Working Group II of the IPCC, in particular, has looked more closely at the climate impacts and vulnerabilities of fragile communities than in previous reports. However, it is not the role of the IPCC to provide an assessment of the likely impacts of climate change on violent conflict, so the issue of conflict and peace building potential is not explored in the AR4.

UN International Strategy for Disaster Reduction (ISDR): The ISDR was set up to coordinate approaches at a local, national and international level with the aim of building disaster resilient communities by promoting increased awareness of the importance of the disaster reduction as an integral component of sustainable development.

Mainstreaming Adaptation Framework on Policy in India

The Human Development Report 2007/08 elucidates clearly that the critical challenge facing humanity from climate change, particularly in developing countries, is to balance the objective of attaining a decent standard of living without compromising the same for future generations. A pro-climate development policy therefore necessitates active government intervention at different levels of the economy essentially entailing two distinctive and converging approaches viz. a) approach focussing on human capabilities and b) approach focussing on better management and efficiency in exploitation of natural resources. A framework on policy formulation on adaptation involving government programmes/schemes while taking a distinctive approach in addressing sectoral issues in improving human capabilities and human dependence on natural resources also needs to take into account measures addressing certain multi-sectoral issues through properly designed schemes or forging convergences in existing interventions. For effectiveness of the entire gamut of existing and new interventions, the system needs to be informed through a process of generating information and its dissemination for the benefit of policy makers and stakeholders involved. In this context, some normative considerations have been briefly discussed which can be the underpinnings for any policy formulation for adaptation and also act as benchmarks for undertaking policy appraisal for developing countries like India. *Improving human conditions and capabilities:* Sustaining the present

gains in development and enhancing the standard of living is already a challenge that most developing countries are facing in Asia, Africa and Latin America. According to the Human Development Report 2007/08, erosion of human capabilities through the adverse impacts of climate change would only enhance the crisis and the risks associated with lack of human development in the less developed and developing countries of these regions. It is therefore evident that for a country like India, an adaptation policy framework needs to have at its core direct interventions in eradication of poverty and ensuring security of livelihood, food and nutrition and social services, in order to provide a safety net to the poor and marginalized. *Improving sustainability of ecosystems*: The adaptation framework in addition to augmenting human capabilities, essentially needs to focus on management of the human dependence on nature and environment, focusing on sustainable use of natural resources, conservation of common property resources and ecosystems, reduction in human-animal conflicts and creation of buffers against natural calamities. Such an approach would involve policies that influence traditional agricultural practices, livestock and fisheries management, exploitation of forestry resources and most importantly management and harnessing of fresh water and coastal resources. Additionally, the second approach also needs to focus on waste management, prevention of environmental pollution, promote prudent use of land resource, provide thrust on efficiency in energy use and diversification of power generation to alternate and renewable resources. Both the approaches described above should entail distinctive, yet inter-dependent policy initiatives. Development of human capabilities can influence the way people access and use natural resources and conversely, availability and access to natural resources can also be a determining factor in human development. Therefore, keeping in view the objective of balancing equity considerations of present vis-à-vis future generations, policy exercises inclusive of planning, implementation and appraisal of government schemes and programmes need to distinguish between the two approaches and yet take a conjunctive view while assessing outcomes. Adaptation is a cross-cutting where necessary to requiring the coordinated efforts of different actors within and also beyond the state. It is need to build on and be supported by activities by relevant ministries (e.g. environment, finance, and planning) and these are responsible for identifying the financial and funding priorities as well as specialised agency such as geographical and meteorological services and institution for disaster prevention. National strategies can help provide a framework for coordinating adaptation activities, enabling informed decision-making, mobilising national and international support and developing appropriate institutional structure for adaptation. However, the disaster risk reduction and climate change adaptation represents an important first step towards identifying the strategies and frameworks for meeting present and future challenges related to climate change.

Conclusion

India has been identified as one of the vulnerable countries in the context of environmental change. Its exposure to frequent and extreme climate related event such as floods, cyclone and drought etc. Those events may alter distribution and quality of the country's natural resources and adversely affect the livelihood of its people. India's economy of the country closely tied to its natural resources base and climate sensitive sectors such as agriculture, water and forestry. Thus India may face a major threat because of such climate events. The United National Framework Convention on Climate Change (UNFCCC) signed in 1992. Basically the UNFCCC and the Kyoto protocol predominantly addressed climate change, adaptation, mitigation, and policy measures to reduce the emissions of green house gases.

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IMPORTANCE OF INFORMATION LITERACY AND THE ROLE OF LIBRARY: AN OVERVIEW

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❖ Abstract:

With the advancement in the Information and Communication technologies, Information act as a commodity. To rule over the information world, Information Literacy has become an important aspect in this era. Taking into consideration the importance of Information Literacy, many educators has taken the initiatives around the world. In the changing environment, especially in the field of Higher Education, with increasing importance of Information Literacy taking into consideration, this paper has discussed the concept of I L and the role of librarians to impart the skills of IL into the students.

❖ **Keywords:** Information Literacy, Higher Education, College Library, Digital Literacy, ICT Literacy

❖ Introduction:

21st century is called the era of information as it ruled over the world. After industrial and technological revolution, information gets the major factor of 21st century. Information is present in so many forms like, digital, print, media, internet, picture, and video etc. Information is available in abundance ways and various resources, one's need special skills to access the right information. In the era of internet, information is available and produced in large scale and it is tedious to get accurate information. It creates issues of accuracy, authenticity and legal issues. The increasing quantity of information (data smog) and its suspicious value creates different challenges for the users. Advancement in technological tools creates information age which has enormous information sources at our fingertips. Educational institutions are realizing their new role and need of new skills to access and retrieve right information. The main purpose of a higher education institution is to develop the students to use different strategies for lifelong learners. Colleges and universities are concerned with developing the capacity for critical thinking and abilities of reasoning in individuals. Colleges and universities play a role in creating informed and informed communities. To achieve the goal of parent institutions, the college library adopts various means of facilitating the use of reading material resources and supporting teaching and research in order to fulfill the institutional mission policies. Libraries play an important role in promoting information literacy of students.

❖ Literature Review

(Mishra, 2017) has discussed the importance of Information Literacy. He has through the light of role of College Librarians for making the informative society. (Sakhawat & Shahzad, 2021) presented a paper on Information Literacy skills of Librarians to enhance the research productivity and its impact on Faculty Members of the University of Agriculture Faisalabad, Punjab, Pakistan. (Rafique & Khan, 2018) presented a paper on Information Literacy skills to determine the IL skills of Management Science Students. For this study a questionnaire was distributed through stratified random sampling technique through random numbers. (Ranaweera, 2008) presented a paper on Information Literacy. The purpose of this paper is to present a n analytical insight of Information Literacy concept, for achieving the information literate society. Also this paper is discussed the concept and approach of the information literacy in details.

❖ Methodology:

For this paper, the literature survey has been used for this study. This survey is mainly based on secondary sources of data like books, journals, magazines, research work used through Google Scholar.

❖ What is Information Literacy?

The term “Information Literacy” was first used in a 1974 by Paul G. Zurkowski, since then it is gaining attention from the academicians and researcher all over the world. Information Literacy (IL) plays an important role in the progress of personal and professional learning of individual and in this way even in the progress of nations. Main purpose of the Information Literacy is to enable the individuals to use the various strategies for lifelong learning. The rapid changes in technology and availability of various information resources, the importance of IL is gaining day-by-day. Every day new information is added to the old one, so that there is a situation of data smog. This world is also called as information age. Information Literacy enables individuals to navigate right information, also provide an approach to a broader understanding of the information in our world. ACRL Framework for Information Literacy for Higher Education 2015 defines as “Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning.” American Library Association (ALA) (1989) defines, “information literacy is a set of abilities needed by individuals to locate, evaluate and use effectively the needed information.” Information literacy makes the individuals skillful to understand, evaluate and use the needed information.

❖ Need of Information Literacy

Information Literacy equips us with needed skills which allowed us to recognize what and when need the information, how to use it effectively and efficiently.

- Information Literacy makes the individuals capable to cope with data smog.
- It makes the individuals independent learner and capability of critical thinking.
- It imparts the skills of information technology to the common people.
- It supports new learners to who have lack of abilities.
- Information Literacy helps the professionals to build their carrier.

❖ Role of Library towards Information of Literacy

Traditional role of libraries changed due the advancement in the Information & Communication Technology. Libraries are not only the warehouse of books but it becomes the center point of resource-based learning center. Role of Librarian also changed it is not only limited to guardian but also becomes as a mentor. Due to new technological changes libraries are not limited to text-material, but it is included to all learning resources like digital resources, including print and non-print resources. Now a day, Information plays a role of major economic commodity. Librarians have to fulfill all demands of their users. According to their users need, they are responsible for acquiring, locating, managing, disseminating and tracking the information resources in their libraries. Functions like include database searching, interlibrary loan, internet browsing control, maintenance of computerized library. All these tasks required managerial expertise and information literacy. All librarians and libraries have to play a major role of teaching effective and efficient use of information use by their users by teaching them literacy skills to be educated for productive use of information. Librarians can design the curriculum according to the requirements and users capabilities, so the users can enhance their skills to cope with the advance technology.

Librarians can arrange following things in their library –

- Librarians can arrange user orientation programs
- Librarians can arrange workshops for training the users and faculty.
- Librarians can train their library staff for new technology.
- Librarians can educate their staff and users for using new tools and techniques.

For achieving above things librarians can –

- Librarians should be committed to the institutional goals and objectives
- They should be kept themselves updating to acquire new skills and competencies.
- Cultivate the concept of life-long learning to cope with new challenges through information literacy skills.
- Train the library staff to work efficiently and effectively with their all types of users.
- Train themselves to become good and effective teachers for information literacy program.

- Make policies for implementation of information literacy program effectively.
- Develop new relationships with educational community to work efficiently with information literacy program.

❖ Conclusion

Information Literacy skills is the process of life-long learning and this applicable to all levels of education. Through the Information Literacy skills Librarians and Faculties can train their students to find the needed information by their own. College libraries should take the initiatives for orientation and workshops program to train the students to find and locate the library resources. For applying these programs effectively, Librarians can collaborate with education community.

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IMPORTANCE OF BARCODE SYSTEM IN COLLEGE LIBRARIES

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Abstract

The application of Barcode technology in circulation system of a college library is most successful due to its speed, accuracy and reliability. This research paper discusses the importance of barcode Technology and gives guidelines for selecting the hardware/s software highlighting the features of scanners and printers. The paper also gives guidelines for retrospective conversion, which becomes the core issue in any library with a very large collection. Some tips necessary for software customization have also been provided. This paper attempts to explain the tools required for implementing the Technology and also gives guidelines for planning and scheduling retrospective conversion.

Introduction:

Bar coding was first introduced in industries/ departmental stores for operational efficiency, fast and accurate inventory, distribution, billing etc. Presently this is widely used in almost all businesses transactions at one stage or other. Bar-coding is a computer aided process of generating codified information, which is subsequently printed on a predefined stationary, invariably on a self-adhesive label for several later applications.

Librarians started using this technology for charging and discharging of Library Documents and also for stock verification for the same reasons operational efficiency, speed and accuracy. Bar coding in the context of Library Applications can be described as a process of generating machine-aided and machine-readable unique and document specific code. The code, which is invariable a unique accession number, when scanned, gets decoded and identifies a specific document in the database for circulation and stock verification related activities. Needless to say that there is an interface between the scanner and the library housekeeping software.

Importance of Barcodes:

Barcodes have taken off because they offer a clear and fast return on investment. Here are the key benefits businesses can take advantage of with barcodes:

1. Accuracy:

Barcodes eliminate manual entry of product information at receiving, meaning there are far fewer opportunities for error. Whether in a retail store or a warehouse, associates simply swipe the barcode across the scanner. Errors in barcodes themselves are extremely rare.

2. Real-time data:

Each time an employee scans a barcode, it immediately updates inventory and sales numbers in the company's enterprise resource planning (ERP) or business management system. This gives a business constant access to up-to-date data, allowing it to quickly calculate meaningful metrics like inventory turn, value of inventory on-hand or sales per week by item.

3. Reduced training:

For the most part, barcodes and scanners are self-explanatory, so it doesn't take new employees long to become efficient at the checkout counter. And, barcodes greatly reduce the need for memorization and institutional knowledge. At a grocery store, for example, the worker doesn't have to know the codes for popular items to be productive.

4. Inventory control:

Barcodes reduce excessive spending on products. Employees can always find the most current information when reviewing inventory positions or trends in demand, which facilitates better decisions around purchasing and discounting. This cuts down on both inventory carrying costs and obsolete inventory, which boosts long-term profitability.

5. Low cost:

Barcodes offer tremendous value, as the upfront investment is not large compared to systems that provide comparable benefits. Companies can create a limited number of barcodes for internal use for a low price, and as their needs grow, the cost of supporting technology remains reasonable.

Planning:

1) Collections should not be bar-coded before the Library has selected its local system:

Bar-coding is one of the steps in Library automation which starts only after developing an exhaustive bibliographic database of available documents on a suitable library house keeping software. The reason is simple without an exhaustive database it is not possible to implement barcode aided circulation system. Secondly, in the absence of such an exhaustive database it will not be possible to generate barcode labels with both accession and class number. Printing of only the accession numbers, which many libraries prefer to do, has its own future implications.

It is also important that Library Software provides features for sorting and printing of desired fields.

2) Types of Collections:

Selection the type of collection for Bar-coding is the second important consideration. In any Library some collections are strictly meant for reference and such documents need not be bar-coded.

Theses, reference collection, loose issues of journals are usually omitted from bar-coding.

3) Determining The Fields for Printing On The Label:

Accession number will be the mandatory field that needs to be barcoded. Call number is the other field recommended for inclusion while printing the labels as it serves dual purpose. Firstly, it serves as barcode label and secondly as a book label. The labels with both accession and call numbers are called as 'SMART' Barcode. The job of retrospective conversion consumes less time if the labels are printed call number wise due to the fact that the sequence of the printed labels will be parallel to the sequence of the books/documents on the shelves and the pasting job needs very little supervision.

Hardware and Software:

The software and hardware that will be discussed here are different from that of what is required for the library house keeping operations.

1) Printer:

Barcode labels can be printed either by using Thermal Transfer Printer or a normal Laser Printer. Labels generated on a thermal printer have better legibility and are durable compared to the labels generated on a laser printer. In either case, software preferable a customized one is needed for the purpose.

I) Thermal Transfer Printer:

A Thermal Transfer Printer uses a thin plastic ribbon with a thin coating of wax or resin based pigment. The ribbon and labels fed from separate rolls are squeezed together by a roller as they pass under the thermal print head.

This printer produces a durable, high-quality image, and can be used with many types of label stocks (Paper and Synthetics). Printers are durable and offer relatively fast printing speeds varying from 3 inches per second to 12

inches per second depending on the model. The cost of printer depends on the speed, DPI (Dots per Inch) and print width.

Laser Printer:

On a Laser Printer, labels can be printed on a quality A4 Size Paper or On a customized A4 Sheet of self-adhesive labels. Laser Printer uses toner to print images. Printing of barcodes on an A4 size paper will not be a good idea, as one has to cut these in to proper sizes before pasting on the books. Secondly, if printed on an ordinary paper the barcodes will not be durable and legible. However, customized labels sheet will offer better quality and durability.

One difficulty in using labels on the customized A4 Sheets Paper is that, there could be possibility of labels getting stuck to the drum or any other part of the printer during printing. The speed and DPI of the Laser Printer varies from model to model.

2) Scanner:

Scanners available to scan barcodes are of three types viz. LED, CCD and Laser. Each uses a different technology to read the barcode label.

I) LED (Light Emitting Diode):

In a LED Scanner, a single light-emitting diode illuminates a small spot on the barcode and photocell measures the amount of light reflected. As the LED and photocell move across the barcode the pattern of bars and spaces is captured and decoded. In a wand scanner (Pen Like Scanner), Light is focused through a small transparent ball at the tip. While scanning, the user just swipes the wand across the barcode. The tip of the wand generally has to be in physical contact with the surface of the barcode.

In this case the width of the barcode is limited and the scanner reads it as long as the operator can swipe the scanner from one end of the barcode to the other at an even speed without wandering off the code.

II) CCD (Charge-Coupled Device):

CCD Scanners do not have to be in direct contact with the surface of the barcode, but their depth of focus is somewhat limited. Most CCD Scanners have a working range from roughly 0.25 Inch (6.35 mm) to 1.0 Inch (25.4 mm); there are some products available with a slightly greater range. The width of the CCD sensor array in the scanner limits the maximum width of a barcode that can be scanned; if the barcode is wider than the scanner, it cannot be read. The distance from which a label can be scanned ranges approximately between 0 to 6 inches.

III) Laser:

Laser scanners use a moving pinpoint of light to illuminate the barcode, and a single photocell receives the reflected light. Most laser scanners sweep the laser beam horizontally using an electronically controlled mirror. Laser scanners tend to be quick and precise and can often read denser barcodes than the other technologies. A primary advantage of a laser scanner is depth of focus; since a laser beam diverges very little with the distance, scanners of this type generally have a working range from roughly 1 inch (2.54 cm) to 12 inch (30.48 cm).

Software and Its Customization:

The software for generating barcode labels comes along with the printer and the vendor will usually take care of any customization as per the local requirements.

The software acts as an interface between the computer and printer and is developed incorporating the printer and scanner barcode technology standards. There are three types of barcodes- Numeric, Alphanumeric And 2-Dimensional Barcodes.

Even though there are many standards available in all these three cases, the Code 39 is widely used in many industries and is the standard for many government barcode specifications, including the U.S. Department of Defense. Code 39 can be read by most of the Scanners available in the market.

In addition to this essential standard, one also has to seek for certain customization. The suggested addition customized features are:

- Printing of labels on different types of stationery, i.e. single or two across of different size.
- Number of copies in both the above mentioned types.
- Printing of necessary information on the labels such as Accession Number, Call Number and Library's Name.
- Option to print both Numeric and alphanumeric characters. It is better to have tow alpha characters as prefix.
- Printing of both Accession number and the call number will be the best feature suggested, as it serves dual purpose. First it acts as a barcode label and secondly as a book label.

Stationary:

In case of thermal printer, the standard stationary required is – Self-adhesive labels and Ribbon. The standard size of the label measures 50 mm x 25 mm. The most preferred color of the label is white as it provides best background. The barcode vendor will usually supply the stationary.

The specification for the ribbon depends on the blank label rolls which come either in single row or two across each of dimension 50 mm x 25 mm. In the former case a two inches ribbon is generally used, where as in the latter it would be four inches ribbon.

Even though the thermal printer is the most preferred printer, some libraries even use laser or dot matrix printer. In such cases, a customized label sheet or ordinary paper can be used to print the labels. The quality of labels printed on thermal printer is always the best. Apart from the quality, use of ordinary non-adhesive paper involves cumbersome additional jobs such as cutting and application of some adhesive.

The pasted labels can be made more durable by putting a piece of thin cello tape over it. This would also work as protective layer against deliberate scratching.

Stock Verification:

The stock verification which most of the libraries undertake at fixed intervals can be simplified by using barcode technology. For stock verification, use of portable scanner will be ideal s it carries a memory chip of 40 MB capacity. It is a handheld portable scanner, which can be used to store the accession numbers of the scanned books. Once its memory is full the store data i.e. accession numbers can be transferred to the PC to clear its memory and later the scanning work can be continued. Its prohibitive price may discourage its use.

With other type of hand held scanners i.e. CCD or Laser Stock Verification work can be carried out by attaching a scanner to a Laptop PC. Scanning of books can be done by moving the scanner along the bookracks.

Conclusion:

The implications of barcode technology are many. It minimizes errors and increases the efficiency at the circulation desk. It also reduces the operational cost, eliminating book cards and book pockets. Bar-coded labels with both accession and call numbers on it can also be used as a book tag. Bar-coding is recommended only for such libraries where transaction is very high or likely to be high in future. It may not be cost-effective in a small corporate library with few members and transaction.

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ASSESSING THE EFFICACY OF INTERNATIONAL CLIMATE CHANGE POLICIES

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Abstract:

Climate change remains one of the most pressing challenges facing our planet, necessitating international collaboration and robust policy frameworks to mitigate its impacts. This research undertakes a comprehensive analysis of the efficacy of international climate change policies, delving into the global commitments made by nations, the strategies employed for implementation, and the broader implications for sustainable environmental stewardship.

The study begins by scrutinizing the array of international agreements and accords designed to address climate change, ranging from the Kyoto Protocol to the Paris Agreement. It evaluates the evolution of global commitments, assessing the strengths and weaknesses of each accord in fostering collective action. Through a meticulous examination of policy documents, official reports, and scholarly literature, the research aims to provide a nuanced understanding of the evolving landscape of international climate commitments.

Furthermore, the study explores the broader implications of international climate policies for sustainable environmental stewardship. This includes an examination of economic, social, and geopolitical factors influenced by climate policies. The research aims to identify potential synergies and conflicts between environmental goals and other societal priorities, shedding light on the complexities of balancing sustainability with economic development and social equity.

Keywords: Climate Change Policies, Global Commitments, Implementation Strategies, Environmental Stewardship, Sustainability

INTRODUCTION:

Climate change stands as a formidable global challenge that demands collective and concerted efforts to mitigate its far-reaching impacts. The imperative to address this crisis has led to the establishment of numerous international agreements and policies aimed at fostering cooperation among nations. This research embarks on a comprehensive analysis to assess the efficacy of international climate change policies, delving into the nature of global commitments, the strategies employed for their implementation, and the broader implications for sustainable environmental stewardship.

Background and Rationale: The scientific consensus on the reality of climate change and its anthropogenic origins has spurred the global community into action. The Intergovernmental Panel on Climate Change (IPCC) has provided unequivocal evidence of rising temperatures, sea level changes, and extreme weather events, emphasizing the urgent need for mitigation and adaptation measures. Against this backdrop, nations worldwide have entered into a series of international agreements, beginning with the Kyoto Protocol in 1997 and culminating in the Paris Agreement in 2015. These accords represent a shared commitment to limit global temperature increases and enhance resilience against the impacts of climate change.

Evolution of Global Commitments: The first facet of our analysis focuses on the evolution of international commitments to address climate change. The Kyoto Protocol marked a pivotal moment in global cooperation, introducing legally binding emission reduction targets for developed countries. Subsequent agreements, including the Copenhagen Accord and the Cancun Agreements, sought to involve a broader spectrum of nations. The Paris Agreement, in particular, represents a landmark in climate diplomacy, as it aspires to limit global temperature increases well below 2 degrees Celsius above pre-industrial levels. Evaluating the evolution of these commitments provides insights into the dynamics of international collaboration and the changing landscape of climate governance.

Implementation Strategies: While commitments are crucial, their efficacy is contingent on the strategies employed for implementation. Our analysis extends to the examination of diverse national approaches to translating policy goals into tangible actions. This involves an in-depth investigation into emissions reduction efforts, the adoption of renewable energy sources, and the integration of climate considerations into broader national development plans. Case studies and comparative analyses will illuminate the successes and challenges encountered by nations in implementing climate policies, offering a nuanced understanding of the practical implications of these strategies.

Implications for Sustainable Environmental Stewardship: Beyond the immediate goals of emissions reduction and climate resilience, international climate policies have broader implications for sustainable environmental stewardship. The interconnectedness of environmental, economic, and social systems necessitates an exploration of the unintended consequences and co-benefits associated with climate policies. This includes considerations of economic transitions, social equity, and geopolitical dynamics influenced by climate action. Understanding the broader implications is crucial for developing holistic and resilient strategies that balance environmental goals with the imperative of sustainable development.

In light of the complexities surrounding international climate change policies, this research seeks to achieve several key objectives. These include a critical assessment of the effectiveness of global commitments, an exploration of the varied strategies employed for policy implementation, and an elucidation of the broader implications for sustainable environmental stewardship. By addressing these objectives, this research aims to contribute valuable insights to the ongoing discourse on climate governance, providing policymakers, scholars, and stakeholders with evidence-based perspectives to inform future decision-making.

LITERATURE REVIEW

The period following the landmark Paris Agreement in 2015 has witnessed a surge in academic literature assessing the efficacy of international climate change policies. This review aims to synthesize key findings and trends from scholarly works published post-2015, providing insights into the evolving landscape of global climate governance.

- 1. The Paris Agreement and Global Commitments:** The Paris Agreement, adopted in December 2015, has been a focal point in recent literature. Scholars have extensively examined the strengths and limitations of the agreement in facilitating global climate action. Notable works include Roberts and Weikmans (2017), who emphasized the shift from a top-down approach to a bottom-up, nationally determined contributions (NDCs) model. They argued that this approach enhances flexibility but necessitates robust mechanisms for transparency and accountability.
- 2. National Implementation Strategies:** Post-2015 literature has delved into the diverse strategies employed by nations to implement climate policies. Bai et al. (2018) conducted a comparative analysis of China and India's climate actions, highlighting the role of domestic factors in shaping policy priorities. They emphasized the importance of understanding national contexts to design effective strategies, acknowledging that a one-size-fits-all approach is inadequate.
- 3. Evaluation of Emission Reduction Efforts:** Several studies have focused on assessing the actual emission reduction efforts and progress made by countries. Fekete et al. (2019) examined the European Union's efforts, emphasizing the need for stronger policies to align with the 1.5°C target. They underscored the significance of continuous monitoring and adaptation of policies to address evolving challenges.
- 4. Renewable Energy Transition:** The transition to renewable energy sources has been a critical aspect of climate policies. Sovacool and Dworkin (2015) provided insights into the challenges and opportunities in renewable energy transitions, emphasizing the importance of considering socio-political factors in addition to technological aspects. Their work highlighted the need for a just transition that considers social equity.
- 5. Broader Implications for Sustainable Development:** Post-2015 literature has increasingly recognized the interconnectedness of climate policies with broader sustainable development goals. Bulkeley et al. (2016) explored the co-benefits and unintended consequences of climate actions, emphasizing the potential for inclusive and sustainable development. They argued for an integrated approach that considers environmental, social, and economic dimensions.
- 6. Global Governance Challenges:** The literature also addresses the challenges associated with global climate

governance. Gupta and Biermann (2020) discussed the evolving landscape of climate governance, pointing out the need for stronger institutions and enhanced collaboration. They highlighted the role of non-state actors and the private sector in complementing governmental efforts.

7. **Climate Justice and Equity:** Climate justice and equity have gained prominence in recent literature. Harris and Albrecht (2017) explored the concept of climate migration justice, arguing for a rights-based approach to address the impacts of climate change-induced migration. Their work contributes to discussions on ensuring fairness and equity in climate policies.
8. **Technological Innovation and Adaptation:** Technological innovation and adaptation strategies have been subjects of interest. Sovacool et al. (2017) investigated the role of innovation in climate adaptation, emphasizing the importance of a diversified portfolio of technological solutions. They discussed the need for adaptive governance frameworks that facilitate innovation.

The post-2015 literature on the efficacy of international climate change policies reflects a growing awareness of the complexities and challenges inherent in addressing global climate issues. From the evaluation of global commitments to the examination of national strategies and the consideration of broader implications, scholars have contributed valuable insights to the ongoing discourse. The literature underscores the need for adaptive and inclusive approaches that consider the diverse contexts and dimensions of climate action, providing a foundation for informed policy decisions in the face of an ever-evolving climate landscape.

OBJECTIVES OF THE STUDY

The study aims to critically assess the effectiveness of international climate change policies post-2015 by examining the evolution of global commitments, analyzing diverse implementation strategies, and exploring the broader implications for sustainable environmental stewardship. The research seeks to contribute nuanced insights to inform future climate governance and policy decisions.

ANALYTICAL FINDINGS

The period following the adoption of the Paris Agreement in 2015 marked a significant juncture in global efforts to address climate change. Understanding the evolution of global commitments is crucial for assessing the effectiveness of international climate change policies during this post-2015 era. This analytical description delves into key aspects of this evolution, exploring the nature of commitments, their strengths, and their limitations.

1. **Paris Agreement as a Pivotal Moment:** The Paris Agreement, a culmination of international negotiations during COP21, represented a watershed moment in global climate governance. Unlike its predecessors, the Paris Agreement adopted a bottom-up approach, allowing each country to determine its nationally determined contributions (NDCs). This departure from the top-down model of the Kyoto Protocol aimed to enhance inclusivity, recognizing the diverse capabilities and responsibilities of nations in addressing climate change.
2. **Nationally Determined Contributions (NDCs) and Voluntary Commitments:** Post-2015, countries submitted their NDCs outlining their individual climate commitments, covering mitigation, adaptation, and means of implementation. The voluntary nature of these commitments underscored a departure from the mandatory targets of the Kyoto Protocol. This shift allowed for a more inclusive and flexible framework, accommodating a broader range of countries with varying levels of development and capacity.
3. **Strengths of the Bottom-Up Approach:** The bottom-up approach introduced by the Paris Agreement offers several strengths in the evolution of global commitments. It encourages broader participation by allowing countries to set their priorities based on national circumstances, fostering a sense of ownership and commitment. This flexibility promotes a more dynamic and adaptable response to evolving climate challenges, enhancing the resilience of the global climate regime.
4. **Limitations and Challenges:** However, the voluntary nature of commitments also poses challenges. The absence of binding, enforceable targets raises concerns about the adequacy of collective efforts to limit global temperature increases. Moreover, the potential disparity in the ambition levels of NDCs raises questions about the overall effectiveness in achieving the Agreement's overarching goal to limit global warming to well below 2 degrees Celsius.
5. **Ambition Gap and Global Disparities:** The analysis of global commitments post-2015 reveals an "ambition gap" – the disparity between the collective ambition of NDCs and the level required to meet the Paris

Agreement's temperature goals. Many NDCs fall short of the necessary reductions in greenhouse gas emissions, indicating a misalignment between stated commitments and the urgency of climate action.

6. **Evolving Nature of Commitments:** The evolution of global commitments post-2015 reflects ongoing changes in climate politics and national priorities. Some countries have updated their NDCs to reflect increased ambition, aligning with the Agreement's call for regular reviews and enhancements. Others, however, face challenges in implementing and revising their commitments, highlighting the complexities associated with translating policy intentions into tangible actions.
7. **Influence of Global Events and Political Will:** The effectiveness of global commitments is also influenced by geopolitical events and shifts in political will. Changes in leadership, economic priorities, and global crises can impact a country's commitment to climate action. The resilience and adaptability of international climate change policies post-2015 are closely tied to the ability of nations to navigate such external factors.
8. **The Role of Non-State Actors:** The evolution of global commitments extends beyond national governments to include the active involvement of non-state actors. Cities, businesses, and civil society organizations play an increasingly significant role in climate action. Their commitments and initiatives contribute to the broader landscape of global climate governance, influencing and complementing national efforts.

The post-2015 era in international climate change policies has witnessed a significant evolution in global commitments. The shift towards a bottom-up approach, as exemplified by the Paris Agreement, reflects a more inclusive and adaptable framework. However, challenges such as the ambition gap and disparities in global commitments underscore the need for continued scrutiny and enhancement of climate governance mechanisms. The evolving nature of commitments, influenced by geopolitical dynamics and the engagement of non-state actors, emphasizes the complex and interconnected nature of the global response to climate change. As the world continues to grapple with the urgency of addressing climate challenges, a comprehensive assessment of the evolution of global commitments remains paramount for shaping effective and equitable climate policies.

DISCUSSION

The evolution of global commitments post-2015 reflects a dynamic landscape shaped by changing political, economic, and environmental factors. The analysis reveals a spectrum of national ambitions, with some countries revising and enhancing their NDCs to align with the Agreement's call for increased ambition. Nevertheless, challenges persist in translating these commitments into tangible actions. The disparities in ambition levels among countries and the varying capacities to implement robust climate policies pose obstacles to achieving the collective goals set forth in the Paris Agreement. Moreover, the role of non-state actors, including cities, businesses, and civil society, has become increasingly significant, influencing the overall efficacy of international climate change policies. This shift introduces a more decentralized and diverse landscape of climate governance, where non-state actors complement and sometimes surpass the efforts of national governments.

The effectiveness of global commitments is not only contingent on the ambition and implementation capacity of individual nations but is also influenced by global events and geopolitical dynamics. Changes in leadership, economic priorities, and unforeseen global crises can alter the commitment levels and policy directions of nations. This interplay between global events and climate policy underscores the need for resilience and adaptability in international climate governance.

In assessing the broader implications for sustainable environmental stewardship, the interconnectedness of climate policies with social, economic, and equity considerations comes to the forefront. The shift towards renewable energy sources and the broader transition to a low-carbon economy introduces both challenges and opportunities for sustainable development. Co-benefits and unintended consequences of climate actions need careful consideration to ensure that environmental goals align with broader societal priorities. Additionally, issues of climate justice and equity become integral to the discourse, emphasizing the importance of addressing the differential impacts of climate change on vulnerable populations.

CONCLUSION

In conclusion, the assessment of the efficacy of international climate change policies post-2015 reveals a complex and evolving landscape. The bottom-up approach of the Paris Agreement offers flexibility and inclusivity but raises

challenges in terms of enforceability and achieving collective ambitions. The role of non-state actors, the influence of global events, and the broader implications for sustainable development highlight the need for ongoing scrutiny and adaptive strategies in shaping effective and equitable international climate policies. As the world continues its collective journey towards addressing climate change, this assessment provides critical insights for policymakers, scholars, and stakeholders to navigate the complexities of global climate governance.

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THE INTERSECTIONS BETWEEN GLOBAL ENVIRONMENT AND POLITICS

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Abstract:

The intersection of environmental concerns and international politics forms a complex landscape that shapes global dynamics. This abstract delves into the intricate relationship between environmental challenges and their ramifications in the realm of international politics. Environmental issues transcend borders, impacting nations worldwide and catalyzing diplomatic negotiations, conflicts, and cooperative efforts among states. This paper explores how environmental concerns such as climate change, resource depletion, and biodiversity loss have become central to diplomatic discourse and geopolitical strategies. It examines how these issues influence international relations, fostering collaborations, competitions, and sometimes tensions among nations. The abstract also addresses the role of international institutions, treaties, and multilateral agreements in shaping the global response to environmental crises. Furthermore, it analyzes the diverse approaches adopted by countries, from unilateral actions to collaborative initiatives, in navigating the intricate nexus between environmental sustainability and geopolitical interests. Through a multidimensional lens, this abstract aims to offer insights into the complex interplay between environmental challenges and the multifaceted landscape of international politics.

Introduction

The relationship between the environment and international politics is multifaceted, encompassing various dimensions that intersect and shape global governance, policies, and geopolitical dynamics. In exploring the intricate interdependence of environmental issues and the realm of international politics, this article endeavors to navigate the complexities that arise at the nexus of these two spheres. The preface sets the stage for an in-depth analysis, probing the evolving dynamics where environmental concerns have emerged as pivotal factors in shaping global diplomatic relations. It delves into the inherent tensions, collaborations, and negotiations that underscore the intricate interplay between safeguarding the environment and navigating the diverse interests of nations. By examining the historical context, contemporary challenges, and the evolving landscape of international cooperation, this preface lays the foundation for a comprehensive understanding of the intricate relationship between environmental sustainability and the complexities of international politics.

The origins of geopolitics can be traced back to the late 19th and early 20th centuries when scholars and strategists began analyzing the interactions between geography, power, and politics. The term "geopolitics" was coined by Rudolf Kjellén, a Swedish political scientist, in 1899. However, its systematic development as a field of study emerged primarily through the works of Sir Halford Mackinder, Friedrich Ratzel, and others.

The Emergence of Geopolitics:

Environmentalism began to gain traction in international politics notably during the late 20th century. The 1960s and 1970s witnessed a growing awareness of environmental issues, spurred by events such as the publication of Rachel Carson's book "Silent Spring" in 1962, which raised concerns about the impacts of pesticides on the environment. Following this, the United Nations Conference on the Human Environment held in Stockholm in 1972 marked a significant milestone, being the first major conference focused on global environmental issues. It brought together world leaders to discuss and address environmental concerns at an international level, setting a precedent for future discussions and agreements related to environmental protection on a global scale. This conference was pivotal in laying the groundwork for environmentalism to become an integral part of international politics. Subsequently, other key events and agreements, such as the formation of the United Nations Environment Programme (UNEP) in 1972 and the adoption of the Montreal Protocol in 1987 to protect the ozone layer, further solidified the presence of environmentalism within the realm of international politics.

An environmentalist approach to international politics advocates for a paradigm shift that places ecological sustainability at the forefront of global governance. This perspective emphasizes the interconnectedness of environmental health and geopolitical stability. It calls for nations to transcend traditional power dynamics, fostering cooperation to address shared challenges such as climate change, deforestation, and pollution. The environmentalist approach envisions international relations guided by principles of conservation, renewable resource management, and global responsibility. This outlook seeks to prioritize the well-being of the planet and future generations over short-term political gains, urging a collective commitment to preserving the Earth's ecosystems through multilateral agreements, sustainable policies, and green diplomacy.

1. Environmental Degradation as a Global Challenge:

Environmental issues such as climate change, deforestation, loss of biodiversity, and resource depletion transcend national boundaries, posing significant global challenges. These issues impact ecosystems, economies, and human livelihoods worldwide, leading to increased international attention and cooperation in addressing them.

2. Environmental Diplomacy and Treaties:

Environmental concerns necessitate international cooperation. Nations engage in environmental diplomacy to negotiate and formulate agreements, treaties, and protocols addressing shared environmental challenges. Examples include the Paris Agreement on Climate Change, the Kyoto Protocol, and the Convention on Biological Diversity. These agreements foster collaboration, setting targets and guidelines for collective action.

3. Resource Scarcity and Geopolitical Tensions:

Competition over finite resources, such as water, energy, and minerals, can escalate geopolitical tensions. Disputes over access to and control of resources often influence international relations, leading to conflicts or diplomatic negotiations.

4. Environmental Security and Conflict:

Environmental degradation can exacerbate social, political, and economic vulnerabilities, potentially contributing to conflicts. Competition for scarce resources or the impacts of environmental disasters can lead to internal strife or cross-border tensions, influencing international security dynamics.

5. Economic Implications and Trade Policies:

Environmental policies and regulations adopted by nations affect global trade patterns and economic relations. Concerns about environmental degradation lead to trade discussions addressing sustainability, standards, and the impact of production and consumption on the environment.

6. Soft Power and Environmental Leadership:

Nations demonstrating environmental leadership can leverage their efforts as a form of soft power, influencing international perceptions and diplomatic relations. Environmental initiatives, innovation, and commitments to sustainability enhance a country's global standing.

7. Global Governance and Multilateral Forums:

International organizations and forums, such as the United Nations Environment Programme (UNEP), provide platforms for dialogue, cooperation, and the formulation of environmental policies. These bodies play a crucial role in facilitating collaboration among nations to address global environmental challenges.

8. Environmental Refugees and Migration:

Environmental degradation, natural disasters, and climate change-induced events contribute to displacement and migration, leading to international humanitarian and political challenges. Managing the implications of environmental migration requires cross-border cooperation and policy responses.

The Influence of Geopolitics on Today's International Politics:**1. Strategic Interests and Power Dynamics:**

- a. **Territorial Control:** Geopolitics continues to influence state strategies, emphasizing the significance of territorial control, access to resources, and geographical advantages in shaping a nation's power and influence.
- b. **Global Power Shifts:** The rise of emerging powers and geopolitical competition between established and rising powers (e.g., the U.S., China, Russia) reflects the ongoing relevance of geopolitics in determining global power dynamics.

2. Resource Competition and Economic Interests:

- a. **Energy Security:** The geopolitics of energy resources, such as oil and natural gas, significantly shapes international relations and strategic alliances, impacting global energy policies and economic interests.
- b. **Trade Routes and Maritime Geopolitics:** Control over maritime routes and access to strategic waterways (e.g., South China Sea, Persian Gulf) remain critical for trade and geopolitical influence.

3. Security and Conflict:

- a. **Military Strategies:** Geopolitical considerations influence military strategies, defense alliances, and security arrangements, impacting regional stability and global security dynamics.
- b. **Regional Conflicts:** Geopolitical interests often fuel regional conflicts and tensions, as seen in territorial disputes, proxy conflicts, and geopolitical rivalries.

4. Geopolitical Shifts in a Globalized World:

- a. **Technological Advancements:** The rise of technology, including cyber capabilities and space exploration, introduces new dimensions to geopolitics, influencing security paradigms and global competition.
- b. **Non-State Actors:** Geopolitical dynamics are also shaped by non-state actors, such as multinational corporations, NGOs, and terrorist groups, impacting international politics beyond traditional state-centric approaches.

Conclusion:

The environment's centrality in international politics underscores the interconnectedness of global challenges and the imperative for collective action. Environmental issues not only transcend borders but also influence power dynamics, trade relations, security, and global governance. Addressing these challenges requires sustained cooperation, diplomacy, and the integration of environmental concerns into international policy agendas.

Geopolitics, rooted in the interaction between geography and power, continues to play a pivotal role in shaping today's international politics. The competition for resources, strategic positioning, security concerns, and global power shifts underscore the enduring significance of geopolitical considerations in influencing global affairs and the conduct of nations on the world stage. Understanding and navigating these geopolitical complexities remain essential in crafting effective foreign policies and managing global challenges in the 21st century.

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NEW TRENDS IN COMMERCE

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Abstract:

This paper delves into the evolving landscape of commerce, focusing on the transformative impact of digital technologies. It explores three key areas: Digital Transformation in Commerce, the role of Artificial Intelligence and Machine Learning, and the emerging influence of Blockchain technology. Through an extensive literature review and focused analysis, the paper aims to provide insights into how these technologies are reshaping the commercial world.

Keywords: Digital Transformation, Artificial Intelligence, Machine Learning, Blockchain, Commerce Trends.

A. INTRODUCTION:

In the dynamic landscape of modern commerce, the fusion of technology and market practices has been nothing short of revolutionary. This transformation is not just a mere change but a complete overhaul of how businesses operate, interact with customers, and envision growth and sustainability. Driven by the lightning pace of technological advancements and ever-evolving consumer behavior, this paper aims to dissect and understand the various facets of this transformation. The digital revolution, marked by the advent and advancement of the internet, smartphones, and a plethora of digital tools, has fundamentally altered the commercial landscape. From the traditional brick-and-mortar establishments to the sprawling digital marketplaces, the shift has been rapid and resounding. This paper intends to explore this digital innovation, particularly focusing on how digital transformation is not just a trend but a complete metamorphosis of traditional business models. We will delve into how businesses are transitioning from conventional practices to digital-centric strategies, integrating online platforms, digital marketing, and e-commerce into their core operations. Equally significant in this transformation is the strategic implementation of Artificial Intelligence (AI) and Machine Learning (ML). Once buzzwords, these technologies are now at the heart of reshaping commerce. This paper will explore how AI and ML are being leveraged to enhance customer experiences — from personalized marketing to customer service chatbots, and predictive analytics. Moreover, their role in operational efficiency cannot be overstated. AI and ML are enabling smarter supply chain management, efficient inventory control, and data-driven decision-making, thus revolutionizing the backend of commerce just as much as the front. Another disruptive force in the realm of commerce is blockchain technology. Often associated primarily with cryptocurrencies, blockchain's potential extends far beyond. This paper will examine its revolutionary impact on secure transactions and supply chain management. Blockchain promises transparency, security, and efficiency — characteristics vital in today's globalized trade environment. It is redefining how transactions are recorded, contracts are executed, and authenticity is maintained, thus potentially transforming the very foundations of trust in commerce.:

Contextualizing these technological advancements within the broader narrative of commerce evolution, this paper seeks to offer a comprehensive understanding of the current landscape. It will address the myriad challenges that come with such rapid transformation — from the digital divide to security concerns, and the resistance to change in traditional business practices. Simultaneously, it will highlight the opportunities that these new trends present — opening up new markets, creating innovative business models, and redefining customer engagement.

B. LITERATURE REVIEW:

1. **Smith & Johnson (2021) - Integration of Digital Technologies in Retail:** Smith and Johnson's comprehensive study, conducted in 2021, delves into the burgeoning integration of digital technologies within the retail sector. The research highlights how digitalization has revolutionized retail, influencing both consumer engagement and the evolution of business models. The authors provide an in-depth analysis of various digital tools - from e-commerce platforms and mobile apps to virtual reality and augmented reality experiences - and their impact on consumer behavior. They argue that digital technology has not just enhanced

the shopping experience but also created new paradigms in retail marketing and customer service. Furthermore, the study examines the challenges retailers face in implementing these technologies, such as the need for digital literacy and infrastructure investment, while also considering the broader implications for employment and market competition. This work is pivotal in understanding the current trends in retail and offers a foresight into the future of shopping.

2. **Chang (2022) - Application of AI and ML in Personalizing Customer Experiences:** In this groundbreaking research from 2022, Chang explores the application of Artificial Intelligence (AI) and Machine Learning (ML) in enhancing and personalizing customer experiences. The paper provides a detailed overview of how AI and ML algorithms are being used to analyze customer data, predict consumer behavior, and deliver personalized content and recommendations. Chang emphasizes the role of these technologies in transforming marketing strategies and customer interactions, moving from a one-size-fits-all approach to a more targeted and individualized experience. The research also delves into the ethical considerations and challenges of using customer data, including privacy concerns and the potential for algorithmic bias. Chang's work is significant for its comprehensive analysis of the role of AI and ML in modern commerce, particularly in relation to predictive analytics and decision-making processes, and serves as a crucial resource for understanding the future trajectory of customer service and marketing.
3. **Lee & Kim (2020) - Adoption of Blockchain in Financial Transactions and Supply Chain Management:** The study by Lee and Kim, published in 2020, provides an insightful exploration into the adoption of blockchain technology in financial transactions and supply chain management. The paper outlines how blockchain technology offers a decentralized, transparent, and secure framework, which can revolutionize various aspects of commerce. It specifically examines the application of blockchain in enhancing transparency in supply chains, reducing fraud, and improving the efficiency of transactions. The authors also discuss the potential of smart contracts and their implications for automating and securing commercial agreements. Furthermore, the paper addresses the challenges in adopting blockchain technology, such as scalability issues and regulatory uncertainties. This research is crucial for understanding the potential and limitations of blockchain in commercial settings and offers a glimpse into how this technology could reshape global trade and transaction security.

C. OBJECTIVE OF THE PAPER:

The objective of this paper is to provide a comprehensive analysis of the latest trends in commerce, with a focus on the impact of digital transformation, artificial intelligence and machine learning, and blockchain technology. It aims to offer valuable insights into how these technological advancements are reshaping commercial practices and strategies.

D. DIGITAL TRANSFORMATION IN COMMERCE:

The advent and rapid evolution of digital technologies have ushered in a new era for the commerce sector, fundamentally reshaping the way businesses operate and interact with their customers. This section explores the multifaceted impact of digital transformation in commerce, focusing on three key areas: the rise of e-commerce, the integration of digital tools in traditional retail, and the overall impact on consumer behavior and business operations.

1. **The Rise of E-Commerce:** The explosive growth of e-commerce is one of the most significant outcomes of digital transformation in commerce. This phenomenon extends beyond mere online shopping; it represents a paradigm shift in how consumers access products and services. The proliferation of internet connectivity and the ubiquity of smartphones have made e-commerce a convenient and preferred choice for many consumers. This section examines the factors contributing to the growth of e-commerce, such as advancements in web technologies, secure payment gateways, and the development of sophisticated logistics networks. It also explores the emerging trends within e-commerce, including the rise of mobile commerce, social commerce, and the integration of AI for personalized shopping experiences.
2. **Integration of Digital Tools in Traditional Retail:** Digital transformation is not limited to online retailers; it has significantly penetrated traditional brick-and-mortar stores. This part of the section delves into how physical retailers are incorporating digital tools to enhance customer experience and streamline operations.

Technologies such as augmented reality (AR) for virtual try-ons, interactive digital kiosks, and personalized in-store promotions using beacon technology are reshaping the retail experience. The use of data analytics tools to understand customer preferences and inventory management systems for optimizing stock levels is also transforming traditional retail operations. This section analyzes the challenges and opportunities faced by traditional retailers in adopting these technologies and the impact on the competitive landscape of retail.

3. **Impact on Consumer Behavior and Business Operations:** Digital transformation has had a profound impact on consumer behavior, altering the way customers interact with brands and make purchasing decisions. This section explores the shift in consumer expectations, characterized by a demand for convenience, speed, and personalization. It discusses how digital channels have enabled customers to access a vast array of information, leading to more informed purchasing decisions. Additionally, the paper examines the impact of digital transformation on business operations, highlighting how businesses are leveraging digital technologies to improve efficiency, reduce costs, and innovate their product offerings. The role of data analytics in understanding customer trends, the use of cloud computing for scalable infrastructure, and the adoption of digital marketing strategies are explored in detail. This section also addresses the challenges businesses face in this digital era, including the need for digital skillsets, cybersecurity concerns, and maintaining a seamless omnichannel presence.

Trend	Key Statistic	Growth/Adoption Rate	Impact	Top Players/Examples
AI-powered Personalization	30% increase in revenue with personalized product recommendations	10% annual growth in AI adoption for retail	Improved customer experience, increased sales and conversion rates	Amazon, Netflix, Spotify
Hybrid Commerce	14% higher spend by omnichannel shoppers	67% YoY growth in click-and-collect model	Seamless shopping experience across channels, increased customer satisfaction	Walmart, Sephora, Ikea
AR/VR in Retail	57% consumer interest in using AR/VR for shopping	25% annual growth of AR/VR market in retail	Enhanced product visualization, immersive shopping experiences	IKEA Place, Wayfair AR, Lowe's Holoroom

E. Artificial Intelligence And Machine Learning In Commerce:

Artificial Intelligence (AI) and Machine Learning (ML) are playing increasingly pivotal roles in the commerce sector, driving innovations and efficiencies across various domains. This section delves into the multifaceted applications of AI and ML in commerce, focusing on three main areas: personalizing customer experiences, improving supply chain management, and enhancing data-driven decision-making processes.

1. **Personalizing Customer Experiences:** One of the most significant applications of AI and ML in commerce is the personalization of customer experiences. This involves using algorithms to analyze customer data, such as past purchases, browsing habits, and preferences, to deliver tailored product recommendations and content. AI-driven chatbots and virtual assistants are increasingly being used for customer service, providing instant, personalized support. This section examines how these technologies are transforming the customer journey, from initial engagement to post-purchase support. It explores the balance between personalization and privacy, discussing the ethical considerations and best practices for handling customer data.
2. **Improving Supply Chain Management:** AI and ML are revolutionizing supply chain management by enhancing efficiency, reducing costs, and increasing transparency. This section explores how AI algorithms are used for demand forecasting, enabling businesses to predict future product demands accurately. It discusses the application of ML in optimizing inventory levels, route planning for logistics, and predictive maintenance for equipment. The integration of AI in supply chain management not only streamlines operations but also helps in minimizing waste and improving sustainability. This part of the paper also

addresses the challenges in implementing AI in supply chains, such as the need for high-quality data and the complexities of integrating AI into existing systems.

3. **Aiding in Data-Driven Decision-Making Processes:** In the current data-rich environment, AI and ML are crucial in helping businesses make informed decisions. This section examines how AI algorithms process vast amounts of data to uncover insights and trends that can inform strategic decisions. It covers the use of AI in market analysis, customer segmentation, and competitive analysis. The paper discusses how ML models can predict market trends, helping businesses to stay ahead of the curve. Additionally, it delves into the role of AI in risk assessment and management, crucial for making financial and investment decisions in commerce. The section also highlights the importance of transparency and accountability in AI-driven decision-making, emphasizing the need for businesses to understand and interpret AI findings correctly.

F. Blockchain In Commerce:

Blockchain technology, initially synonymous with cryptocurrencies, has emerged as a transformative force in the commerce sector. Its applications extend far beyond financial transactions, offering revolutionary changes in supply chain management, security, transparency, and global trade. This section explores the multifaceted role of blockchain in commerce, focusing on three main aspects: transforming financial transactions, enhancing supply chain transparency and security, and its implications for global trade and contract management.

1. **Transforming Financial Transactions:** Blockchain technology is fundamentally changing the way financial transactions are conducted in the commerce sector. This section delves into how blockchain enables secure, transparent, and efficient transactions, reducing the reliance on traditional banking systems and intermediaries. It examines the use of blockchain for various types of transactions, including cross-border payments, micropayments, and smart contracts. The discussion also covers the implications of blockchain on reducing transaction costs and times, and how it offers a decentralized approach to financial operations. Furthermore, the section explores the challenges associated with integrating blockchain into existing financial systems, such as scalability issues and regulatory compliance.
2. **Enhancing Supply Chain Transparency and Security:** The application of blockchain in supply chain management is a game-changer for the commerce sector. This part of the section discusses how blockchain technology can be used to create immutable and transparent records of product journeys, from manufacturing to delivery. It highlights the ability of blockchain to enhance traceability, allowing businesses and consumers to verify the authenticity and origin of products. This is particularly crucial in sectors like pharmaceuticals, luxury goods, and food, where provenance and safety are of utmost importance. The discussion extends to how blockchain can improve inventory management and reduce the incidence of counterfeit goods. Challenges such as the integration of blockchain with existing supply chain systems and ensuring stakeholder participation are also addressed.
3. **Implications for Global Trade and Contract Management:** Blockchain technology has significant implications for global trade and contract management. This section explores how blockchain can simplify and secure international trade processes, offering a streamlined approach to customs clearance and compliance with trade regulations. It discusses the potential of smart contracts in automating and enforcing trade agreements and transactions, thus reducing the need for intermediaries and minimizing the scope for disputes. The paper also considers how blockchain can aid in intellectual property rights management and licensing, adding a layer of security and efficiency. The challenges here include the need for global standardization and regulatory acceptance of blockchain-based systems.

G. Research Methodology:

1. **Type of Data:** The paper is purely based on secondary data.
2. **Type of Research:** The research is descriptive in nature.
3. **Period of Research:** The period of research is from 2000 to 2023.

H. Conclusion:

In concluding this comprehensive exploration into the realms of digital transformation, Artificial Intelligence (AI) and Machine Learning (ML), and blockchain in the context of modern commerce, this paper synthesizes key insights and draws pivotal conclusions about the future of the industry. These technological paradigms are not merely additive elements to the commerce sector; they are fundamentally redefining it, presenting a mosaic of challenges and opportunities. The advent of digital transformation has ushered in a new era of commerce, characterized by an unprecedented integration of digital technologies into business models and consumer interactions. This transition to a digital-first approach in commerce is not just a trend but a critical shift in operational and strategic thinking. As detailed in this paper, businesses that leverage e-commerce platforms, digital marketing, and online customer engagement strategies are witnessing enhanced reach and improved customer satisfaction. However, this digital shift also presents challenges, notably in the realms of cybersecurity, data privacy, and the digital divide that can exclude sections of society from fully participating in the digital economy. Similarly, the integration of AI and ML in commerce has been transformative. These technologies have enabled businesses to personalize customer experiences, optimize supply chain management, and make more informed, data-driven decisions. The potential of AI and ML to revolutionize customer interaction and backend operations is immense, yet it brings forth challenges such as ethical considerations around data use, the potential for algorithmic bias, and the need for significant investment in technological infrastructure. Blockchain technology, while initially associated primarily with cryptocurrencies, has shown its expansive potential in revolutionizing financial transactions, enhancing transparency and security in supply chains, and offering new paradigms in global trade and contract management. This technology promises to introduce levels of efficiency, security, and trustworthiness that were previously unattainable. However, challenges such as regulatory acceptance, technological integration, and understanding blockchain's complexities remain significant hurdles. The cumulative insights from these technological advancements paint a picture of a rapidly evolving commercial landscape. This evolution is not without its challenges, which include technological adaptation, regulatory hurdles, and ensuring equitable access to these new technologies. However, the opportunities they present are transformative. Businesses that can effectively harness these technologies can gain unparalleled advantages in efficiency, customer engagement, and innovation. Therefore, the paper emphasizes the need for businesses to not only adapt to these evolving trends but to actively engage with them. Staying competitive in this fast-paced, technology-driven world requires a proactive approach to adopting and integrating new technologies. Businesses must continually invest in understanding and implementing digital, AI, and blockchain technologies to stay relevant and thrive.

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NEP - 2020 BOON OR BANE FOR EDUCATION SYSTEM IN INDIA

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Abstract:

Well defined and futuristic education policy is essential for a country at school and college levels due to the reason that Education leads to economic and social progress. Different countries adopt different education systems by considering the tradition and culture and adopt different stages during their life cycle at school and college education levels to make it effective. The National Education Policy 2020 (NEP 2020), which was approved by the Union Cabinet of India on 29 July 2020, outlines the vision of India's new education system. The new policy replaces the previous National Policy on Education, 1986. The policy is a comprehensive Framework for elementary education to higher education as well as vocational training in both rural and urban India. The policy aims To transform India's education system by 2021. Shortly after the release of the policy, the government clarified that no one will be forced to study any particular language And that the medium of instruction will not be shifted from English to any regional language.[3] The language policy in NEP is a Broad guideline and advisory in nature; and it is up to the states, institutions, and schools to decide on the implementation. Education in India is a Concurrent List subject. Himachal Pradesh has become the first state to implement New Education Policy 2020. The national educational policy should be implemented.

Keyword: Higher Education, National Education Policy 2020, NEP-2020, Overview & Analysis, Implementation Strategies, Approaches, Challenges, Opportunities of NEP 2020.

Objectives of the Study:

1. To analyze the provisions of the policy for school and Higher education in India in terms of their contribution to the existing system of education.
2. To study the about the challenges which will be there in the implementation of this policy.

Introduction:

India, being a growing liberal country for educational reforms, currently has about 845 universities and approximately 40,000 Higher education institutions , reflecting the overall high fragmentation and many small sized in the country which are Affiliated to these universities. It is found that over 40% of these small sized institutions are running single program me against the Expected reform to a multidisciplinary style of higher education which is an essential requirement for the educational reforms in the Country for the 21st century. It is also noted that over 20% of the colleges have annual enrolment less than 100 students making them Nonviable to improve the quality of education and only 4% of colleges enrol more than 3,000 students annually due to regional Imbalance as well as the quality of education they offer. Some of the reasons found for the fragmentation of the higher education System in India it is predicted that India will be the third largest economy in the world by 2030-2032 with estimated GDP of ten trillion Dollars. It is evident that the ten trillion economies will be driven by knowledge resources and not by the natural resources of the Country. To boost the growth of the Indian education sector, the present government decided to revamp it by introducing a Comprehensive National Education Policy 2020. This is in line with the Prime Minister's recent call on leveraging the Fourth Industrial Revolution to take India to new heights. The currently introduced National Education Policy 2020 envisions an India Centered education system that contributes directly to transforming our nation sustainably into an equitable and vibrant knowledgesociety, by providing high quality education to all.

Boon of NEP 2020: New education Policy begins with the unfinished agenda of NEP — 1986. NEP — 1986 was rooted in a very different India. Over the years, remarkable strides have been made in terms of access and equity. Near universal levels of enrolment at primary levels, And subsequent increase in enrolment at higher education levels (GER: 26.3%) have been achieved. However, there has also been a drop In the quality of learning in public

school systems, followed by an exodus of elite and middle classes. This also led to the weakening of Accountability mechanisms. Despite poor returns on learning, the pay-structures in public systems have seen a gradual increase.

1. School Education

Revamping of 10 + 2 structure to 5 + 3 + 3 + 4. New pedagogical and curricular structure to include pre-primary years. It's a good Departure as this was ignored in education policy documents, and referred to in informal sense. NCERT will focus on the development of new curricular and pedagogical structure for ECCE. Policy also delves deep into the Development and training of Anganwadi trainers through short-term and long-term programs. A positive thrust towards Formalisation of ECCE structure and delivery. Focus on attaining foundational numeracy and literacy by grade 3. Ministry of Education (MoE) will strengthen this, and run it in a Mission mode through a separate national mission. A separate national book policy to develop libraries around the country and instil love of reading in children. Public libraries in India are scarce. If this could be strengthened through the public education policy, it's a plus. Mid-day meals to see an upgradation in nutrition component, wherever possible, local alternatives to be provided. Eggs are still a Contentious policy issue, policy plays it safe by steering clear to avoid any unnecessary controversy. Design of programs and interventions to alleviate issue of dropouts in conjunction with the Ministry of Social Justice and Empowerment. Medium of instruction section for some reason has received lot of undue attention. However, the section remains fairly flexible to Avoid all sort of controversy. Half-baked understanding and market push towards English and paternal perception of 'quality' Could've led to this flexibility. Policy also doesn't thrust/force/prefer any particular language over the other and encourages learning multiple languages. It also recommends teaching foreign languages at secondary level: Korean, Japanese, Thai, French, German, Spanish, Portuguese, and Russian. Policy inserts a new term called SEDGs (socio-economically disadvantaged groups). This hitherto hasn't been used as a social Category in technical documents. Though later sections highlight categories as caste, tribe, disability, transgender and have passing References to term minority. Technical criticism aside, policy envisages ample initiatives to be targeted at these groups to increase Enrolment and retention. PARAKH, a new body to focus on assessments as NAS (National Achievement Survey) and SAS (State Achievement Survey). PARAKH could be an important instrument to look at learning gaps and support targeting of various ministry goals and programs.

1. Higher Education

It's important to view the policy in context of what has been happening in public universities, and recent debacle of Universities of eminence. There has been continuous erosion of university autonomy by the state. Perverse state violence unleashed upon one of the best public universities in India didn't happen in some distant past. Political appointments of university leaders who are At best the instruments of state, as opposed to being focused on teaching, learning, research or administration. Though the document highlights regulatory autonomy, it would be worrisome if the document also meant financial autonomy. This 'imagined' autonomy is envisaged through replacement of UGC (University Grants Commission) and AICTE (All India Council for Technical Education). New body Higher Education Commission of India is based on the idea of division of functions and separation of activities. Policy also argues against commercialization of education. However, in the same breadth allows for foreign universities to come to India. There has been significant increase in number of private universities by Indian providers. If the idea was to increase competition, it makes sense. However, insertion of the statement doesn't. Focus on futuristic curriculum makes sense, and a separate body dedicated to focus on integrating technology in institutions is a necessary direction. National Research Foundation is another great idea. However, if these spaces get filled by individuals who are driven by ideological agendas, little could be expected. Indian Universities will be allowed to set up campuses elsewhere in the world — there is a strong potential for this to develop in gulf -markets. There is a huge demand for quality education by Indian Diaspora.

Bane or Challenges for NEP 2020: National Education Policy (2020) is reformatory step toward changing the education system of India for the better. A lot of effort has been put in framing the policy, it is the result of in-depth research, deliberations and discussion that we have arrived at something as comprehensive as NEP. But, there exist few changes in the successful implementation of these reforms which are as follows:

* There is a lack of infrastructure and funding to incorporate such massive changes into the system. The national education policy 2020 focuses on making India a global destination for education by stressing upon quality and

dynamism. The policy focuses on raising expenditure in the education sector to reach 6% of GDP at the earliest. But figures give a very contracting picture. It is not for the first time that there are talks about increasing the investment in education. The economic survey 2019-20 says India spends only 3.1 % of its GDP on education sector even after continuous talks on spending patterns. So the first thing is to prioritize education as a top priority and channelize the investment towards this goal (Soni).

* From the policy documents it seems quite obvious that there will be more stress on privatization of education. In a country like India where affordability of education is still the biggest issue, privatization seems like a major hurdle in implementation of the policy. Although NEP does mention about the need of transparency in fee structure but there is no mention about how they will curtail the growing fees of private institutions and make them function in a manner where utilitarianism will be the focus not profit maximization. There is no mention in the NEP 2020 about how it will be ensured that the benefits of Education reaches the marginalized section of society. The explicitness about the Inclusion of every section of the society is missing in the policy document. The Roadmap for any such action is missing.

* Ensuring the accountability of each stakeholder is a huge task. The Comprehensiveness of the policy requires many stakeholders working together in a Close knitted and well-coordinated relationship. The kind of changes the Implementation of this policy will bring to the system is massive in terms of impact and outreach. Thereby expecting cooperation and acceptability of each stakeholder is a tedious task in such a large setup.

* The policy document talks about top foreign colleges setting up their institutions in India. However to what extent it will solve the problem for India is debatable as Setting up institutions in India will Cost them hefty amount of money which they will Be recovering from the fees and related charges which will ultimately increase the Burden on the student making it difficult to enroll themselves in such institutions.

* NEP advocated that mother tongue will also be a medium of instruction till class 5, preferably till class 8 and beyond it wherever possible. But it has a negative side attached to it also as it will further intensify the gaps between students who know English or Hindi and who doesn't know these. Secondly, it will be difficult to Standardize the reading material in absence of any script making it a tedious task. It will require large investments and positives coming out of this investment seems Less likely and there are chances that it might create a bigger gulf in the education system.

Conclusion: All higher education institutions with current nomenclature of affiliated colleges will expand as multi-disciplinary autonomous colleges with degree giving power in their name or become constituent colleges of their affiliated universities. An impartial agency National Research Foundation will fund for innovative projects in priority research areas of basic sciences, applied sciences, and social sciences & humanities. The system will transform itself as student centric with the freedom to choose core and allied subjects within a discipline and across disciplines. Faculty members also get autonomy to choose curriculum, methodology, pedagogy and evaluation models within the given policy framework. These transformations will start from the academic year 2021-22 and will continue until the year 2030 where the first level of transformation is expected to be visible. NEP 2020 is an advanced regime that will facilitate value-based education and scientific learning. It will replace the older system of 'curriculum' which is rigid and unamenable to change with changing time due to the unwieldy bureaucratic system to change it. The NEP 2020 lays emphasis on making the education system holistic, flexible and aligned to the needs of 21st-century education. However, in order to accomplish all these goals, we must overcome all the execution challenges in a sustained manner for years to come. The drafting committee of NEP 2020 has made a comprehensive attempt to design a policy that considers diverse viewpoints, global best practices in education, field experiences and stakeholders' feedback. The mission is aspirational but the implementation roadmap will decide if this will truly foster an all-inclusive education that makes learners industry and future ready.

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THE IMPACT OF REMUNERATION ON PERFORMANCE OF EMPLOYEES

(With Special reference to Employees of non Grant College in Marathwada Region)

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Abstract :

Employees play an important role in constitution and strategic development of any organization as they increase the efficiency and profitability of an organization, so it's a prime duty of an organization to take care of its employees by providing them a good facility which includes remuneration for their work performances or we can say for the services or employment such as basic salary and bonuses. The present study is conducted by the researcher a sample of 100 Assistant Professor (Teachers) from 50 colleges from the Marathwada region, affiliated with Dr. Babasaheb Ambedkar Marathwada University, using random sampling techniques by circulating the structured questionnaire through google forms.

Key Words : Remuneration, Performance, Efficiency, Impact

Introduction :

Employees play an important role in constitution and strategic development of any organization as they increase the efficiency and profitability of an organization, so it's a prime duty of an organization to take care of its employees by providing them a good facility which includes remuneration for their work performances or we can say for the services or employment such as basic salary and bonuses or other economic benefits during employment as it is the basic attraction to the employee to perform job efficiently and effectively. In terms of motivating employees, remuneration is often a very important incentive resource. Remuneration is a part of reward received by employees as a result of their task in the organization, including gifts, awards or promotions. Performance cannot be achieved optimally if remuneration is not given proportionally. In addition, the individual's attachment to work is the key to the success and profitability of the organization. The use of remuneration in return for educators in the university environment as well as being a form of independence is also the responsibility of the leadership in improving job satisfaction and work motivation. Basically, the existence of these benefits has fulfilled the expectations of the teaching staff at work. The broad sense of reward includes economic reward and non-economic reward, which refers to monetary rewards such as salary. The non-economic reward mainly refers to the employee's psychological feelings in the organization. Within the organization, the employee pays attention to the vertical change of the increase or decrease of economic reward but also compares the psychological feeling of such non-economic reward horizontally.

Review of Literature :

Yingshan Hu(2021) With development and reform of enterprises, the remuneration system has become the core issue of human resource management and development, and is also an important means to scramble for talents among enterprises. This article takes the Haidilao enterprise as an example, through official website information, the staff handbook and the related news report as the data collection source, uses the equity theory as a tool, explores the pay incentive system and staff performance intrinsic relations. This paper divides equity theory into subjective equity and objective equity, and suggests that enterprises should shape subjective equity and objective equity when constructing remuneration structure, and give consideration to equity and efficiency. Dr. Safdar Rehman Ghazi(2010), The major purpose of this study was to explore the level of job satisfaction of university teachers in the North West Frontier Province of Pakistan. The objectives of the study were: to assess the general satisfaction level of university teachers, to determine university teachers' satisfaction level for each of the twenty dimensions of the job, and to give suggestions to improve university teachers' job satisfaction level. All the university teachers working in North West Frontier Province of Pakistan constituted the population of this study. A sample of 108 university teachers was drawn from this population. A questionnaire following the theoretical framework of Herzberg's two factor theory was developed. The findings show that university teachers were

generally satisfied with their jobs. However teachers were neutral with dimensions: working conditions, organizational policies and practices, recognition, supervision technical and promotion opportunities. The teachers were satisfied with work variety, creativity, moral values, compensation, work itself, colleagues' cooperation, responsibility, ability utilization, authority, activity, social status, job security, achievement and students' interaction. Provision of sufficient fund to universities for the availability of modern tools, scholarly publications, properly equipped libraries and laboratories is recommended. Their participation in decision making, revision of curricula, and other academic matters must be ensured. A formal strategy needs to be put in place to address teacher's needs while stressing and encouraging accountability and initiatives. Ego Dike(2020) Remuneration as a Tool for Increasing Employee Performance in Nigerian This research work assesses fundamentally remuneration as a device for expanding employee performance with specific reference to Bottling Companies in Nigeria. The broad aim of this research is to decide the role of remuneration in expanding workers performance. The population of the study is 200. It was found that remuneration assumes a significant role in increasing workers performance in an organisation. The study therefore suggests that organisation ought to embrace the right remuneration tool that meets the craving of their workers so as to increase their output.

Methodology:

Objective of The Study:

1. To examine the role of salaries, wages, bonus and incentives play as motivational tools in improving employees' performance.
2. To determine the relationship between remuneration and employee performance.

Hypothesis of the Study :

H0: Remuneration does not play any vital role in motivating performance of employees'

H1: Remuneration play vital role in motivating performance of employees'

Sources of Data:

Primary Data was collected by circulating the structured questionnaire through google forms. To Assistant Professor (Teachers). **Secondary Data** was collected from published sources i.e. Books, Websites, and Journals & Reports, etc.

Sample and Sampling Technique:

A sample of 100 Assistant Professor (teachers) from 50 colleges from the Marathwada region, affiliated with Dr. Babasaheb Ambedkar Marathwada University, Aurangabad using random sampling techniques.

Result & Discussion :

Table 1 Showing Profile of Respondent

Particulars	Frequency	Percentage	Cumulative %
Male	75	75	75
Female	25	25	100
Total	100	100	

The majority of the respondents are male 75 % as against female 25%. It Can be interpreted that institutions is male dominated against female.

Table 2 Showing age group of the respondent

Particulars	Frequency	Percentage	Cumulative %
30-40years	25	25	25.00
41-50years	53	53	78.00
51-60years	22	22	100.00
Total	100	100	

The majority of the staff are people in the middle age grade 41-50 years with 53. 0%, followed by young adults 30-40 years 25.%. Age grade 51-60 years with 22% .

Table 3 showing Educational level of Respondents

Particulars	Frequency	Percentage	Cumulative%
Master	22	22%	22.00
Master with M.Phil	30	30%	52.00
PhD	48	48%	100
Total	100	100	

The majority of the respondents working in the institutions have Masters 22%. 30% possess master with M.Phil degree in their respective fields while 48% have PhD. It can be interpreted that UGC norms for appointment of in Institution PHD is basic requirement. Remaining may be the senior lectures who have appointed on the basis of Master and Master with M.Phil Degree.

Hypothesis Testing :

H0: Remuneration does not play any vital role in motivating performance of employees'

H1: Remuneration play a vital role in motivating performance of employees'

Performance Correlations

	performance	salary/wage	Bonus
Performance Pearson Correlation	1	.844**	.598**
Sig.(2-tailed)		.000	.000
N	100	100	100
salary/wage Pearson Correlation	.844**	1	.574**
Sig.(2-tailed)	.000		.000
N	100	100	100

Bonus Pearson Correlation	.598**	.574**	1
Sig.(2-tailed)	.000	.000	
N	100	100	100

**Correlation is significant at the 0.01 level (2-tailed).

Interpretation :

- The table above showed the relationship that exist between the Independent variables Remuneration i.e. salaries, wages & bonus and the dependent variable i.e performance of employees'.
- The correlation analysis showed that there is positive correlation between salaries and wages (.844**) and bonus (.598**) and employees performance revealing that an increase in remuneration will lead a positive increase in performance of employees'.
- Remuneration from the employer will encourage or motivate the employees to increase their performance in every field.
- This supports and reinforces the reinforcement and expectancy theory of remuneration.
- Hence, we reject the null hypothesis remuneration does not plays a vital role in motivating performance of employees' to perform & Accept the Alternate Hypothesis.

Conclusion :

The study concludes that there is a significant and positive relationship between remuneration and employees' performance. Remuneration has a significant role in improving employee's performance. Remuneration is the main objective of implementing additional employee's duties.

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CHALLENGES AND OPPORTUNITIES: ASSESSING THE FINANCIAL LITERACY LEVELS AMONG HOUSE MAKERS USING DIGITAL PLATFORMS.

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Abstract-

This research paper explores the challenges and opportunities associated with assessing financial literacy levels among home makers through digital platforms. The study delves into issues of accessibility and digital literacy while also examining the potential for tailored online resources, interactive tools and targeted educational content to enhance financial knowledge in this demographic. Their financial literacy was measured with three dimension-awareness of digital financial product and services and risk and utility of digital tools. 200 women were selected by using convenience sampling method for this research work and the data were collected through structured questionnaire. The data were analyzed through the Excel sheet

Key words-

Financial literacy, Digital financial services, E-wallets, challenges and opportunities , Financial tools and Financial risk.

Introduction-

Assessing financial literacy among home makers through digital platforms presents both challenges and opportunities. Challenges include ensuring accessibility for diverse demographics and tailoring content to varying literacy levels. Opportunities lie in leveraging interactive tools for engaging and educating users, fostering a supportive online community for shared learning, and utilizing data analytics to personalize content based on individual needs.

Financial literacy plays a pivotal role in fostering economic well-being, and its significance is particularly pronounced among house makers who manage household finances. In the contemporary digital era, assessing the financial literacy levels of this demographic through digital platforms presents both challenges and opportunities. As household dynamics evolve, the need to equip house makers with effective financial knowledge becomes imperative. This introduction provides a contextual overview of the challenges faced by house makers in achieving financial literacy through digital means, while also highlighting the promising opportunities that arise from leveraging technology for tailored educational initiatives. The study seeks to unravel the complexities surrounding financial literacy within this group, aiming to contribute valuable insights for the development of effective digital strategies to enhance financial acumen among house makers (Baluja Garima,2016)

Financial literacy-

Financial literacy is the knowledge of budgeting, saving and investing enabling individuals to make informed decisions about their personal finances .Financial literacy is the ability to understand the financial concepts and make informed money decisions. This is something that everyone should try and understood so that they can manage their money in a better way.

Digital financial literacy-

Digital financial literacy combines the skill needed to navigate financial services with the skills use digital technologies.



Objective of the study- The primary objective of this study is to systematically examine the challenges and opportunities associated with assessing the financial literacy levels among house makers through digital platforms. Specific aims include:

1. To identify the key challenges faced by house makers in gaining financial literacy through digital means, with a focus on issues such as accessibility, digital literacy gaps, and socio-economic diversity.
2. To explore the potential opportunities offered by digital platforms in delivering tailored online resources, interactive tools, and targeted educational content to enhance the financial knowledge of house makers.
3. To analyze the impact of digital financial education initiatives on the economic empowerment of house makers, considering factors such as improved budgeting skills, informed decision-making, and long-term financial planning.
4. To provide recommendations for addressing identified challenges and maximizing the potential benefits of digital platforms in promoting financial literacy among house makers, taking into account diverse demographics and varying levels of digital literacy.

By addressing these objectives, this study aims to contribute to the existing body of knowledge on financial literacy and inform the development of effective strategies to empower house makers economically through digital educational interventions.

Review of literature-

One of the biggest challenges of our country is women empowerment which can only be attained by making women educated, finance liberated and independent. Financial literacy can be understood as the ability to know how money works in a normal course of action (Chetan Singh and Rajkumar, 2017).

Several benefits gained by consumers, government and service providers. Government did many financial inclusion where the benefits gained by marginalized people and service providers and ultimate there is poverty reduction (Ozili, P.K. 2018)

From this several benefits a report from the Institute, M.G (2016) it increase the GDP from old financial literacy to digital financial literacy. For ultimate users, digital means saving of time and resources in utilizing the different financial product and services. For service provider it becomes easy to avail the financial services in virtual interface with low transaction costs. This creates transparent picture of money flow where able to know frequency of economic growth.

Research methodology-

Method-descriptive survey method

Sample- 200 women (age-25years and above)

Data -Primary data--semi-structured interview

Data –secondary data—books , journal and sites

Sampling method-convenience sampling method

Secondary data-journals, books, newspaper, etc

Statistics' tools-Excel

Figure 1- Indicates the components of digital financial literacy and its relationship with the usage of digital financial services. Demographic variables like the gender, age ,education are expected to affect the level of digital financial literacy.

A questionnaire was designed to measure the level of digital financial literacy and its challenges among the women in Jalna. It was divided into 4 parts –

1. Demographics – the first part contains the demographics of the respondents.
2. Awareness- the second part focused on the awareness of digital financial products and services. Questions like what is a PAN? What is Recurring deposit? What is the use of IFSC code? Total 11 items are included to measure.
3. Utility- the third part measured the utility of digital financial services. Question like reason for using E-wallets like phone pe/ Google pe, types of benefits received from digital financial literacy.etc. Total 3 items are included to measure.
4. Risk-fourth part measures the risk and its control. Questions like do you share the password with the others? Etc. Total 10 items are included to measure.

Table 1.1-Respondent profile (200women)-

		Frequency	Percent
Age	Above 25 to35	8	04%
	Above 35 to 45	136	68%
	45 years and above	56	28%
Education	10 th	16	08%
	12 th	8	04%
	Graduation	32	16%
	Post Graduation	56	28%
	Other or above PG	88	44%
	Annual Income of family	Below 50000	40
Above 50000-200000		72	36%
Above 200000		88	44%

Scope of the study-

The study will measure the impact of education, age and income women on digital financial literacy.

Limitations of the study-

The study of digital financial literacy is limited to 200 women of Jalna only and it may have certain human errors.

Data Analysis-

Digital financial literacy was measured by using following aspects-the awareness of digital financial products and services and their utility. Challenges and opportunities by using digital platforms .

Table 1.2 -Digital Financial literacy Score: Education and family income has direct relation with the financial literacy and use of digital platforms.

Central tendency	Value
Mean	151.34
Median	164
Mode	184
SD	37.744
Minimum	88
Maximum	192

Table 1.3-Corrected Responses on Awareness and knowledge of Digital financial services presented by percentage in the following table .

Rank	Question no.	Question topic	% of correct answer
1.	12	OTP	96
2.	8	PAN	92
3.	9	UPI	91
4.	14	Interest charged on credit card	90
5.	10	Use of Net banking	88
6.	15	Debit card advantages	84
7.	17	IFSC Code	80
8.	11	ATM	76
9.	16	QR Code	64
10.	13	KYC	52
11.	18	POS	48
12.	7	RD	44

Table 1.4- Reason for using E-wallets (phone pe/ Google pe, etc)

	Particulars	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean	Mean rank
1.	Easy to use	136	48	16	0	0	9.2	1

2.	No need to carry cash	136	48	8	8	0	9.12	2
3.	No tension of losing money	112	48	40	16	0	9.04	3
4.	Quickly transferable	96	80	32	0	0	8.96	4
5.	Useful in evidence	96	96	8	0	0	8.88	5
6.	Receiving some benefits of cash back	56	64	48	16	16	7.28	6

Since the data is rank order data, the higher value indicates more favorable responses. From the rank table, it is concluded the top five reasons for using digital financial literacy are 1) easy to use 2) no need to carry cash 3) no. Tension of losing money 4) quickly transferable 5) useful in evidence .

Table 1.5- Benefits received from financial literacy.

	Particulars	Strongly agree	Agree	Neutral	Disagree	Strongly disagreed	Mean	Mean rank
1.	Get monthly interest /dividend makes you financially sound	80	64	48	8	0	8.16	1
2.	Get regular income makes you more confident	72	96	32	0	0	8.4	2
3.	Financially help to your family	64	88	40	0	4	8	3
4.	Helps to face financial crises easily	56	88	32	8	8	7.6	4
5.	Makes your nature of shopping / expenditure/purchasing logically	48	80	56	16	0	7.6	4

From the rank table, it is concluded the top five benefits of using digital financial literacy are 1) Get monthly interest /dividend makes you financially sound 2) Get regular income makes you more confident 3) Financially help to your family 4) Helps to face financial crises easily 5) Makes your nature of shopping / expenditure/purchasing logically.

1.6 The Digital Financial risk and its control.

Sr no.	PARTICUALRS	Yes	No
1	Set your financial goals	136	64
2	Make monthly budget	136	64
3	Strictly follow your budget	104	96
4	UPI increases tendency of unwanted expenditure	152	48

5	Invalid QR code opened while scanning	40	160
6	Change your password of banking apps frequently	104	96
7	Set common password for all apps.	48	152
8	Take summary of financial transaction monthly	80	120
9	Share your password with anyone	136	64
10	Stuck with any digital scam	48	152

From the data the higher values indicates more favorable responses. Most of the respondent preferred UPI increases tendency of unwanted expenditure, set your financial goals, make monthly budget, and share your password with anyone in Digital Financial Risk and its Control.

Conclusion-

Women often encounter limited access to digital devices and the internet, hindering their ability to engage with digital financial literacy tools. Cultural Barriers: Societal norms and cultural expectations may discourage women from pursuing digital financial education, limiting their exposure to opportunities in the digital financial landscape. Technological Literacy: A lack of familiarity with technology may pose a significant hurdle for women, affecting their ability to navigate digital platforms for financial learning and transactions. Financial Inclusion Gaps: Women face disparities in financial inclusion, with fewer opportunities to access formal banking services, making it challenging to engage with digital financial tools. Cyber security Concerns: Women may be more vulnerable to cyber security threats due to factors such as lower digital literacy, putting their financial information at risk.

Suggestions: Tailored Educational Programs: Designing digital financial literacy programs specifically for women can help bridge the gender gap by addressing their unique needs and challenges. Mobile Technology: Leveraging the widespread use of mobile phones in many regions provides an opportunity to deliver financial education directly to women, even in remote areas. Empowerment through Knowledge: Providing women with digital financial literacy can empower them to make informed decisions, fostering financial independence and resilience. Collaboration with NGOs and Governments: Partnerships with non-governmental organizations and government initiatives can amplify efforts to enhance women's digital financial literacy, ensuring a more comprehensive and widespread impact. Financial Inclusion Policies: Implementing policies that promote financial inclusion for women, such as incentivizing the use of digital financial tools, can create an environment conducive to their participation.

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EXPLORING NEW TRENDS IN TEACHING, LEARNING, COMMUNITY CLIMATE RESILIENCE AND ENVIRONMENTAL EDUCATION

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Abstract:

The impact of climate change is seen on various aspects like health, food, agriculture and environment. For keeping the balance, there is an urgent need to adopt some policies and strategies. From a very early age, the education of environment starts through home, school and projects. Students can transform their skills, knowledge, and experience to the community. Therefore, there is a big responsibility on the shoulders of students, youth and community to understand the disastrous impact of nature, a significant impact on strengthening the climate adaptation and climate resilience of society. This research paper focuses on how the financial support from government helps to save the climate from polluted factors. The United States Agency for International Development (USAID) has taken some initiatives in various fields of environment. Ministry of Environment, Forest and Climate Change has some important plans which are discussed in this present research paper.

Keywords: Youth, Formal and Non-formal education, Climate Change, Community Climate Resilience and Environmental Education

Introduction

“Study what you most affect” was advice first given from the stage of an Elizabethan theatre in London over 400 years back. Nowadays, it is too important to relate this advice in today's situation than ever. Our family is our first society. One should learn at home, classroom and everywhere about environmental education. Patrick Verkooijen, Chief Executive Officer of Global Center on Adaptation rightly pointed out that “The continent carries a heavy burden of climate impacts in the form of increased climate change threats to human health, food and water security and socio-economic development” As indicated by the Innovating Pedagogy 2016 report (Sharples et al., 2016, p.32), “formative analytics are focused on supporting the learner to reflect on what is learned, what can be improved, which goals can be achieved, and how to move forward.” Debate, academic trip, projects, workshop, seminar, conference help informally to inculcate the values in community. The potential transformative initiatives are useful for the wellbeing of society. Providing education to people is a main thing for sustainable environment and unlocking solutions for climate change. education policy makers, educators, environmental activists and researchers are considerably protecting ecosystem. Digital education is also important for learning new things. The United States Agency for International Development (USAID) partners with India to address critical development challenges through, Global Health and Global Climate Change initiatives. This mainly focuses on innovation and entrepreneurship that benefits vulnerable populations with a focus on issues such as health, urban water and sanitation, food security, climate change, early grade reading, and women's empowerment as a cross-cutting issue. While talking about global health, USAID supports eradicating preventable child and maternal deaths, preventing the patients of AIDS and tuberculosis. Apart from that it is engaging a large number of public and private sector partners from India, Africa and the United States to accelerate the sharing and transfer of Indian agricultural innovations that improve food security throughout Africa and Asia. USAID supports for a low emission and energy secure economy through clean energy partnerships.

Climate Change brings numerous risks like hurricanes, flooding, sea level rise, heat waves, droughts etc. therefore everyone has to study efficient effective education along with the innovative settings. this paper focuses how to change how we teach, what we teach and we teach. from school level towards the higher education, one should learn the skills and to survive in the natural disaster. the covid-19 pandemic is also an example to learn about the changing environment for example the disturbance is in teaching and learning routine. education systems are shifted to online mode and this is revolutionary change in the field of education. it increases screen time and students do not like to read and ponder. Environmental education can be given from schools and grassroot initiatives must be taken for the betterment of society. Everyone should take the responsibility of nature and

maintain the balance between living and non-things. The process outlined in the USAID Theory of Change Workbook and incorporate the systems thinking perspective of USAID's 5Rs Framework. According to this framework, there are Seven steps to climate Resilient education programming in the following way:

1. Identify the local climate hazards, present and future- the lack of basic necessities with issues like clean water, electricity, sanitation and employment opportunities. In the slum areas, the problem of the basic things arises on a large scale.
2. Identify the climate to the local education system, present and future- as per geographical changes the climate also changes. Therefore, in heavy rainy season, water harvesting project can help to save water. Water scarcity is a big climate threat across the world. Hot and dry summer, droughts bring the starvation and poverty. In order to stop these threats, the care should be taken of trees, water tanks and education of innovative
3. Identify the climate vulnerabilities and existing climate-relevant assets capacities within the local education system- at a very young age, a sense of awareness about climate change and its impact should be taught in the school. In school campus, children can learn about organic food. So, school campus and home are used as a climate education learning ground by encouraging children to practice climate resilience building activities. Through the curriculum, extra-curriculum and field trips, students learn about climate change and its impact, and resilience strategies.
4. Identify opportunities and entry points for climate action- the impact of climate change on agriculture has very harmful impact and far-reaching impact on future climate. Community leader can help to practice the traditional methods. Student's participation in experimental learning is also important. The existing knowledge, experience can be transferred from one generation to the next generation.
5. Design climate responsive interventions and a theory of change- To equip the learner with an integrated approach, both mitigation and adoption approaches can enhance awareness in the teaching community and the education system.
6. Develop and implement climate-relevant learning questions- undocumented local and traditional knowledge is important to understand the climate change along with formal education. Life threatening temperatures above 41C can be decreased by saving nature and stopped devastating impacts through community-based resilience. Sometimes natural calamities happen in various forms. Therefore, youth and students should be ready with skills like adaptability, open mindedness, flexibility, problem solving and critical thinking, as well as transformative skills like leadership, time management and strategic thinking, coalition building and creating networks, engagement and effective communication, and prioritizing Indigenous perspectives.
7. Monitor and report on indicators that map to climate indicators- there is a need to understand the risk, then understand the impact and after that comes adaptation process. While measuring the impact of climate change on population health and health systems, one should know exposure to temperatures, Respiratory disease from exposure to air pollutants, climate-related risks. Effective indicators can trace the progress and provide the information.

“The World Health Organization proposed a wide range of indicators to monitor the extent to which a health system is able to anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress, so as to bring sustained improvements in population health, despite an unstable climate (Online).” Even some NGOs also helps to create an awareness about environment for example Sankalp Taru Foundation, Mukti, Deepalaya etc.

Another important factor of this study is to understand how the policies and plans of government are designed to save the nature. Education directed funds are very important for the awareness program, resources and education infrastructure. The impact of climate change causes climate stressors like drought, rising sea level, rising temperature etc.

However, everyone should know how to deal with the challenges in climate change and understand more about sustainable world of work. There is a need of new technical knowledge and capacities, enhancing current and developing novel surveillance, and robust health systems where climate change-related impacts may affect human health. However. Through the education and awareness programme, environment education can be perceived and

used in day-t-day routine for the betterment of living beings. Based on this broad approach, academics have identified that beyond government actions, grassroots responses to environmental changes, including disasters and other climate impacts, can be understood as community-led resilience initiatives (Berkes and Ross Citation2013; Cutter et al. Citation2008; Magis Citation2010). The Expert Committee on Impact of Climate Change set up by the Ministry of Environment & Forests in June 2007 assessed the impact of climate change on six areas, namely water resources, agriculture, Natural Ecosystem, Health, Coastal Zone Management and Climate modelling. This committee has given the importance to National Solar Mission. In the year 2015-16, Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) was implemented. The National Mission on Strategic Knowledge for Climate Change (NMSKCC) is there for the support to ecologically sustainable development. The Cabinet Committee on Economic Affairs approved a proposal of the Ministry of Environment and Forests for a National Mission for a Green India15(GIM) as a Centrally Sponsored Scheme. There is The Himalayan ecosystem for the nature and human beings. They help to conduct the programmes on environmental programmes, eco-conservation. Like this there is an NGO Marathwada Gramin Vikas Sansthan which established in 1996. It promotes community based development programmes such as soil and water conservation.

Conclusion

Teaching and learning of environment education began a long back but successful implementation of plans and policies have really advocated for the sustainable development of resilience climate. In this regard, environmental education supports for creating awareness and reinforcing social connectedness, while the resilience literature highlights the teaching and learning through different experiments in the society. Community based actions are important to implementation of the national plans and initiatives. The education should come from the page to the action. There is an urgent need for strengthening linkages between pre-primary, primary, secondary, and HEIs to ensure learners, especially from community to adequate opportunities to build the basic skills for learning in climate-relevant fields of study. Ministry of Education has given some polices which are very important in this matter. National Action Plan on Climate Change (NAPCC), Ministry of Environment, Forest and Climate Change, brought out the goals in this regard. Environment education must be provided to children, girls and young women, and people with disabilities, refugees and local people. In short, there will be this education for everyone on this beautiful planet.

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IMPORTANCE OF AGRICULTURE SECTOR IN INDIAN ECONOMY

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Abstract

Agriculture is the major occupation of the India. In India about 70% of the rural people are engaged in the agriculture. From past to present the agriculture plays vital role in the Indian Economy because most of the industries in the India primarily based on the agriculture for their raw material. Agriculture is considered to be 'Back Bone' of the Indian Economy because it contributes 17% to the GDP. Today almost every sector in the country is affected by the agriculture. Agriculture plays major role in the export of the commodities and helped earning the valuable foreign exchange because mainly from fruits crops, vegetables, nuts, spices, rice, various processed milk products, etc. Today with the increasing population there is a major challenge for the agriculture to feed this increasing population. Agriculture with its great efforts cope up with this challenge with advancement in the production, introduction of hybrids, growing of resistant and fast growing varieties. Due improvement in the production and processed technology India is able to increase his export in many countries. As agriculture is the 24 by 7 days running industries everyday it add some profit to the Indian Economy. Agriculture in India offers cultivation of various crops, fruits, nuts, spices, etc.

Introduction

The Indian Economy is an Agro-Economy; the difficulty with such an agro-economy is that the agriculture sector is highly dependent on the cycle of production, distribution, and consumption. Another problem with the Agro-economy is productivity. Currently, Indian Farmers produce 2.4 tons of rice per hectare of land, far behind its actual potential. On the other hand, China and Brazil produce 4.7 and 3.6 tons of rice per hectare. Despite so many disadvantages of the agriculture sector, it is still the most crucial sector for the Indian Economy.

The Indian Economy holds the sixth position in the world's top economies. The majority of the country's population depends on agriculture for their livelihood. The agriculture sector contributes roughly 14% of the country's total GDP. Although the agriculture sector plays a crucial role in the Indian Economy, there is a constant drop in this sector while the service sector is comparatively improving.

Importance of Agriculture sector

Almost half of the population of India indulged in agriculture. The agriculture sector holds an important place in the economy. A few of the important points are:

1. Agriculture provides employment opportunities to rural agricultural and non-agricultural laborers.
2. It plays a significant role in international trade and import and export activities.

a. Relation between Agricultural and Industrial sector

For the continuous manufacturing of products, there is a constant need for raw materials, and to fulfill this need, most of the industries in the country collect this raw material directly from the agricultural fields. In India, around half of the income generated in the industrial sector comes from agricultural-based industries. Therefore, in India, the industrial sector is highly dependent on the agricultural sector.

b. Largest Employee Sector

In India, the agriculture sector has more than half of the total population of the country engaged, which makes it the sector with the most number of employees in the country. Comparing it with the developed nations, India has about 54.6% of the total population in the agriculture sector engaged, while in developed nations such as the UK, USA, France, and Australia, only 2%-6% of its total population is engaged in the agriculture sector

c. Contribution in GDP

Since the time of Independence, the agriculture sector has been the major contributor to the country's GDP. In the financial year 1950-1951, agriculture and other related activities had a share of 59% of the country's total GDP in that financial year. Although there is a constant drop in the agriculture sector, it is still one of the most crucial sectors in the Indian Economy. On the other hand, in developed countries such as the UK and USA, the agriculture sector contributes only about 3% of the country's total GDP.

d. Source of Food

India is the second-most populous country in the world. And to feed such a huge population, there is always a constant need for a supply of food. Therefore, there is a need for agriculture and a need for less dependency on the agriculture sector for the Economy.

e. Contribution to the Government's Revenue

Agriculture is the most significant source of income for the central and state governments. The government of the country has substantial revenue from rising land revenue. Also, the movement of agricultural goods helps generate revenue for the Indian railways, which helps the government in revenue generation.

f. Significance

Indian Agriculture is important for the industrial sector and trading purposes both internally and externally. Agro-products such as tea, coffee, sugar, cashew nuts, spices, etc., which are edible and textile products such as jute, cotton, and others contribute 50% and 20% respectively to the total export of the total country. These add up to around 70% of the country's total export and help the country in earning foreign exchange.

Agriculture Economic Planning

A successful harvest also means that the government will have enough money to cover its budgeted expenditures. Similarly, a bad harvest causes a total depression in the country's business, which eventually leads to a collapse of economic planning. Thus, in a country like India, the agricultural sector plays a critical role, and the Indian economy's prosperity is still heavily reliant on it. As a result of the above study, it is clear that agricultural growth is a necessary precondition for sectoral diversity and economic development.

India's planning prospects are also heavily reliant on the agriculture sector. A good harvest always offers momentum to the country's projected economic growth by improving the business climate for the transportation system, manufacturing sectors, internal commerce, and so on.

Major Challenges;

The agriculture sector in India has undergone significant structural changes in the form of decrease in share of GDP from 51.90% in 1950-51 to 17.00% in 2014-15 indicating a shift from the traditional agrarian economy towards a service dominated one (Figure 1). This decrease in agriculture's contribution to GDP has not been accompanied by matching reduction in the share of agriculture in employment. However, within the rural economy, the share of income from non-farm activities has also increased

Conclusion:

The Indian economy is an agro-economy and depends highly on the agricultural sector. Despite just supporting the Indian Economy, the agricultural sector also supports the industrial sector and international trade in imports and exports. Although the contribution of the Agricultural Sector to the Indian Economy is reducing, it is the sector with the most number of people working in it around the country.

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PRESENT EDUCATION SYSTEM: ISSUES AND CHALLENGES

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Abstract:

The world around us is rapidly and drastically changing. The environment is getting less stable, the globe is getting more linked, and technology is constantly changing how we interact with information. We must reconsider where, how, and what we learn — but maybe more importantly, how — in light of the shifting global landscape. For the 21st century, education is necessary. Schools and colleges are beginning to approach education differently in response to the problems presented by the digital era. The present papers shed significant light on the burning issues and challenges of present education system by following MLA eighth edition referencing and citation.

Keywords: corruption, unemployment, education, privatization, social system, etc.

Introduction:

Every nation in the world is attempting to develop itself to the fullest extent feasible these days. Each and every nation, developed or emerging, aspires to technological advancement. Their goal is to stay abreast of advancements. However, all nations are aware that eliminating the issue of illiteracy would not solve the problems of poverty or corruption. Although they are attempting, none of our instructors or leaders have been able to resolve this issue. And all of this is a result of our flawed and inadequate educational policies. And when our plans don't work, we blame other people, saying things like 'the population is washing our efforts' and 'corruption has eaten up our system,' etc. when we discuss education in this setting and its current problems. Before talking about the problems and challenges facing the modern world, we should first talk about the goals and purposes of education. Only then can we look for the cause of these problems. The primary goal of our education was to grow the kid holistically, but it is clear that this is a pipe dream because the existing system does not help children develop even one skill.

The burning issues:

Youth Dissatisfaction:

The following concerns and difficulties dominate modern Indian schooling. Youth dissatisfaction is the primary problem. Young people are not satisfied with the education system or the instructors since neither party can satisfy them with their knowledge or the techniques used to teach it. As a result, the young rebel against both the system and the teachers.

Rules and Regulations:

Discipline in universities and schools is the second justification. This explanation is provided by our self-proclaimed social contractors and leaders. Who occasionally provokes young people for their own gain?

Unemployment:

The unemployment issue may rank third. While some educators believe that the school system is the solution to this problem, a rebellion might start when a young person sees their sibling or sister unemployed despite having a bachelor's or graduate degree.

Poverty:

It is the next problem or obstacle that our educational system may have to deal with. Because education is so expensive these days, the impoverished in our society struggle to afford it.

Political Unwillingness

Political apathy presents another significant obstacle for our educational system. Politicians believe they have five years to have their wish list fulfilled. Education-related issues are simply left unanswered.

The caste system

A barrier dividing the high and lower classes is produced by casteism. I once witnessed a teacher collecting money from students at another institution (you may be surprised to learn that this is not unusual since most schools have teachers collecting money from their pupils).

Unaffordable fees:

Another problem facing the educational system is dearness. The cost of attending universities and other educational institutions is growing daily, with public schools boosting their tuition every academic year, while worker incomes are not rising at the same rate. As a result, low-income parents are unable to enroll their kids in those institutions. Besides, public and CBSE schools are not in competition with government institutions.

Corruption:

Corruption, which is now the entitlement of all public servants and the system as a whole. It is discovered at numerous schools that the money that was being sent there vanished in route.

Privatization in Education:

Education privatization is a serious problem. Some intelligentsia claim that although government employees receive more pay, they do not operate in accordance with it. However, instructors continue to work in extremely unfavorable conditions in private institutions, which is bad for the educational system.

Teachers' Ignorance:

Teachers' ignorance of instructional strategies and tactics. Not even they find them interesting. Being a teacher means that one must always improve one's knowledge base. Additionally, regular upgrading of methods and procedures is required due to the nature of the job. This, in my opinion, is what the profession requires of them, yet our instructors are so set in their ways that they refuse to grow.

Teachers' Personalities:

The character of our teacher is deteriorating. The only individual who has the power to alter society's course is a teacher. He is the one that any educational system revolves around. More than any other aspect of society, this has an impact on ours. This has a greater impact on our education than anything mentioned above. However, these days, news reports in many formats may be found in newspapers about teachers abducting their students or raping them. And as a result, a large number of pupils dropped out of school in the middle.

These problems and difficulties did not appear overnight; rather, they developed gradually. If we go back in time, India was the epicenter of knowledge and education. Students used to go from all over the world to this nation to receive an education and information. It was not even close to any country in the globe. What then transpired with our wonderful nation? Beginning with the first Muslim invaders who entered the nation to plunder and attempt to eradicate its culture and knowledge, the tale takes place. It was the British invaders who followed them. They handed us a lot of things when they left our nation in the state of a beggar, including unemployment, injustice, corruption, poverty, and many other issues that are currently posing a challenge to our educational system.

Furthermore, as we can see from the state of society now, our cultural, moral, social, and ideal standards are declining and eventually heading towards hell. Western society and culture are completely alien to us and are something we are absorbing. While they believe in physical or worldly education, we believe in spiritual education.

Teachers do not want to teach, and students do not want to attend to study. Instead, they attempt to obtain excellent grades using unethical means. They give coaching lessons their whole focus.

High prices are used by private college owners to sell degrees and grades. The majority of college owners in this area are members of business families or individuals with idle land and little capital to spend; they entered this industry primarily for the large profit margin rather than, as is natural, to benefit society. This is why the attitude of college owners contributed to this. After all, how are we to believe that these individuals will serve the nation and society when they view schools as factories, administrators and heads of department as managers, and teachers as employees?

With 1.2 billion people, or around 17% of the world's population, India is the biggest democracy with remarkably diverse populations. The population of India is over 70% rural. The adult literacy rate is around 60%, with women and minorities having far lower rates. In India, there are government, government-aided, and private educational institutions; around 40% of them are government-run. The education system is under extreme pressure to increase the literacy rate and offer high-quality instruction at a reasonable cost due to the 1.5% annual population growth rate. India's education system confronts the following main obstacles:

Challenges:

Quality of Education:

It's difficult to keep up academic standards in more than a million schools across the country, provide teacher training programs, and maintain a healthy balance with the global education system. Schools are need to make compromises in the chances for students' overall development, despite their differences in size and finances.

Cost of Education:

It is more difficult to ensure that education is available to all societal sectors due to social concerns and infrastructure limitations (women, minorities, and the poor).

Unaffordable fees structure:

Even for those individuals and locations where it is readily available, education comes at a very high cost. For instance, parents and children are under pressure to choose private training programs and fees to augment their formal education due to competition.

Cultural & Social status:

India's ethnic variety makes it difficult to provide uniform schooling across the country. The nation speaks more than 300 languages, which makes it challenging to provide instruction geared toward a particular socioeconomic group. In certain countries, women's education is a major problem. Children from low-income households are compelled to work, which prevents them from attending school. Adults who are illiterate have relatively few options to get educated in later life

Conclusion:

The world we live in is unique and changing quickly. The goal of education today is to educate our kids for the "new" world and teach them how to apply the abilities they will need to be flexible and adaptive. The secret is to make time to think about what needs to be done and then take proactive measures to address any issues that may arise. In the field of education, this is an exciting moment! More is being expected of teachers and students than we have ever done in the past. We will work together to give our kids the self-assurance and skills they need to take on the new world.

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KEY COMPETENCIES IN EDUCATION FOR SUSTAINABLE DEVELOPMENT: A STUDY

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Abstract:

Globalisation and the rapid advancement of technology are posing new challenges to societies all around the world. These include the following: a rise in social variety and individualization; a decrease in the environmental services that support societies; an increase in economic and cultural homogeneity; and a heightened susceptibility to technology and natural disasters. Furthermore, these civilizations are now equipped with an abundant and never-ending supply of knowledge. These problems are too complicated for simple problem-solving techniques; instead, innovative and self-organized action is required due to the multiplicity of individuals, circumstances, and action plans involved. The present paper sheds significant light of on ESD and offers key competencies necessary to adopt sustainable development.

Abstract: ESD, Transformation learning, strategic competency, globalization, etc.

Introduction:

The goal of education for sustainable development (ESD) is to create abilities that allow and empower people to think critically about their own activities, considering the social, cultural, economic, and environmental effects they will have both locally and globally in the future. It calls on people to engage in socio-political processes, investigate novel concepts and methods, and behave sustainably in intricate circumstances in order to gradually shift their communities towards sustainable development.

ESD, understood in this way aims to enable learners to take responsible actions that contribute towards creating sustainable societies now and in the future. It ‘develops the skills, values and attitudes that enable citizens to lead healthy and fulfilled lives, make informed decisions, and respond to local and global challenges. (UNESCO, 2016: IV)

ESD need to be viewed as a crucial component of both lifelong learning and high-quality education. From early childhood education to postsecondary education, including both informal and non-formal learning, all educational institutions should see it as their duty to address issues and trends in education for sustainable development and to support the development of critical cross-cutting competencies linked to sustainability.

The development of these competencies is an essential contribution to efforts to achieve the Sustainable Development Goals (SDGs). ESD equips individuals not only with the knowledge to understand the SDGs, but also with the competencies to engage as informed citizens in promoting the transformation to a more sustainable society (UNESCO, 2017)

Learning content and outcomes, pedagogy, and the learning environment are all addressed in ESD, which is a comprehensive and transformative approach to education. ESD develops dynamic, learner-centered teaching and learning environments in addition to adding and emphasising topics on poverty, climate change, and sustainable consumerism in the curriculum. ESD essentially necessitates a change from teaching to learning. This manifests as an action-oriented transformational pedagogy with a focus on problem-orientation, participation and collaboration, self-directed learning, inter- and trans-disciplinarity, and the integration of formal and informal learning. The development of competences necessary for advancing sustainable development depends on such educational techniques.

ESD as competency-based and transformational learning:

Globalization and the rapid advancement of technology are posing new challenges to societies all around the world. These include the following: a rise in social variety and individualization; a decrease in the environmental services

that support societies; an increase in economic and cultural homogeneity; and a heightened susceptibility to technology and natural disasters. Furthermore, these civilizations are now equipped with an abundant and never-ending supply of knowledge. These problems are too complicated for simple problem-solving techniques, as seen by the range of players engaged, the circumstances, and the recommended courses of action. Instead, innovative and self-organized solutions are required.

In order to contribute to sustainable development, individuals need to learn how to understand the complex world in which they live, and how to deal with uncertainties, trade-offs, risks and the high velocity of societal (global) change. They need to be able to collaborate, speak up and act for positive change within the world (UNESCO, 2015a). These people might be called 'sustainability citizens.' (Wals, 2015; Wals and Lenglet, 2016).

Finding the ways that function best in the actual world and figuring out how to support the required learning are the foundations of the competency approach. As previously said, there is a claim that ESD should allow people to consider the social and environmental consequences of their activities, both now and in the future, from a global perspective, in light of the present global concerns. This then gives them the opportunity to constructively intervene and shape them in a way that is more sustainable. Here, a competence-based strategy can aid in bridging the knowledge and action gaps. Accordingly, the Global Action Programme (GAP) on ESD states that:

ESD allows every human being to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development and take informed decisions and responsible actions for environmental integrity, economic viability, and a just society for present and future generations. [...] ESD promotes skills like critical thinking, understanding complex systems, imagining future scenarios, and making decisions in a participatory and collaborative way (UNESCO, 2014b: 33)

Teaching sustainable development and incorporating fresh material into trainings and courses is not the only thing that ESD does. For example, educational institutions like schools and universities ought to view themselves as hands-on learning environments for sustainable development, and as such, they ought to focus all of their operations on sustainable principles.

For ESD to be more effective, the educational institution as a whole has to be transformed. Such a whole-institution approach aims to mainstream sustainability into all aspects of the educational institution. It involves rethinking the curriculum, campus operations, organizational culture, student participation, leadership and management, community relationships and research. (UNESCO, 2014a)

The institution itself serves as an example for the students in this way. Eco-schools and green campuses are examples of sustainable learning settings that enable teachers and students to incorporate sustainability ideas into their daily routines, support the development of competence and capacity, and value education holistically. Within the global discourse on ESD, there is a consensus that the following critical sustainability competences have particular significance for considering and acting in support of sustainable development:

Proficiency:

Proficiency in systems thinking is the capacity to identify and comprehend linkages, analyze intricate systems, discern how systems are integrated into many domains and sizes, and manage uncertainty.

Imaginative competency:

The capacity to comprehend and weigh several futures — possible, likely, and desired — as well as to formulate personal future visions, implement the precautionary principle, weigh the effects of decisions, and adapt to changes and dangers;

Normal Competency:

The capacity to comprehend and consider the norms and values that guide one's behavior as well as to negotiate sustainability values, principles, objectives, and targets in the face of trade-offs, conflicting information, and inconsistencies is known as normative competence.

Strategic competency:

The capacity to work together to design and carry out creative initiatives that promote sustainability both locally and globally;

Collaboration competency:

The capacity to absorb information from others, comprehend and value the needs, viewpoints, and behaviors of others (empathy); comprehend, relate to, and show consideration for others (empathic leadership); resolve conflicts within a group; and encourage cooperative and participatory problem-solving;

Competency in critical thinking:

The capacity to challenge conventions, beliefs, and behaviors; consider one's own principles, attitudes, and behavior; and adopt a stance in the sustainability debate;

Competency in self-awareness:

The capacity to consider one's place in the local and (global) community, to analyze and justify one's behaviors over time, and to manage one's emotions and impulses;

The capacity to integrate the aforementioned talents to apply various frameworks for problem-solving to complex sustainability issues and provide workable, fair solutions that advance sustainable development is known as integrated problem-solving competency.

This list highlights competencies that are particularly essential for sustainability and which have not been the main focus of formal education. While each competency has its own qualities and areas of relevance, they are mutually interdependent. This is why the integrated problem-solving competency is of particular importance. In addition, basic competencies such as communication skills are crucial for dealing with sustainable development. Furthermore, these key sustainability competencies have to be developed in conjunction with basic competencies. (Wiek, Withycombe and Redman, 2011)

To be clear, competences do not always indicate that a person would behave a certain way in a certain circumstance, even when they do characterize the ability or propensity to act to handle complicated issues. Accordingly, people require motivating factors and ideals that align in order to translate potential into actual, lasting actions.

Conclusion:

By fostering the cross-cutting sustainability abilities required to address a variety of sustainability concerns, ESD may aid in the facilitation of sustainable development. All educational institutions should commit to addressing sustainable development concerns in-depth and promoting the development of sustainability competences in order to enable individuals all over the world to act in favor of sustainable development. As such, it is imperative that curriculum incorporate not only knowledge related to sustainability, but also utilize an action-oriented transformational pedagogy. In order to implement this methodology, teachers must possess both ESD knowledge and ESD-related teaching competences from their own training and education.

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IDENTITIES AND CULTURE NEGOTIATIONS IN ANREA LEVY'S NOVEL

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Abstract

Andrea Levy's *Small Island* (2004) presents a counter-history of the period before and after World War II (1939-1945) when men and women from the Caribbean volunteered for all branches of the British armed services and many eventually immigrated to London after the war officially ended in 1945. Her historical novel moves back and forth between 1924 and 1948 as well as across national borders and cultures. Levy's novel, written more than fifty years after the first Windrush arrival, creates a common narrative of nation and identity in order to understand the experiences of Black people in Britain. *Small Island*—structured around four competing voices whose claims of textual, personal and historical truth must be acknowledged—refuses to establish a singular articulation of the experience of migration and empire. In this essay, I focus on discrete moments in the “Prologue” in Levy's *Small Island* in order to think through the formation of discursive identity through the encounter with others and the necessity of accommodating difference. *Small Island* forecloses the possibility of addressing modern multiculturalism as a purported ‘happy ending’ in light of Levy's formulation of the Windrush moment as disruptive, violent, and overwhelmed by flawed characters. Yet, through the space of writing, she also invites the reader to experience moments of encounter and negotiate the often competing claims on nationhood, citizenship, and culture.

Identity as Cultural Production in Andrea Levy's *Small Island*

Andrea Levy's *Small Island*² moves back and forth between 1924 and 1948 and across national borders and cultural moments, including the Empire Exhibition of 1924 at Wembley³ ; London immediately before the outbreak of World War II; Jamaica during the war years; the England and America of the Jamaican airmen during the war; and Calcutta after VJ Day (Victory over Japan). In this article, I argue that Levy's “Prologue” in *Small Island* foregrounds many of the novel's central concerns about space, race, libidinal impulses, and language. At the Empire Exhibition, as I will show, Queenie's cultural, ethnic, and political imagination are inscribed through an imagined encounter with Africa and a real encounter with a man that Queenie perceives as African. These moments of contact make a lasting impression on Queenie as a child and have a profound impact on how she interprets difference as an adult. This defining event in the life of Queenie frames both her subjectivity and identity as an adult in the aftermath of World War II. The brief but significant interaction in the “Prologue” not only structures Queenie's personal narrative but also tells part of a greater story of historical encounters in Britain and throughout empire. Levy's novel is “essentially an essay about the inescapable hybridity and intermixture of ideas.”⁴ Significantly, Levy begins her novelistic representation of the 70 Identity as Cultural Production in Andrea Levy's *Small Island*

Pre-/Post-Windrush Contexts

Levy's *Small Island* focuses on the period before and after World War II (1939-1945) when men and women from the Caribbean volunteered for all branches of the British armed services with the majority of those Caribbeans serving in the Royal Air Force.⁵ In 1948, an advertisement in a Jamaican newspaper offering inexpensive transport on the ship to anyone who wanted to come and work in the UK, lured many to the ‘Mother Country.’ At that time, there were no immigration restrictions for citizens from one part of the British Empire moving to another part since Britain's 1948 Nationality Act⁶ gave UK citizenship to people living in her colonies, including the West Indies. The arrival of the *MV Empire Windrush* at Tilbury Dock in London on 22 June 1948, with its 492 West Indian passengers, is regarded as a landmark event in British post-war history, marking the beginning of immigration to Britain from Commonwealth countries and colonies.⁷ Many of those on board had been posted to Britain during the war and were promised that jobs would be waiting for them, and some looked forward to joining (or rejoining) the Royal Armed Forces (RAF). Others were just curious to see the ‘Mother Country.’ As a second-generation migrant, born in Britain, Levy is firmly entrenched in the ‘we’ of British identity. Yet, her sense of identity has also

been shaped by her family's migrant history from Jamaica to Britain during the Windrush years. Irene Pérez Fernández, observes that Levy's "dual cultural heritage becomes the mediating lens by which she understands and negotiates her writing."⁸ We can see evidence of this in Levy's article in *The Guardian* (2000) *Small Island* is structured around four competing personal narratives—each laying claim to historical truth—and temporal shifts through space and time. Levy's novel takes place during two time periods: "Before," a nebulous period of time before World War II, and "1948," a year that marked the advent of multiple ethnic immigrations to Great Britain from her current and former colonies.

The novelistic discourse traverses multiple geographic locations, including Jamaica, the racially segregated United States, India, and London. This accumulative and overlapping approach to time and space defies a singular articulation of the experience of migration and empire while suggesting instead a plurality of moments, locations, and perspectives. The form of the novel, with its shifting perspectives, does not privilege a particular subject position over another. The novel tells the story of interracial encounters and brings together disparate perspectives—voiced by black and white characters—but it resists the tendency to suggest a seamless collective. Instead, this structuring device calls attention to the gaps, fissures, and differences that underpin race thinking. Identity is seen as a provisional and negotiated construct, shaped by the pressure of political necessity, an ever-changing product of cultural encounters. Reflective of the instabilities of identity formation, Levy's novel moves through space, occupies contested locations, and stands in the intervals.¹⁰

"Prologue" Reading

In *Small Island*, the narrative perspective moves back and forth—across time and geographical locations—and presents intersecting historical trajectories and cultural knowledge. Following the "Prologue," the cyclical repetition of section headers (the names of the main characters), marked by temporal signifiers ("Before" and "1948"), creates a sense of rhythm or cadence, suggesting unity through repetition and return. While the term "1948" calls attention to the moment of Windrush, the term "Before" elicits a threshold of temporal elusiveness, a pre-history. The section titles of the work are chronological and symmetrical: the "Before" / "1948" structure is repeated four times. Within each section, the chapter title reflects the shifts in narrative voicing as the point-of-view switches from one character to another:

Conclusion

In closing, I would like to reflect on the significance of Levy's inscriptions of dislocating moments in British culture, particularly through the dialogue between private and public spheres. Paul Gilroy's *Postcolonial Melancholia*,³⁷ published in Britain in the same year as *Small Island*, offers a useful way to approach space, relationality, and cultural production in Levy's work. Gilroy suggests that the British Empire has forged a common destiny of intimate spheres of affiliation, which exist even in the midst of a social twilight.³⁸ For Gilroy, a multiculturalism is what the ethnic and culturally diverse society of Britain might become, that is, "a society that is no longer phobic about the prospect of exposure to either strangers or otherness," an "unheralded multiculturalism" "distinguished by some notable demands for hospitality, conviviality, tolerance, justice and mutual care."

Small Island complicates notions of truth, knowledge, and identity by calling attention to the relations between the imagined and the real, the past and the present, home and away. As I have shown in my reading of the "Prologue," Queenie's anxieties about the spatial order foreshadow the motif of dis/location which saturates the novel and the lives of its characters, evident in the movement between here and there, the farm and the city, Jamaica and London, and the home and the world. With the "Prologue," Levy establishes the narrative strategies that shape her approach to the novel as a whole: this self-conscious discourse presents a multi-layered, poly-vocal, and temporally fluid account of history and identity. The narrative brings together multiple, often unreliable representations of encounters, intimacies, and spatial relations under empire. In the end, *Small Island* does show that new ways of belonging must linger in the imaginary until they are ready to be embraced as new realities

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IMPACT OF CLIMATE CHANGE ON HUMAN LIFE IT'S REASONS

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Abstract

Climate change refers to the long-term changes in temperature and weather due to human activities. Increase in average global temperature and extreme and unpredictable weather are the most common manifestations of climate change. In recent years, it has acquired the importance of global emergency and affecting not only the wellbeing of humans but also the sustainability of other lifeforms.

Enormous increase in the emission of greenhouse gases in recent decades largely due to burning of coal and fossil fuels, and deforestation are the main drivers of climate change. Marked increase in the frequency and intensity of natural disasters, rise in sea level, decrease in crop productivity and loss of biodiversity are the main consequences of climate change. However, under the present emission scenario, the world is heading for a 3–4 °C warming by the end of the century. This was discussed further in COP 26 held in Glasgow in November 2021; many countries pledged to reach net zero carbon emission by 2050 and to end deforestation, essential requirements to keep 1.5 °C target. However, even with implementation of these pledges, the rise is expected to be around 2.4 °C. Additional measures are urgently needed to realize the goal of limiting temperature rise to 1.5 °C and to sustain biodiversity and human welfare.

Introduction

Climate change refers to long-term changes in local, global or regional temperature and weather due to human activities. For 1000s of years, the relationship between lifeforms and the weather have been in a delicate balance conducive for the existence of all lifeforms on this Planet. After the industrial revolution (1850) this balance is gradually changing and the change has become apparent from the middle of the twentieth century. Now it has become a major threat to the wellbeing of humans and the sustainability of biodiversity. An increase in average global temperature, and extreme and unpredictable weather are the most common manifestations of climate change. It has now acquired the importance of global emergency. According to the report of the latest Intergovernmental Panel for Climate Change (AR6 Climate Change 2021), human-induced climate change as is prevalent now is unprecedented at least in the last 2000 years and is intensifying in every region across the globe. In this review the drivers of climate change, its impact on human wellbeing and biodiversity, and mitigation measures being taken at global level are briefly discussed

Deforestation

Limited deforestation in early part of human civilization was the result of subsistence farming; farmers used to cut down trees to grow crops for consumption of their families and local population. In preindustrial period also, there was a balance between the amount of CO₂ emitted through various processes and the amount absorbed by the plants. Forests are the main sinks of atmospheric CO₂. After the industrial revolution, the trend began to change; increasing proportion of deforestation is being driven by the demands of urbanization, industrial activities and large-scale agriculture. A new satellite map has indicated that field crops have been extended to one million additional km² of land over the last two decades and about half of this newly extended land has replaced forests and other ecosystems (Potapov et al. 2021). In recent decades the demands on forest to grow plantation crops such as oil palm, coffee, tea and rubber, and for cattle ranching and mining have increased enormously thus reducing the forest cover. According to the World Wildlife Fund (WWF), over 43 million hectares of forest was lost between 2004 and 2017 out of 377 million hectares monitored around the world (Pacheco et al. 2021). Amazon Rain Forest is the largest tropical rain forest of the world and covers over 5 million km². It is undergoing extensive degradation and has reached its highest point in recent years. According to National Geographic, about 17% of Amazon rain forest has been destroyed over the past 50 years and is increasing in recent years; during the last 1 year it has lost

over 10,000 km². In most of the countries the forest cover is less than 33%, considered necessary. For example, India's forest and tree cover is only about 24.56% of the geographical area (Indian State Forest Report 2019).

Weather pattern and natural disasters

One of the obvious changes observed in recent years is the extreme and unpredictable weather, and an increase in the frequency and intensity of natural disasters. Brazil's south central region saw one of the worst droughts in 2021 with the result many major reservoirs reached < 20% capacity, seriously affecting farming and energy generation (Getirana et al. 2021). In earlier decades, it was possible to predict with reasonable certainty annual weather pattern including the beginning and ending of monsoon rains; farmers could plan sowing periods of their crops in synchrony with the prevailing weather. Now the weather pattern is changing almost every year and the farmers are suffering huge losses. Similarly the extent of annual rainfall and the locations associated with heavy and scanty rainfall are no more predictable with certainty. Many areas which were associated with scanty rainfall have started getting much heavier rains and the extent of rainfall is getting reduced in areas traditionally associated with heavy rainfall. Similarly the period and the extent of snowfall in temperate regions have also become highly variable.

Sea level rise

Global warming is causing mean sea level to rise in two ways. On one hand, the melting of the glaciers, the polar ice cap and the Atlantic ice shelf are adding water to the ocean and on the other hand the volume of the ocean is expanding as the water warms. Incomplete combustion of fossil fuels, biofuels and biomass releases tiny particles of carbon (< 2.5 μm), referred to as black carbon. While suspended in the air (before they settle down on earth's surface) black carbon particles absorb sun's heat 1000s of times more effectively than CO₂ thus contributing to global warming. When black particles get deposited over snow, glaciers or ice caps, they enhance their melting further adding to the rise in sea level. Global mean sea level has risen faster since 1900 than over any preceding century in at least the last 3000 years. Between 2006 and 2016, the rate of sea-level rise was 2.5 times faster than it was for almost the whole of the twentieth century (OXFAM International 2021).

Biodiversity

The other impact of climate change on plant and animal species has been in their phenological shift. Phenology is the timing of recurring seasonal events; it is a sort of Nature's calendar for plants and animals. In flowering plants, various reproductive events such as the timing of flowering, fruiting, their intensity, and longevity are important phenological events, and in animals some of the phenological events include building of nests in birds, migration of animal species, timing of egg laying and development of the larva, pupa and adult in insects. Phenological events of both plants and animals are generally fixed in specific time of the year as they are based on environmental cues such as temperature, light, precipitation and snow melt. Phenological timings of species are the results of adaptations over 100 s of years to the prevailing environment. Wherever there is a mutualism between plants and animals, there is a synchrony between the two partners. For example in flowering plants, flowering is associated with the availability of pollinators and fruiting is associated with the availability of seed dispersers and optimal conditions for seed germination and seedling establishment. In animals also, phenological events are adapted to suit normal growth and reproduction. In temperate regions, melting of ice initiates leafing in plants; this is followed by the flowering in the spring. Similarly, warming of the climate before the spring induces hatching of the hibernating insects which feed on newly developed foliage. Insects emerge and ready to pollinate the flowers by the time the plants bloom.

Conclusions

Climate change has now become the fastest growing global threat to human welfare. The world has realized the responsibility of the present generation as it is considered to be the last generation capable of taking effective measures to reverse its impact. If it fails, human civilization is likely to be doomed beyond recovery. As emphasized by many organizations, the climate crisis is inherently unfair; poorer countries will suffer its consequences more than others. India is one amongst the nine countries identified to be seriously affected by climate change. According to a WHO analysis (2016) India could face more than 25% of all global climate-related deaths by 2050 due to decreasing food availability. China is expected to face the highest number of per capita food

insecurity deaths. Bhutan, a small Himalayan kingdom with 60% forest cover, is the most net negative carbon emission country; its GHG emission is less than the amount removed from the atmosphere. Other countries should aim to emulate Bhutan as early as possible.

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EFFECT OF YOGA ON SPORTS PERFORMANCE AND PHYSICAL FITNESS OF COLLEGE STUDENTS OF PARBHANI DISTRICT

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Abstract

This study discusses the effect of yoga on sports performance and physical fitness of college going students of parbhani district. For this study researcher conduct a survey of college going students of parbhani district who was interested in sports performance and physical fitness. Also researcher investigates views and interest of youth in yoga and yogic exercise. Yoga and yogic exercise are most useful activity for youth. Also yoga is useful activity for best performance in sports. It is activity of exercise. The art of Yoga has its roots in ancient Indian tradition. Yoga is not about only exercising, but it is a physical, mental and spiritual practice. That's why Researcher conducts a study to investigate advantages and positive effects of yoga and yogic exercise in college going students of parbhani district. This is in the title of effect of yoga on sports performance and physical fitness of college students of parbhani district.

Keywords: effect of yoga, yoga for sports performance, yoga and physical fitness

Introduction

Yoga is useful activity for best performance in sports. Yoga is the gift of nature to human life. It is most useful activity for best performance in sports. It is activity of exercise. The art of Yoga has its roots in ancient Indian tradition. Yoga is not about only exercising, but it is a physical, mental and spiritual practice. Yoga is one of the Indian philosophical systems that emphasize the importance of the work with the body to develop healthy behaviours and thoughts. Among all its techniques the physical postures, called asanas in Sanskrit, are the ones that got. It is necessary to remember that sports and gymnastics belong to the scope of Physical Education. Once there was a time when people said "it is not the winning itself but the competing nobly that really matters", when the place where competitions took place was sacred and the respect between competitors was essential. Yoga is not about only exercising, but it is a physical, mental and spiritual practice. That's why Researcher conducts a study to investigate advantages and positive effects of yoga and yogic exercise in college going students of parbhani district. This is in the title of effect of yoga on sports performance and physical fitness of college students of parbhani district.

Objectives of research

1. To overview on importance of yoga in physical education.
2. To study of effect of yoga for sports performance
3. To investigate advantages and views and interest of youth in yoga and yogic exercise

Research Methodology:

While studying any subject or event, it is necessary to do it in a scientific manner. One of the most important tasks in social research methodology is data collection. In the present research the facts have been collected through primary and secondary sources. Along with secondary data collection, more emphasis is given especially on primary data collection and observation method. For the study of the subject of the present research paper, an attempt has been made to obtain information from the college students of parbhani district by conducting a survey through interview schedule. An attempt has been made to arrive at a definite conclusion based on the information obtained. For the purpose of this study also used social science research methodology to study the research topic. Especially I used historical analysis. In this method used secondary data tools. In this secondary data tool used reference books. Research articles, newspapers, journals, published and unpublished materials and also taken help of internet facilities.

Data Collection

The collected data included material directly produced by the college going students. Especially those students include in the study who was interested in sports performance and physical fitness. Students had interested in exercise of their physical education classes. In-depth individual interviews were conducted to examine experiences emerging in the participants.

Simpleing method

For the study of the topic of the present research paper, a survey has been conducted among the college students of Parbhani district. For this, 20 college going students from Parbhani district have been selected for interview in a random manner. An attempt has been made to obtain information from them through interview schedule.

Investigation through interview schedule

Table no 1.1

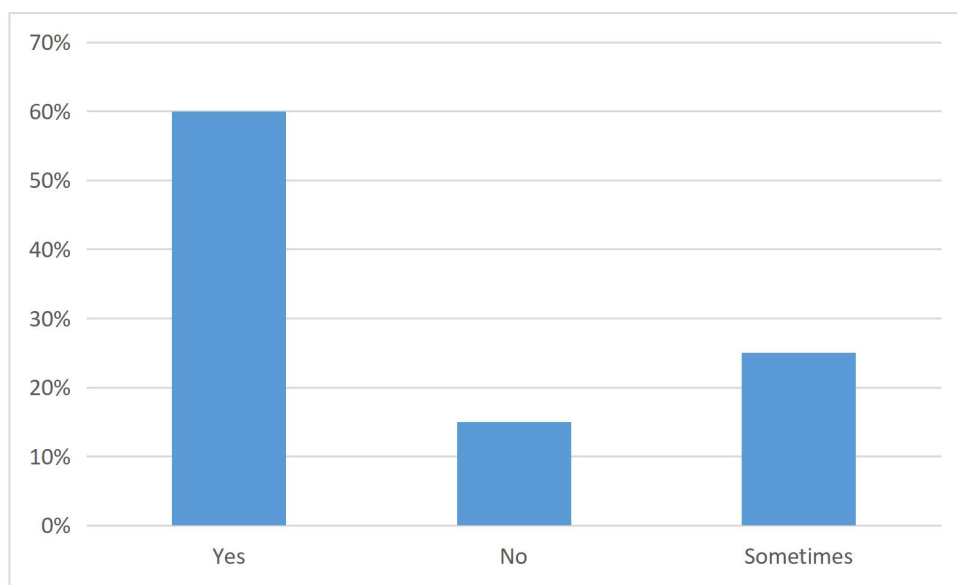
Q. You Do yoga and yogic activities regularly?

Sr.No.	Options	No of Students	Percentage
1	Yes	12	60 %
2	No	03	15 %
3	Sometimes	05	25 %
	Total	20	100 %

Source- Survey of students

Graff No 1.1

You Do yoga and yogic activities regularly?



Source- Survey of students

It is clearly seen from the above table that when the college students of Parbhani district were surveyed regarding yoga and yogic activities for sports performance and physical fitness do regularly, the highest percentage of students who answered that they do yoga and yogic activities regularly, which is 60 percent. Below that, the

proportion of students who answered that they Sometimes do yoga and yogic activities, which is 25 percent. The proportion of students who do not give any answer regarding online teaching of physical education is also 25 percent. It was found that the percentage of students who responded that they were not interested in yoga and yogic activities regularly was the lowest and it was 15 percent.

Table no 1.2

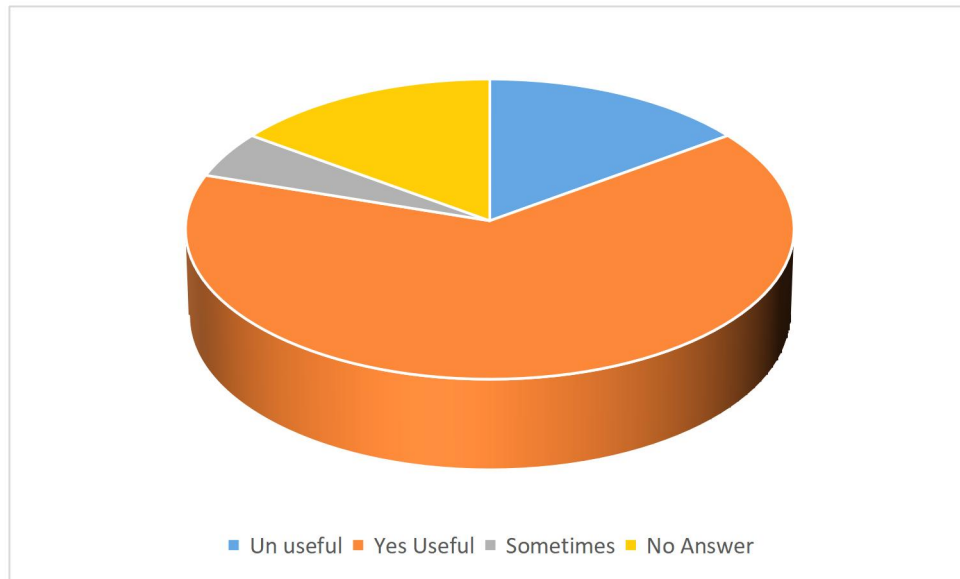
Are yoga and yogic activities useful for physical fitness?

Sr.No.	Options	No of Students	Percentage
1	Un useful	03	15 %
2	Yes Useful	13	65 %
3	Sometimes	01	05 %
4	No Answer	03	15 %
	Total	20	100 %

Source- Survey of students

Graff No 1.2

yoga and yogic activities useful for physical fitness



Source- Survey of students

It is clearly seen from the above table that when the college students of Parbhani district were surveyed regarding yoga and yogic activities for sports performance and physical fitness, the highest percentage of students who answered that it is useful, which is 65 percent. Below that, the proportion of students who answered that yoga and yogic activities for sports performance and physical fitness is not useful is 15 percent. The proportion of students who do not give any answer regarding yoga and yogic activities for sports performance and physical fitness is also 15 percent. It was found that the percentage of students who responded that sometimes yoga and yogic activities for sports performance and physical fitness is useful was the lowest and it was only 05 percent.

Table no 1.3

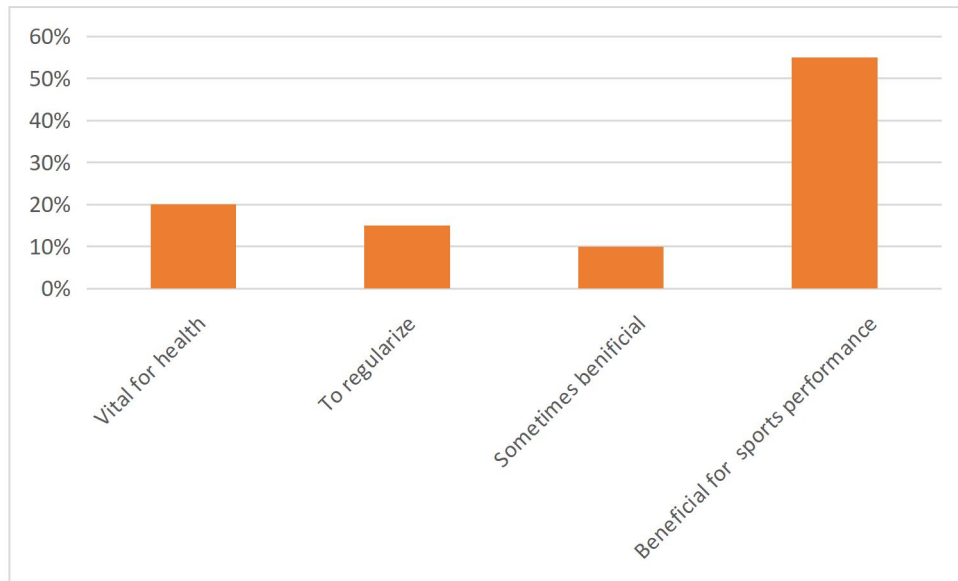
What is your view on yoga and yogic activities?

Sr.No.	Options	No of Students	Percentage
1	Vital for health	04	20 %
2	To regularize	03	15 %
3	Sometimes beneficial	02	10 %
4	Beneficial for sports performance	11	55 %
	Total	20	100 %

Source- Survey of students

Graff No 1.3

View on yoga and yogic activities



Source- Survey of students

It is clearly seen from the above table that when the college students of Parbhani district were surveyed regarding their view on yoga and yogic activities, the highest percentage of students who answered that it is Beneficial for sports performance, which is 55 percent. Below that, the proportion of students who answered that yoga and yogic activities is Vital for health is 20 percent. The proportion of students who answered that it is to regularize is 15 percent. It was found that the percentage of students who responded that sometimes yoga and yogic activities are beneficial for sports performance and physical fitness was the lowest and it was only 10 percent.

Table no 1.4

Can sports performance and physical fitness be achieved through regular yoga and yogic activities?

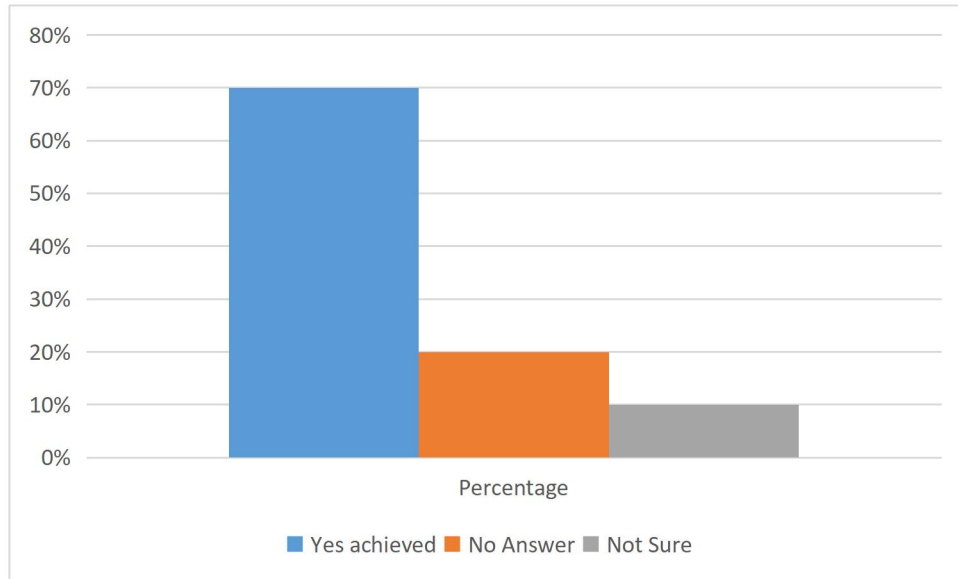
Sr.No.	Options	No of Students	Percentage
1	Yes achieved	14	70 %

2	No Answer	04	20 %
3	Not Sure	02	10 %
	Total	20	100 %

Source- Survey of students

Graff No 1.4

Can sports performance and physical fitness be achieved through regular yoga and yogic activities?



Source- Survey of students

It is clearly seen from the above table that when the college students of Parbhani district were surveyed regarding can sports performance and physical fitness be achieved through regular yoga and yogic activities, the highest percentage of students who answered that Yes achieved, which is 70 percent. Below that, the proportion of students who not answered that sports performance and physical fitness be achieved through regular yoga and yogic activities is 20 percent. It was found that the percentage of students who are not sure for sports performance and physical fitness can be achieved through regular yoga and yogic activities was the lowest and it was only 10 percent.

Conclusion

Yoga is the application of physical postures, control of breath, purification and relaxation of mind or body and spiritual principles aimed at bringing greater unity and balance to the mind and body. Yoga offers new learning possibilities to a wider group of students than traditional sports or fitness curriculum, making it a valuable addition to any educational program. Additionally, adding yoga to a school's curriculum will help provide a quality physical education program as modification of traditional physical education yoga in sports as important as other think it helps us in different ways and different levels in a sports men life. Yoga can play a key role in cultivating mind control and concentration which helps a sportsperson to perform at their game.

The Silent Observations

Of course sports performance and physical fitness can be achieved through regular doing yoga and yogic activities. It is also useful for youths and students. The physical advantages of yoga are visible to everyone but the part it plays in the youth and sports person is inversely significant. For scholars or working professionals, diurnal Yoga practice brings increased attention, relaxation and peace of mind, helps to relieve symptoms of anxiety, stress, and so on. However, some observations have been reported from the study. They are as follows.

- Yoga is useful activity for best performance in sports.
- Sports performance and physical fitness can be achieved through regular doing yoga and yogic activities.
- Students View on yoga and yogic activities is Beneficial for sports performance.

Results

Some Results have been drawn from the above analysis. They are as follows.

- The college students of Parbhani district were surveyed regarding yoga and yogic activities for sports performance and physical fitness then the highest percentage of students who answered that it is does regularly.
- The college students of Parbhani district were surveyed regarding yoga and yogic activities for sports performance and physical fitness, the highest percentage of students who answered that it is useful.
- The college students of Parbhani district were surveyed regarding their view on yoga and yogic activities, the highest percentage of students who answered that it is Beneficial for sports performance.
- The college students of Parbhani district were surveyed regarding can sports performance and physical fitness is achieved through regular yoga and yogic activities, the highest percentage of students who answered that yes achieved.

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DEFINING THE CONCEPTS OF TECHNOLOGY AND ITS EFFECTS ON INVESTMENT BEHAVIOR

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Abstract:

This paper's main goal is to add to the body of literature by thoroughly evaluating technological definitions and concepts. Although many scholars contend that the term "technology" itself is difficult to comprehend, observe, or evaluate, this review tries to provide a brief explanation and improve comprehension of these topics from multiple angles. Technology is playing a bigger role in business. It is becoming ever more prevalent in business, making it difficult to distinguish between the two. Businesses are born from innovation, and since technology clears the way for that innovation, it stands to reason that businesses require technology to succeed. The data for the study are gathered from secondary sources. Understanding the conceptual underpinnings of technology and, finally, how it works to persuade people to invest are the research's two main objectives. This review may provide some innovative suggestions for future scholars to better recognise, conceptualise, and comprehend the underlying theories and viewpoints that have a significant impact on the past, present, and future conceptions of technology.

1. Introduction

Technology is the body of knowledge, methods, and procedures used to accomplish objectives like scientific research. In its most basic sense, technology simply refers to technical knowledge that may be expressed in writing or technical information that is included in patents. In this, we discuss the concept of technology from articles and books.

Table 1. Various Definitions of Technology from Previous Literatures

Sr.no	Year	Scholars/Authors	Definitions
1	1968	Merrill	Technology refers to the practical arts, systems of knowledge, techniques, and methods for creating, utilizing, and performing useful things.
2	1971	Hawthorne	The use of science to address specific issues.
3	1981	Hawkins and Gladwin	Knowledge and abilities are necessary to manage a group of interconnected technological processes, as well as specialized knowledge about the creation of commodities and services in organized economic activity.
4	1987	Woolgar	A combination of the production of the physical objects, the making process, and the meaning attached to the physical products. These components don't stand out and can't be separated; instead, they work together to create technology as a whole.
5	1991	Methe	A procedure that emphasizes its dynamic aspect and connects its starting point and ending point.
6	1996	Levin	It is best to think of technology as a strategy rather than as a "thing." Using scientific principles to address real-world issues is what it is. Material objects (things), using objects to achieve a goal, and possessing the knowledge to use these objects are the three elements of technology, according to certain definitions.

7	2002	Tihanyi and Roath	Data like a patent, know-how, or trade secrets. On the other hand, it can be altered as machinery, part assemblies or final products. Technology that is both tangible and intangible is combined in the manufacturing techniques and procedures that are required to use various kinds of production. Information that is difficult to duplicate or transfer can also be a part of technology.
8	2006	Reisman	The creation and use of devices, equipment, materials, and procedures that assist in resolving human issues.

Source: Sazali and Raduan (2011)

Following are different definitions of technology from books:

- 1) The excellent small book *Technological Change: Its Impact on Man and Society*: by Emmanuel G. Mesthene from 1970 has Emmanuel Mesthene's definition of the term technology:
"We define technology as the organization of knowledge for the achievement of practical purposes."
 - 2) John Kenneth Galbraith used a term that is remarkably similar to Mesthene's in his 1967 book *The New Industrial State*:
"Technology means the systematic application of scientific or other organized knowledge to practical tasks."
 - 3) Thomas P. Hughes, quoted definition in three different forms in *Human-Built World: How to Think about Technology and Culture*, published in 2004:
"Technology is messy and complex. It is difficult to define and to understand. In its variety, it is full of contradictions, laden with human folly, saved by occasional benign deeds, and rich with unintended consequences." (p. 1)
"Defining technology in its complexity," he continued, "is as difficult as grasping the essence of politics." (p. 2)
"a creativity process involving human ingenuity." (p. 3).
- It's interesting to note that he provided a somewhat different definition in another book, *American Genesis: A Century of Invention and Technological Enthusiasm, 1870-1970*:
"Technology is the effort to organize the world for problem solving so that goods and services can be invented, developed, produced, and used." (p. 6, 2004 ed., emphasis in original.)
- 4) *A Culture of Improvement: Technology and the Western Millennium*, written by University of Maryland historian Robert Friedel in 2007, begins with a formal definition of technology and ends with a less formal one:
"By technology we typically mean the knowledge and instruments that humans use to accomplish the purposes of life." (p. 1)
- He concludes the book by saying:
"Technology can, indeed, be defined as a pursuit of power over nature." (p. 543).
- 5) Peter Thiel Internet businessman and VC Peter Thiel writes in *Zero to One: Notes on How to Build the Future* (2014):
"Properly understood, any new and better way of doing things is technology."
 - 6) In June 2020, Sriram Krishan speaks with Marc Andreessen for his newsletter, *The Observer Effect*, and asks him why he supports technological progress. His final definition of technology is as follows:
"Technology is quite literally the lever for being able to take natural resources and able to make something better out of them."

Therefore, in this context, technological mastery refers to the capacity to apply knowledge of the physical processes underlying a technology to assimilate, adapt, and/or generate fresh elements in response to changing needs. By boosting the economy's productivity and creating more jobs, investment plays a crucial part in reducing poverty. The introduction of new technologies that can help to raise the productivity and sustainability of other components of production is encouraged by a favorable investment climate, which offers incentives for all businesses—small, medium, and big as well as micro enterprises—to make productive investments, create jobs, expand, and do all of these things.

Foreign direct investment (FDI) is significant because it brings, in addition to significant financial resources, improved know-how, modern technology, access to global markets, and a corporate culture of efficiency and

competitiveness, even though the majority of private investment in developing countries is domestic in nature. Perhaps innovation, the transfer of knowledge and technology, and productivity are where FDI makes its greatest contribution. If the knowledge of superior technology it delivers can be shared with domestic enterprises through business connections, its contribution to growth is probably going to be higher. In this regard, FDI has the potential to stimulate local business expansion and enhance the environment for investment.

2. Objectives of the study

1. To understand the different definitions of technology
2. To examine how technology has affected investment behaviors.

3. Research methodology

Type of research: Descriptive research (Conceptual Paper)

Data was collected from secondary sources such as books, websites, and research articles.

4. The role of technology in inducing investment behavior

The way Indians do financial transactions is quickly changing due to technology. Investors can now achieve their financial goals with the aid of artificial intelligence. Users are guaranteed to receive the best guidance to make sure they are on track to meet all their financial needs, thanks to systematic investment suggestions and intelligent financial planning. The majority of Indians choose saving before spending. But when it comes to scheduling their expenses, individuals find themselves relying on hunches about their financial situation. Because of this, people are never certain of 1) how much to save and 2) whether their present investment strategy will allow them to achieve their financial goals. This is especially true for young professionals who desire both a more rewarding life experience and a secure future. What is needed is clear, quantitative financial advice that provides the answers to these issues.

Finding sound financial and investing guidance, however, was never an easy chore. Professional guidance was offered, but it was mainly offline, static, and only available to wealthy people. Effective financial planning could be provided by a fee-based advisor, but most investors could not afford it. The offline model was similarly rigid, necessitating the active involvement and support of the financial advisor for every attempt to alter an investor's investments or financial plan. Artificial intelligence has provided a remedy for these problems. A subfield of artificial intelligence called cognitive technologies deals with the use of computers to do jobs that have historically been done by people. The goal of this approach is to create software that can perform the same tasks as a person by having extensive and clear instructions. The advantages of this method include the ability to complete the same task more quickly, accurately, and affordably.

The fact that most investors are unable to understand technical words presents a significant barrier in financial planning and investing. The majority of investors aren't clear why or how certain investments were recommended to them. However, they can find what they want with the help of a user-friendly interface provided by mobile apps. Finding user-interesting activities is key for mobile apps to succeed. By developing a financial plan that takes into account both his own financial demands and suggestions that deal with issues that are recognizable to him, mobile apps can assist in achieving this. To provide each user with a genuinely personalized solution, intelligent mobile apps continuously learn from user behavior to identify and suggest appropriate goals and investments that will fit with their individual financial plans.

One area in India that still receives relatively little attention is financial and investment advisory. In order to help them save for their duties to their families and themselves as they enter the job, young people will require guidance on how to invest their resources. Additionally, by easing people's anxiety about the future, financial planning can also help them live better lives. As a result, financial preparation will become even more crucial, and the future looks promising for digital investors who are well-informed.

5. Conclusion

In the end, this study aided in understanding the conceptual underpinnings of technology, the many investment avenues open to investors, and the part played by technology in determining the investment avenue. For the goal of investing, investors need have understanding of modern technology. The investment should be made in a way that maximizes return while minimizing risk. Finally, the investor can be referred to as a digital investor. The simple explanation is that different perspectives/theories underlying technology will have different theoretical arguments and insights, research problems, constructs, variables, and measurements.

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AN EXPERIMENTAL STUDY OF THE ROADMAP OF E-COMMERCE INDUSTRY AND DIGITIZING INDIA

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Abstract:

India is a technology-driven country. In India, e-commerce has experienced enormous growth. The rising use of technologies such as smart phones and tablets can be attributed to e-commerce growth. As a result of e-digitization, more entrepreneurs are going into the sector of E-commerce, making India a hot and appealing market for both consumers and competitors. Furthermore, initiatives such as Digital India and Skill India have increased the resources available to India's e-commerce business. India has a younger population than many other developing countries, with a population under the age of 40. Among the youthful population, the young generation Z, which is roughly 20 years old, has demonstrated an addiction to electronic devices and internet devices. The demographic dividend ensures that India's e-commerce growth is sustainable.

Keywords: E-Commerce, E-Online, E-India, Digital India, Skill India

I. INTRODUCTION

Technology is critical in helping business units improve the quality of their offerings. The internet has altered the way the world communicates, interacts, works, and collaborates with one another. It has resulted in a significant change in society, and as a result, it is correctly regarded as the third wave of revolution following the agricultural and industrial revolutions. E-Commerce is today's e-cutting edge for company.

Electronic commerce or e-commerce, is the purchasing and selling of goods and services over an electronic system, such as the internet, using devices such as computers and mobile phones. The internet is the new high-end technology for e-commerce since it makes it easier to connect with businesses and individuals at a low cost to conduct day-to-day commercial transactions. Computer skills are also required for the growth of the internet. Online shoppers are concerned about the hazards of online shopping, particularly the financial and non-delivery threats. Many e-online consumers in developing nations, particularly India, prefer to use debit cards rather than credit cards because they believe credit card transactions are riskier. According to studies, ATMs are the most often used method of obtaining electronic banking services in many developing nations.

The e-digital revolution has resulted in complicated and sophisticated security challenges that necessitate a high degree of expertise to secure, as well as protection at both the enterprise and customer level. Apart from the cutthroat cyber threat, e-retailers and brands are under pressure to focus on providing quality products and consistently enhancing the shopping experience in order to not only meet but also exceed consumer expectations.

II. RESOURCES AND METHODS

The e-study was conducted utilizing secondary data obtained from a variety of sources. To develop the research objective, the study generally combines secondary data with existing research reports or publications (literature review). The purpose of this study is to inform readers and researchers on current events in India's e-commerce industry. To get at a meaningful concept of the e-commerce industry in India, the data is examined using percentage analysis and appropriate tables.

III. E-COMMERCE: E-INDIA WAY

In terms of both value and volume, India's e-commerce industry has exploded. Education, personal perspectives, cultural, socio-psychological, economic, and banking product/service awareness all influence e-online purchasers or online shoppers in India. To please Indian online buyers, e-factors such as presenter and brand ambassador, website design, advertisement, and friends' recommendations are crucial, and entrepreneurs in the textile business

have begun to exploit this online platform. Customers in India, particularly students, expect a high level of material clarity and security. Two aspects are critical to a good online purchase or experience and customer retention.

E-Commerce has changed the way businesses in India and throughout the world conduct business. Many industries have begun to invest more in online marketing. Many of the headaches associated with going to a brick and mortar store, dealing with traffic congestion, parking issues, and so on have been eliminated thanks to information technology enabled devices and the online medium. On the other side, digital businesses are developing user-friendly, secure, and convenient online purchasing options. E-commerce, also known as online or internet commerce is being used by exporters and businesses to contact and serve customers all over the world, 24 hours a day, seven days a week. The internet has lowered the time barrier to doing business, lessened the geographical barrier, and practically removed the distance barrier.

E-commerce provides a seamless business proposition that empowers both the marketer and the shopper to innovate in product production, storage, and delivery, resulting in a better customer experience. E-CRM solutions are being utilized by Indian banking and non-banking financial institutions to improve customer service, particularly in customer profiling, self-service, one2one, and customization of services.

The use of technology in the Indian e-commerce industry drives continual development in all aspects of supply chain, inventory management, customer experience, and personnel management.

The convenience of selling and buying/purchasing things online has been aided by the rising penetration of internet services and quicker internet services such as 3G and 4G. The use of digital marketing methods and tools to target specific client groups, such as mailers, digital billboards, mobile SMS, and word-of-mouth marketing (over the internet), blitzkrieg marketing, and carpet bombing marketing. However, as buyers become more educated and knowledgeable about the internet, they want to make informed online purchases by comparing the pricing of the same product across several e-retailers and selecting the one with the lowest price. As a result, it is vital to note that, in order to stay ahead in the increasingly competitive online retail environment, e-marketers must understand exactly what customers think, anticipate, and how they (act/ behave) while purchasing a product through an online platform. In 2014, the Indian e-commerce business was valued at USD17.6 billion, and it is predicted to increase at a CAGR of 40% by 2020, reaching USD136 billion. E-commerce retailing, e-financial services, classified segments, job searches, and online matrimony are all key contributors to the e-commerce industry.

IV. DRIVERS OF E-COMMERCE IN INDIA

In India, the number of people using the internet is steadily increasing. The country's overall number of web users exceeds 243 million. In India, internet penetration climbed from 0.10 percent in 1998 to 30 percent in 2015, a nearly 30 percent rise over the previous 17 years. The top four metros have a 23 percent internet penetration rate, while the remaining four metros have an 11 percent penetration rate. Despite this rise, just 19% of India's overall population has access to the internet, compared to over 40% in peer countries such as Brazil, Russia, and China. Furthermore, just 14% of the population has engaged in online purchasing, out of a total of 19%. While the numbers are still low, internet and smartphone usage is steadily increasing, providing an interesting opportunity for e-commerce companies.

Generation Z's way of life: People born after the year 2000 have a distinct way of behaving. They are intelligent, outgoing, and love to sample a variety of items and services without reservation. Many youthful internet buyers in metro cities seek convenience, flexibility, and speed in making payments and receiving goods delivery. They want options that present them with as many options as possible. Young folks don't want to waste time trying out new things. They are unconcerned about taking a chance by purchasing a goods on the spur of the moment, without hesitating. Is the impulse behavior of young online consumers giving online marketers an advantage when it comes to making money from a casual web surfer by encouraging him or her to buy products or services right away?

Growth of Smart e-devices: The rapid development of affordable electronic gadgets enabled people in rural areas to connect to the internet. E-commerce retailing in the country is growing thanks to gadgets such as smart watches, smart phones, personal computers/laptops, and internet television. By December 2023, the number of people who use a smart phone to access the internet is expected to increase 2.5 times, resulting in a similar increase in the online shopping business in India. More than half of all orders for e-commerce retail behemoths are now placed

through smartphone apps. In terms of traffic, larger e-commerce retail organizations use mobile to drive up to 70% of their entire traffic. 40 million buyers between the ages of 19 and 24 are likely to spend time and money online in the coming years.

Payment convenience in e-commerce: There are numerous choices that encourage customers to buy or utilize e-commerce. EMI users make up less than 1% of the population. Payments made with a debit card account for 13%, payments made with a credit card account for 17%, and payments made with cash on delivery account for 60%. It would hasten the development of online shopping. Online shoppers prefer e-commerce to brick-and-mortar retail because of the ease and convenience of access, confidentiality, service quality, and time savings.

V. ROADMAP FOR SUCCESS

The roadmap for success is depends on various parameters such as,

- i) *Training and skill development:* For aspiring businesses and MSMEs, e-Commerce has already shown to be a desirable destination. It has resulted in the creation of more skilled jobs for the people. It also entails a lengthy supply chain management process. It would be professionally delivered by a qualified trainer and made as simple as possible. It should be emphasized that the primary criteria that motivate individuals to utilize internet services are comfort and ease, with quality and quantity of information being the most appealing feature. Keeping this in mind, the company should focus on good manpower training to deliver a better client experience, even when online customers do not engage with personnel face to face.
- ii) *New projects will be implemented more quickly:* The Indian government has already started various initiatives, including Digital India, Skill India, the Innovation Fund, and Start-up India. The success of these projects will be determined by the government's ability to implement them more quickly. As a result, it would have a significant influence on E-commerce. People in India are prone to copying rather than innovating. The government's Make in India policy encourages all stakeholders to innovate and create a high standard for others to follow. The e-commerce industry will acquire a lot of momentum if more entrepreneurs and businesses jump on board.

The Indian government has taken a number of steps to increase governance efficiency by tackling the issue of delayed payments and benefits to the poor. Jan Dhan (bank accounts), *Jeevan Jyoti Bima* (life insurance), *Suraksha Bima* (accident insurance), and *the Atal Pension Yojana* (pension for the unorganized sector) are examples of successful 'Digital India' programmes. India has taken steps to close the system's leaks by connecting 125.5 million *Jan Dhan bank* accounts, 757 million Aadhaar identity numbers, and around 904 million mobile phones for faster direct cash transfers of subsidies and benefits such as pension and relief sums.

- iii) *New Delivery Models:* In light of the "choked traffic" situation in India's metros, which has resulted in late deliveries or an increase in the number of bikers needed to meet delivery deadlines, e-Commerce and Logistics service providers are considering switching from a synchronous hand-delivered parcel system to an asynchronous model, in which parcels are delivered to a locker secured by a code sent to the recipient as a text message. If successful, this experiment will most likely aid e-Commerce enterprises in improving consumer experience. E-commerce businesses have recently begun to offer Cash on Delivery (COD) as a payment option for customers. The majority of consumers prefer to pay cash on delivery to ensure expediency in payment and security in obtaining the products as ordered. Few companies have lately begun employing unmanned aerial vehicles (UAVs) to deliver products to end users. Notably, Amazon, the world's largest online retailer, and DPDHL, the world's largest logistics firm, are both experimenting using UAVs (Unmanned Air Vehicle: Miniature UAV) to deliver merchandise to clients. Amazon's goal is to boost profits by implementing new technology that will result in a better product delivery system that will also improve consumer pleasure.

VI. CONCLUSION

The Indian internet development narrative is attracting e-commerce businesses. Young clients, referred to as generation Z, are becoming increasingly glued to internet platforms. As a result, reaching them through other

communication channels such as newspaper advertisements, television advertisements, and radio advertisements is extremely difficult.

The average demographic profile of shoppers is 16 to 34 years old, despite the fact that they are spending more time online. This provides these players with an opportunity to attract more users to their websites through innovative marketing strategies such as e-bill boards, carpet bombing, blitzkrieg, and social media for word of mouth marketing. The tide is turning in favour of teenagers. The fact that ordinary online users are spending more time online provides these players with an opportunity to attract more users to their websites with innovative marketing tactics such as e-bill boards, carpet bombing, blitzkrieg, and social media for word of mouth marketing. These players can utilize novel marketing methods like e-bill boards, carpet bombing, and blitzkrieg to attract more people to their websites, as well as use social media for word-of-mouth marketing.

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TOWARDS INDUSTRY 5.0: AN ERA OF AUTOMATION WITH HUMAN CREATIVITY

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Abstract

Industry 5.0 seeks to succeed the industrial revolution, its objective is to combine the creativity of human professionals with efficient, smart, and precise machines to provide manufacturing solutions that are resource-efficient and user-friendly. Industry 5.0 refers to add human, environmental and social aspects back into the equation. Industrial Revolution as an evolution of the original idea of Enterprise 4.0 with the little enhance role of human beings and environmental as well as social aspect for the society, handling over commercial enterprise cost along with the robots. Their major goal was to seek consensus the various numerous groups (scientific, political, and Industry) at the need to comprise social and environmental priorities in industrialization better and higher. This research paper also shows the weaknesses of the theory of Industry 4.0, especially in the area of the role of man in smart factories and sustainable development. That's the major reason of the concept of Industry 5.0 was identified. Industry 5.0 is the strong collaboration between intelligent humans and smart machines while industry 4.0 marks an era of automation, Industry 5.0 puts the focus on person's intellectuality. In this study also indicate brief introduction of All Industry, their function and the major difference between industry 4.0 and Industry 5.0.

Keywords: Industries, Economics, Industry 5.0, IoT, manufacturing processes, Digitalization, technology management, Human Centric.

Industrial Revolution, in modern history, the process of change from an agricultural and handmade economy to one dominated by Industry and machine manufacturing. This process of transformation commenced in Britain and from there spread out to other parts of the world.

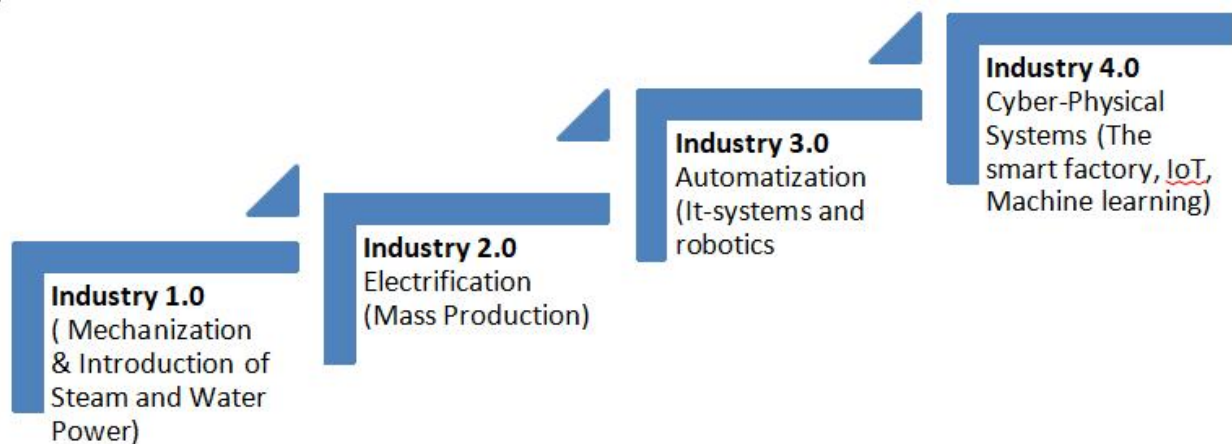
First industrial revolution basically started in this 1770s, and will be moved from hand to machines, from farms to the first factory using steam and water power then hundred years later electricity arrived the next industrial revolution, so they gave us automation, assembly lines. This was the real start of factories. Today another hundred years later we got the computers. It would allow us to automate some of the blue-collar work in factories. We have intelligent machines and factories and have inbuilt sensors in them that are connected and they can diagnose their own problem and alert. If anything goes wrong within the machines, we have big data so all of these machines generating huge volumes of data that we can use and analyse and we can use artificial intelligence and machine learning. Unprecedented Occurrences have posed challenges to industrial operations over the last decade and the recent Covid19 pandemic is one obvious example. In addition to its social impact the virus

has shattered the traditional work process. To deal with the challenges the industry must act quickly to address the situation to maintain a sustainable business. So, this paper indicates the meaning of all Industries, their functions and the major differences between industry 4.0 and 5.0.

The Evolution of Industry from 1.0 to 5.0

To understand the impact of the concept of Industry 4.0 on manufacturing processes, it's important to understand the evolution of the industry from 1.0 to 4.0.

Industry 4.0 Cyber-Physical Systems (The smart factory, IoT, Machine learning)



Industry 1.0

Long back to around 1760, the First Industrial Revolution was the transition to new manufacturing processes using water and steam which started in Britain. It was hugely beneficial in terms of manufacturing a larger number of various goods and creating a better standard of living for some. The textile industry, in particular, was transformed by industrialization, as it was also transported all around. Fuel sources like steam and coal made machine use more feasible, and the idea of manufacturing with machines quickly spread. Machines allowed faster and easier production, and they made all kinds of new innovations and technologies possible as well.

Industry 2.0

The Industry 1.0 represented the period between the 1760s and around 1840. This is where the second industrial revolution picked up. Historians sometimes refer to this as “The Technological Revolution” occurring mainly in Britain, Germany, and America. During the time, new technological systems were introduced, most notably superior electrical technology which allowed for even greater production and more sophisticated machines.

Industry 3.0

It began with the first computer era. These early computers were often very simple, unwieldy and incredibly large relative to the computing power they were able to provide, but they laid the groundwork for a world today that one is hard pressed to imagine without computer technology. Around 1970 the Third Industrial Revolution involved the use of electronics and IT (Information Technology) to further automation in production. Manufacturing and automation advanced considerably thanks to internet access, Connectivity and renewable energy. Industry 3.0 introduced more automated systems onto the assembly line to perform human tasks. i.e. using Programmable Logic Controllers (PLC). Although automated systems were in place, they still relied on human input intervention.

Industry 4.0

Industry 4.0—Smart Manufacturing of the Future. The Fourth industrial revolution is the era of smart machines, storage systems and production facilities that can autonomously exchange information trigger actions and control each other without human intervention. The exchange of information is made possible with the industrial Internet of Things (IIoT) as we know it today.

Key elements of Industry 4.0 includes-

1. Cyber physical system – a mechanical device that is run by computer-based algorithms.
2. The Internet of Things (IIoT) – Interconnected networks of machine devices and vehicles embedded with computerized sensing, scanning and monitoring capabilities.
3. Cloud Computing – offsite network hosting and data backup.
4. Cognitive Computing – Technological platforms that employ artificial intelligence

Industry 4.0 starts to move towards Industry 5.0 when you begin allow customers to customize what they want actually.

Industry 5.0

Less than a decade has passed since talk of Industry 4.0 first surfaced in manufacturing circles, yet visionaries are already forecasting the next revolution – Industry 5.0. If the current revolution emphasizes the transformation of factories into IoT-enabled smart facilities that utilize cognitive computing and interconnect via cloud servers, Industry 5.0 is set to focus on the return of human hands and minds into the industrial framework. The Industry

5.0 is the revolution in which man and machine reconcile and find ways to work together to improve the means and efficiency of production. But the industry 5.0 is underway among the companies that are just now adopting the principles of Industry 4.0.

Challenges of industry 5.0:

1. With around industry 5.0, it is easier to overlook the potential challenges. The challenges are being identified and solved for industry 5.0 developments to succeed for the business.
2. People are required to develop competency skills, as working with the advanced robots, the human workers are required to get knowledge about collaboration with the smart machine and robot manufacturer. Apart from the soft skills required, gaining technical skills is also an issue for human workers. Programming to the industrial robot and managing translation in the new jobs are difficult tasks requiring a high level of technical skills.
3. Adoption of advanced technology is required more time and effort from the side of the human workers. Customized software-connected factories, collaborative robotics, artificial intelligence, real-time information, and the internet of things must be adopted for industry 5.0. Advanced technologies are required investments. UR Cobot is not coming cheap. Training the human workers for new jobs is bringing extra costs. The companies are found it difficult to upgrade the production lines for industry 5.0. Adopting Industry 5.0 is expensive as it requires smart machines and highly skilled employees to increase productivity and efficiency.

Top Trends of Industry 5.0

1. **Lights-out Manufacturing:** Fully automated processes without any human supervision
2. **Co-bots:** Collaborative robots that work alongside human workers to increase efficiency.
3. **Accelerated Innovations:** Elevate employee innovative abilities by automating time-wasting, labor-intensive tasks.

Difference between Industry 4.0 and Industry 5.0

The digital transformation of manufacturing slashes production and related industries as well as value creation processes. It's called Industry 4.0. It is the result of an initiative to revitalize the germin manufacturing industry. It encompasses cyber physical system, The Internet of Things, cloud computing, cognitive computing, the development of the intelligent factory in essence the technologies that are enable industry 4.0 use existing data as well as a plethora of additional data sources. Such as data from connected assets to gain efficiencies on multiple levels transform exiting manufacturing processes create end-to-end information streams across the value chain and realize new services and business models.

On the other hand Industry 5.0 provides primary vision of an industry that goes beyond efficiency and productivity as sole goals and reinforces the industry's role and contribution to society. It prioritizes worker well-being in manufacturing and employees new technologies to provide prosperity beyond jobs and growth while respecting the planet's production limits. It adds to existing industry approach by putting research and innovation especially at the service of the transition to more sustainable human-centric and resilient industries. Interconnectivity between smart automation devices and system is central to the 5.0 industry vision. According to rudder, the priority of Industry 5.0 is to efficiently utilize a workforce of machines and people in synergy with the environment. It transitions from a virtual to physical environment. This vision focuses on waste prevention.

Industry 5.0 takes a more collaborative approach than industry 4.0 with increased collaboration between humans and robots. While the theme of industry 4.0 is connectivity via cyber physical system industry 5.0 while also aligned with platforms enabled by industry 4.0 also addresses the relationship between man and machines also known as robots or bots. Industry 4.0 paved the way for human slash machine collaboration. A Collaboration between machines and interconnection in the middle of the plant logistics, supply chain management and the end user. All stakeholders will now be able to collaborate with single platform facts to digital integration. In addition to these components industry 5.0 integrates human creativity and robotic precision resulting in one-of-a-kind solution in high demand in the coming decade.

Reviews of Literature:

According to European Commission (EC), the power of Industry 5.0 is a societal goal beyond jobs and growth to become a resilient provider of prosperity by making production respect the boundaries of our planet and placing the well-being of the industry worker at the centre of the production process (Document EC, [2021](#)).

Difficulties in defining the Industry 4.0 concept have existed since its beginning in 2011, finally accepted that Industry 4.0 is a set of technologies capable of creating cyber-physical systems inside companies and in supply chains (Kagermann et al., [2015](#)).

The assumptions of the Industry 4.0 concept formulated in the publications of Prof. K. Schwab ([2017](#), [2018](#)) have not yet been fully realized, because technological investments require high financial resources. Until 2020, the German industry has invested a total of euros 40 billion in Industry 4.0 every year.

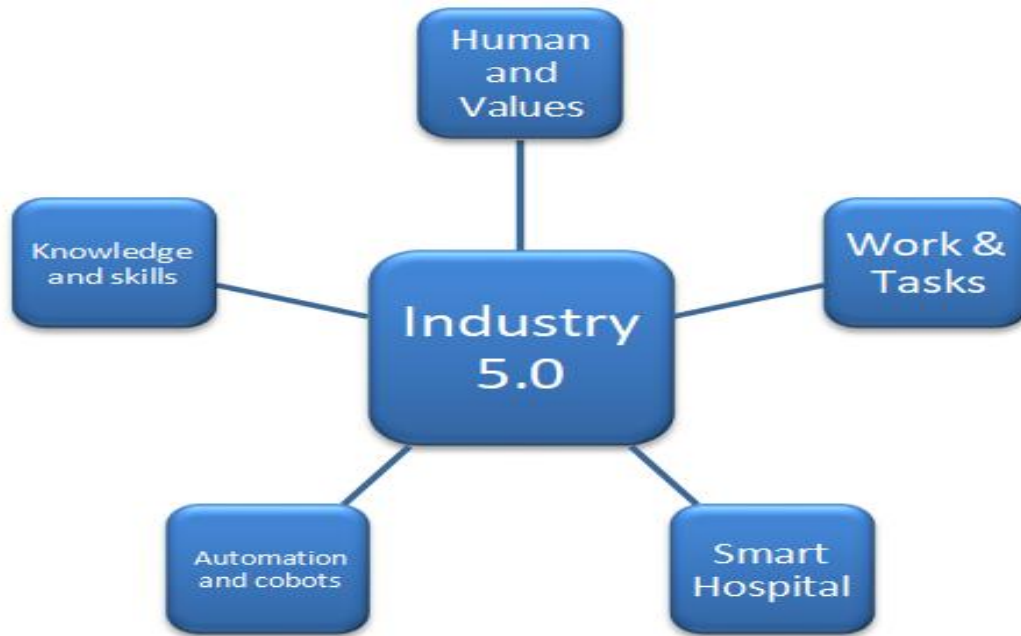
It was emphasized that symbiosis between humans and new technologies is needed. The authors proposed to introduce the human factor into cyber-physical systems. The new system design is called Human Cyber-Physical System (H CPS). Nowadays, apart from the human factor, the authors noted research gaps in sustainability, responsibility, safety, and others in the Industry 4.0 concept (Longo et al., [2020](#)).

A similar topic was analyzed by Pagoropoulos et al. ([2017](#)) but in the influence of digital technologies on the circular economy. At the same time, Terlau and Hirsch ([2015](#)) discussed sustainable consumption in the development of industries and economies. The authors of this publication, joining the discussion about the evolution of Industry 4.0 towards Industry 5.0, analyzed the research gaps of Industry 4.0 based on a review of the topics of publications in the WoS scientific database, which served to initiate a discussion about the new directions of industrial development, defined, according to the time chronology of industrialization— Industry 5.0.

Objectives of the Study:

1. To understand the study of Industry Revolutions.
2. To find out the major difference between Industry 4.0 and Industry 5.0
3. To apprehend the functions of Industries.
4. To clarify the challenges of Industry 5.

Conceptual Framework:



Significance of Study: From the perspective of Industry 5.0, the importance of digital skills is widely recognised. As a result, there is an increased interest in soft skills, yet there remains a need for comprehensive research on the relevant categories of soft skills. Industry

5.0 is important as it allows businesses and industry to actively deliver solutions for society to preserve resources, ensure social stability and address climate targets.

Limitations of the Study: Acceptance of technology and trust in the technologies are critical. Adaptation of the technology to humans coincides with training people who are using the new technologies. Current challenges are security, privacy, lack of skilled workers, time-consuming process, and large budget required. Adoption of industry 5.0 is required to follow industrial laws and regulations that can help to work together with smart machines plus robots. Future directions for industry 5.0 are cognitive computing, human and machine interaction, and quantum computing.

Research Methodology of the Study: The Present Study is based on Secondary Data. The data is gets derived from books, internet, directives and circulars, committee reports, research publications both published and non-published. The collected data were subjected to proper

recording, editing's, classification, tabulations and interpretations as per the well-established practice of social research methodology,

Period of the Study: Reference Period of the study will cover the data for the last 15 years

Conclusion of the Study: As technological innovations become more rapid, revolutions could ultimately follow one another in quick succession over the next 10 years and beyond. The first three industrial revolutions took decades to play out, today's revolutions last only as long as it takes for industry-wide implementation to complete itself. It's important to note that manufacturing 5.0 is an upgrade of the form industry 4.0 and not entirely new. Overall, the development of Industry 5.0 could prove to be the full realization of what the architects of Industry 4.0 had only dreamed of at the dawn of the 2010s.

As artificial intelligence improves and factory robots assume more human-like capabilities, the interaction between computers, robots and human worked will ultimately become more meaningful and mutually enlightening.

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PYTHON API LIBRARIES OF SMART API, UPLINK, AND KITE CONNECT: A COMPREHENSIVE STUDY

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Abstract:

The ability of machines to efficiently execute complicated and high-frequency trading strategies has made algorithmic trading, or "algo trading," an essential part of the financial markets. With a focus on three well-known platforms like SmartAPI, Uplink, and Kite Connect—this research paper offers an in-depth study of Python APIs in the context of the Indian financial markets.

The basics of algorithm trading are covered in the first section of the study, along with the value of Python as a programming language for creating algorithmic techniques. The selection of Kite Connect, Uplink, and SmartAPI was driven by their notable positions in the Indian financial scene, each providing traders and developers with special features and functionalities.

Factors including order execution speed, accuracy of market data, and the variety of supported financial instruments are considered in this study. Case studies and real-world examples show how each API is used in algorithmic trading scenarios. The study additionally looks at each API's WebSocket streaming capabilities, which are essential for real-time data updates in the market.

Keyword: WebSocket, SmartAPI, Uplink, Kite Connect, API

Introduction:

The financial system has shifted its paradigm in recent years due to the use of technology into trading activities. Algorithmic trading, or "algo trading," has become an effective tool that is changing the way the financial market function. This study explores the complex world of algorithmic trading, with a particular emphasis on its application utilizing Python API inside the framework. Algo trading is the process of automatically executing high-frequency trades using mathematical models and pre-established methods. Its ability to quickly assess market conditions, identify trading opportunities, and carry out orders at speeds faster than humans makes it attractive. As the Indian share market keeps developing and embracing new technology, algo trading strategies—especially those that use Python APIs—are becoming more and more popular. After approving the Direct-Market-Access (DMA) technology, the Securities Exchange Board of India (SEBI) approved Algo Trading in 2008[1].

Artificial intelligence is a technology that can think and act for itself. As such, it is ideal for complicated trading applications where efficiency and speed are critical. Its use can alter trading in a variety of ways [2], as is already clear. Many factors are responsible for the daily changes in the market, which makes it challenging for businesses and stockbrokers to choose where to trade[3]. Python's versatility, user-friendliness, and availability of libraries and frameworks make it a popular choice for algo trading. For traders and engineers looking to build advanced algorithms in the dynamic and complex environment of the Indian stock market, Python is a great option due to its readability and strong community involvement. With a focus on Python API integration complexities, this research study attempts to offer a thorough grasp of API libraries. It looks at the main benefits and characteristics of using Python for algorithmic trading, as well as the difficulties encountered and how they affect in trading procedures. Algorithmic trading is a method of order execution. Using automated, pre-modified trading rules that represent variables like volume, cost, and time [4]. When compared to human brokers, this type of trading aims to take advantage of the speed and computational power of PCs.

This study explores the complex world of Python API libraries, concentrating on the Python APIs offered by three major platforms: Kite Connect, Uplink, and SmartAPI. These APIs, which are provided by top Indian financial institutions, are essential in enabling algorithmic trading methods because they give developers the resources and connection they need to communicate programmatically with financial markets.

Python API

1) Kite Connect from Zerodha

One of the top stockbrokers in India, Zerodha, offers Kite Connect, a well-liked trading API. Using Python and other computer languages, it enables developers to include stock trading capabilities into their own apps [5]. An interface for easy interaction with the Kite Connect API is provided by the Kite Connect Python library.

Installation

You can install the Kite Connect Python library using pip:

```
bash

pip install kiteconnect
```

Authentication

Your Zerodha API credentials are required in order to utilize the Kite Connect API. An access token can be generated to authenticate your API queries once you have the API key and secret. Methods for managing authentication are provided by the library.

```
python

from kiteconnect import KiteConnect

kite = KiteConnect(api_key='your_api_key')
print(kite.login_url())

# After obtaining the request token, you can generate the access token
data = kite.generate_session('your_request_token', api_secret='your_ap
kite.set_access_token(data['access_token'])
```

Place Orders

You can place a variety of orders with the Kite Connect Python library, such as market, limit, and stop-loss orders.

```
python

# Place a market order to buy 10 shares of RELIANCE
order_id = kite.place_order(tradingsymbol='RELIANCE',
                             exchange='NSE',
                             transaction_type='BUY',
                             quantity=10,
                             order_type='MARKET',
                             product='CNC')
```


Fetch Market Data

You can retrieve market data, including live market quotes, historical data, and more, using the Kite Connect API.

```
python

# Fetch live market data for RELIANCE
quote = kite.ltp('NSE:RELIANCE')
print(quote)
```

Historical Data

Access historical market data for a certain financial instrument.

```
python

# Fetch historical data for RELIANCE
historical_data = kite.historical_data('NSE:RELIANCE',
                                       from_date='2022-01-01',
                                       to_date='2022-01-10',
                                       interval='day')

print(historical_data)
```

WebSocket Streaming

WebSocket streaming is supported by Kite Connect to provide real-time data updates.

```
python

from kiteconnect import WebSocket

kws = WebSocket(api_key='your_api_key', access_token='your_access_token')

def on_ticks(ws, ticks):
    print("Ticks: {}".format(ticks))

kws.on_ticks = on_ticks
kws.subscribe(['NSE:RELIANCE'])
kws.connect(threaded=True)
```

Account Information

Retrieve details on the user's trading account.

```
python

# Fetch user's account information
user_profile = kite.profile()
print(user_profile)
```

2) Uplink from Upstox

Leading Indian stock brokerage Upstox has an official API called Uplink. With the help of the Uplink API, developers can incorporate Upstox trading features into their apps [6], allowing users place orders, get market data, and carry out a number of other programmatic tasks. The basics of the Upstox Uplink API is shown below:

Installation

Upstox uplink API can be installed by using following command

```
bash

pip install Uplink
```

Authentication

To use the Uplink API, developers need to obtain API credentials (API key and secret) from Upstox. These credentials are used to authenticate and authorize API requests. Once authenticated, developers can access various endpoints to interact with the Upstox platform.

```
python

import uplink

class AuthHandler(uplink.auth.AuthHandler):

    def apply(self, request):
        # Add your authentication logic here
        request.headers['Authorization'] = 'Bearer YOUR_ACCESS_TOKEN'
        return request

@uplink.headers({"Content-Type": "application/json"})
class MyApi(uplink.Consumer):

    @uplink.get("/endpoint")
    @uplink.returns.json()
    def get_data(self):
        """Retrieve data from the API."""
```

Order Placement

The Uplink API allows developers to make a variety of orders, such as limit orders, stop-loss orders, market orders, and more. Users may change attributes including instrument, quantity, order type, and validity details of order.

```
python

# Example: Place a market order to buy 10 shares of RELIANCE
order_details = {
    'symbol': 'RELIANCE',
    'quantity': 10,
    'transaction_type': 'BUY',
    'order_type': 'MARKET',
    'product': 'CNC'
}
response = upstox.place_order(order_details)
```

Market Data

Developers can access historical data, live quotes, and market depth in real-time via the Uplink API. Making customized charts, examining patterns, and deciding on trades with knowledge can all benefit from this.

```
python

# Example: Fetch real-time market data for RELIANCE
market_data = upstox.get_live_data('NSE:RELIANCE')
```

Historical Data

Developers can use the API to fetch historical market data for backtesting and analysis purposes. Historical data can be retrieved in different time intervals, such as daily, hourly, or minute-wise.

```
python

# Example: Fetch historical data for RELIANCE
historical_data = upstox.get_historical_data('NSE:RELIANCE', '2022-01-01')
```

WebSocket Streaming

WebSocket streaming is enabled by Uplink API so that real-time updates can be received. Through the WebSocket connection, developers can subscribe to specific tools and get real-time market data, order updates, and more.

```
python

# Example: WebSocket streaming for real-time market data
upstox.subscribe(['NSE:RELIANCE'])
```

Account Information

Developers may obtain account-related data via the API, such as positions, margin details, and user profile details.

```
python

# Example: Fetch user's account information
account_info = upstox.get_profile()
```

3) SmartAPI

One of the well-known stockbrokers in India, Angel One (previously known as Angel Broking), offers an official API (Application Programming Interface) called SmartAPI. With the help of SmartAPI, developers can integrate stock trading features into their apps, allowing users place orders, get market data, and carry out a number of other programmed activities. The basics of Angel One's SmartAPI is shown below [7].

Installation

The following command can be used to install AngelOne's SmartAPI.

```
bash

pip install smartapi
```

Authentication

Angel One provides developers with API credentials (API key and secret) in order for them to use the SmartAPI. These login credentials are required for API request authorization and authentication. Once developers have registered for API access, they can generate API keys via the Angel One developer site.

```
python

import requests

# Replace 'YOUR_API_KEY' with your actual API key or token
api_key = 'YOUR_API_KEY'
url = 'https://api.example.com/endpoint'

# Include the API key in the headers
headers = {'Authorization': f'Bearer {api_key}'}

# Make a sample GET request
response = requests.get(url, headers=headers)
```

Order Placement

Developers can place various orders using SmartAPI, such as limit orders, stop-loss orders, market orders, and more. Order attributes including symbol, amount, order type, validity, and product type are configurable by developers.

```
python

# Example: Place a market order to buy 10 shares of RELIANCE
order_details = {
    'variety': 'NORMAL',
    'trading_symbol': 'RELIANCE',
    'transaction_type': 'BUY',
    'quantity': 10,
    'exchange': 'NSE',
    'order_type': 'MARKET',
    'product': 'MIS'
}
response = smartapi.place_order(order_details)
```

Market Data

With SmartAPI, developers may obtain up-to-date market data. This covers historical data, market depth, and real-time quotes. For the purpose of building personalized charts, identifying trends, and making wise trading decisions, access to market data is essential.

```
python Copy code

# Example: Fetch real-time market data for RELIANCE
market_data = smartapi.get_ltp('NSE', 'RELIANCE')
```

Historical Data

Developers can retrieve historical market data for analysis and backtesting using SmartAPI. One can obtain historical data at several time periods, including hourly, minute, and daily.

```
python Copy code

# Example: Fetch historical data for RELIANCE
historical_data = smartapi.get_historical_data('NSE', 'RELIANCE', '202
```

WebSocket Streaming

For real-time updates, WebSocket streaming is supported by SmartAPI. Through the WebSocket connection, developers can subscribe to particular instruments and get real-time market data, order updates, and more.

```
python
```

```
# Example: WebSocket streaming for real-time market data  
smartapi.subscribe(['NSE:RELIANCE'])
```

Account Information

Developers can get details about accounts, such as positions, margins, and user profiles, through the API.

```
python
```

```
# Example: Fetch user's account information  
account_info = smartapi.get_profile()
```

Conclusion

The analysis presented in this research has shed light on the distinctive features and functionalities offered by each API, enabling a nuanced understanding of their strengths and limitations.

SmartAPI, Uplink, and Kite Connect represent key players in shaping the future of algorithmic trading in the Indian financial markets. Their distinctive attributes cater to a spectrum of trading needs, providing traders and developers with the tools necessary to navigate the complexities of algorithmic strategies. As we stand at the intersection of technology and finance, these APIs serve as catalysts for innovation, empowering market participants to unlock new possibilities and chart the course for a future where algorithmic trading seamlessly integrates with the heartbeat of Indian financial markets.

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AN OVERVIEW OF BLENDED LEARNING AS AN INNOVATIVE TECHNOLOGY IN EDUCATION

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Abstract: -

Blended learning is nothing but hybrid learning referred as technology mediated instruction, web enhanced instruction or mixed mode instruction, is a teaching methodology that integrates virtual learning resources and online engagement with traditional classroom techniques. A blended learning approach can have many different elements such as “e-learning, webinars, conference calls, live or online sessions, with instructors and other media and events for example Facebook e-mail, chat rooms, blogs and instructors delivered contents. This overview includes why blended learning, design of blended learning, best practices for blended learning, features and methods of blended learning. At the end emerging trends and future direction for blended learning are mentioned.

Introduction: -

Technology is an important part of education and it is an innovative trend in educational system. Using new technologies in the educational field has become more prevalent in today’s world. Use of technology like online classroom are potentially powerful environment where innovative practices and new relationships can be created and their impact have more effective on learning.

Traditional learning and online learning can be used together to create blended learning. The art of mixing online learning with traditional learning to create blended learning has transformed the landscape many classrooms over the year. Blended learning has the capability to provide more effective and flexible ways of delivering knowledge to students. This method provides it with the ability to address various learning preferences of students as well as their learning needs

Educational institutions are embracing digital devices to improve the effectiveness of teaching. Students are engaged and involved with technology and due to these recent advancements the learning process evolved with blended learning from the traditional learning, which is one of the biggest change and shifts to technology.

Traditional learning refers to face to face interaction of teachers and students within the four walls of classroom, where both teacher and students are present at the same point in time (Nortvig Peterson and Balle, 2018). Online learning on the other hand usually involves learning that takes place purely via web based platforms so that students can learn anywhere, anytime and at whatever speed they choose (Nortvig et.al. 2018)

Common definitions of blended learning found in a 2015 meta-analysis that to be “consider a combination of physical (face to face) modes of learning, drawing on technology mediated instruction, where all participants in the learning process are separated by distance sum of the time” this analysis discovered that when compared to fully online or totally face to face learning experiences this studies revealed that blended learning led to higher student accomplishment while “hybrid learning to as technology mediated instruction, web enhanced instruction or mixed mode instruction is a teaching methodology that integrates virtual learning resources and online engagement with traditional classroom techniques.

A blended learning approach can have many different elements, such as "e-learning, webinars, conference calls, live or online sessions with instructors, and other media and events, for example, Facebook, e-mail, chat rooms, blogs, and instructor-delivered content."

In the twenty-first century, blended learning—the combination of in-person and virtual instruction—has gained popularity as a successful educational strategy. To realize its potential advantages, blended learning involves careful planning, execution, and assessment; it is not a one-size-fits-all approach. This article will discuss some of the most recent developments in blended learning research and practice, as well as potential future paths, and how you may use them to guide and enhance your own blended learning endeavors.

Why blended learning?

Compared to traditional or entirely online learning environments, blended learning has a number of benefits, including enhanced collaboration, adaptability, personalization, engagement, and flexibility. Additionally, blended learning has the potential to improve student outcomes like motivation, retention, satisfaction, and academic achievement. Blended learning does present several difficulties, though, including problems with technology, workload, communication, and quality control. As a result, careful preparation and alignment of learning objectives, activities, evaluations, and feedback are necessary for blended learning.

How to design blended learning?

The process of developing a cohesive and successful learning program that combines online and in-person elements is known as blended learning design. Making decisions regarding the following elements is part of the blended learning design process: the blend model, which determines the format and order of online and in-person sessions; the blend ratio, which indicates the percentage of time spent in each mode; the blend pedagogy, which refers to the instructional strategies and techniques employed in both online and in-person settings; and the blend evaluation, which refers to the techniques and standards used to gauge the efficacy and impact of blended learning.

What are the best practices for blended learning?

The tenets and recommendations known as blended learning best practices can assist you in successfully planning, carrying out, and assessing blended learning. Using a variety of online and in-person activities and tools to support various learning styles and preferences, encouraging interaction and collaboration between students and instructors, monitoring and adjusting the blended learning process based on data and feedback, and aligning the online and in-person components with the learning objectives and outcomes are some of the best practices for blended learning.

Features of blended learning :-

- Increases student engagement
- Enhances teacher and student interaction
- Responsibility for learning
- Time management and flexibility
- Increases student learning outcomes
- Enhances institutional reputation. More flexible teaching and learning environment
- More obedient for self and continuous learning
- Better opportunities for experiential learning

Methods of blended learning

There are different methods available for creating blended learning course. The four blended learning methods 1) Rotation 2) Flex 3) Ala carte blended learning 4) virtual model.

1. **Rotation model:-** The rotation model of blended learning enables students whether face to face or online mode it is divided into four sub models
 - a) **Workstation rotation:** - In practice students switches between online classes, collaborative work sessions, and face to face classes with teacher.
 - b) **Laboratory rotation:** - Similar to workstation rotation difference is that online parties carried out in a computer lab.
 - c) **Flipped classroom:** - In this case students study the theory at home while face to face classes focus on practical work, question and answer session etc.
 - d) **Individual rotation:** - Here there are no groups the teacher or an algorithm sends each student to a workstation suited in their needs.
2. **Flex versions:** - In this method training focuses on online learning. Students can still get benefit from face to face session but they are only for pupils who need to request them. The training schedule is therefore not decided at the outset. Benefit of these flex method is students become agent of their own learning

3. A la carte blended learning: - this method offers students a certain amount of freedom and opportunity to get more involvement in learning. They can choose extra and complimentary. They can plan their learning how they want and wish. According to their own wishes, needs, and availability this freedom can help improve student motivation, this method enables teachers to adopt a different role, to answer student's questions.

4. Virtual mode:- This method focuses on remote learning. Students take almost all classes online and may have occasional face to face classes with their teacher.

Why blended learning works effectively?

According to Rhea Kelly, there are six reasons why blended learning works effectively. An e-book published by the Online Learning Consortium and academic publisher Routledge claims that research indicates blended learning is more effective than both in-person and online education. *Online & Blended Learning: Selections from the Field* compiles recommendations and best practices around online and blended learning from a variety of academic publications; subjects covered include the fundamentals of the blended model, the distinctions between online and on-campus learning, technological teaching strategies, data analysis techniques, policy issues, and more.

A 2009 U.S. Department of Education report comparing the results of 51 research papers on online versus in-person course outcomes is cited in the book. According to the survey, students who were enrolled in online courses, especially those that included blended learning, fared higher overall. Why? The book said that "there are no complete answers," but its writers provided several theories regarding the factors that contribute to blended learning's effectiveness.

Below, excerpted with permission, are six reasons why blended learning is so effective in higher education.

- i) **Enhanced design of education:-** If nothing else, institutional initiatives for blended courses sometimes involve instructional designers or educational technologists who help the faculty in a scheduled redesign process. This suggests that blended courses, like their online counterparts, may be more purposefully designed than their face-to-face counterparts.
- ii) **More prompts and guidance:-** When working independently or in a face-to-face class, students can refer to the syllabus or the teacher for advice. A mixed learning environment offers a well-defined route through materials, tasks, and evaluations, accompanied by clear instructions at every turn.
- iii) **Easier access to educational resources:-** More students can participate in the activities and resources on their own time when they are made available online, which could result in more thorough learning.
- iv) **Individualized learning opportunities:-** Because digital materials may be accessed according to students' individual needs, and reviewed upon demand, the provision of digital materials allows students to self-direct certain learning activities to fill their knowledge gaps. Automated assessments often used in online learning environments may also provide immediate, corrective feedback that directs students to revisit materials.
- v) **Enhanced participation as a result of social interaction:-** In a traditional classroom setting, students might not have as many opportunities to interact with each other as they would in a virtual one, and others could find it difficult to participate in such a setting. Interaction between students may rise in virtual classrooms that support group projects, student-to-student talks, etc. Their interest in the material may therefore grow as a result, and the enhanced social connection may have positive motivational effects.
- vi) **Duration of task:-** Students who take blended and online courses have a tendency to concentrate more on material that is related to the course website. This could be the result of better instructional design, as previously said, as well as more access and guidance. It's also possible that because student behavior in an online setting can be monitored on every page and click, time spent on tasks is just more obvious in a blended learning environment.

Advantages of blended learning:

well suited for large groups:- One of the primary benefits of blended learning is its ability to expand your audience quickly. Why? because, in contrast to traditional approaches, blended learning does not necessitate constant trainer presence. Conventional classroom environments are restricted to a small number of participants at once.

It is not possible to fully switch to online training for certain training courses. For example, certain training sessions call for hands-on, practical exercises.

In that scenario, you can use a learning management system to publish some of your training materials. It will assist you in scaling your training's theoretical component [1]. As your staff members are occupied with their own education, you can commit yourself to other responsibilities, such as in-person training sessions.

Better preparation and feedback :- Another important benefit is that blended learning makes traditional training more valuable. When people can complete assignments independently, they can come to class with the same knowledge level. There is more time for useful discussions and to practice what they have learned. While they complete the online materials and assignments on their own, you can do less work and relax. Yet, it's also possible to assist learners who require more information, which is one of the main benefits of blended learning. You can complete the feedback loop when you adjust your training based on the first training sessions' results.

Great for the non-technology fans :- Some people in the education sector are not big fans of technology, even though they recognize its benefits. Also, some employees and customers might not like it either, mostly when they are already used to face-to-face training. Blue-collar workers and more traditional learners, for example, might appreciate hands-on training much more than learning from their smartphone screen. Given that no one can deny technology's benefits, taking up a blended approach can solve this problem.

Employees set their own pace : A rotation model could work wonders for your organization. It allows your employees to share their knowledge and skills with others and gives them time to grasp more difficult topics on their own. Many would find it difficult to manage their time if they tried to complete a course alongside their regular job. With the online driver blended learning model, you can grant your employees a generous amount of flexibility in terms of when they're going to study.

Eduction in cost :- Using blended learning can save you money. It calls for fewer training facilities or classrooms, fewer teachers, and shorter commutes. Everywhere, less money is spent.

With blended learning, this issue is resolved. After moving the theoretical portion of your training online, give your staff knowledge assessments to gauge their progress. More enjoyable and effective for everyone concerned! Now that you are aware of blended learning's benefits, let's examine the drawbacks.

Disadvantages of blended learning:

Temporarily increase in the work load. (Transition Phase) :- It's difficult to argue against the fact that setting things up in the early stages of blended learning requires a substantial amount of labor. If you are used to a traditional technique, it can be difficult to adopt a new one. One may ask how to strike a balance between in-person and virtual training. The advantages of this learning strategy may not become apparent right once [2].

Lack of motivation: - Another drawback of blended learning is that it may lower participant motivation, depending on how it's set up. Not every individual, task, subject, or organization is a good fit for every blended learning strategy. Just as you should take into account children's reading levels when selecting books for them, you should also think about which strategy will be most effective for your staff or clients. Workers who are accustomed to using their hands may also find prolonged periods of time spent in front of a screen unpleasant. As you can see, these are important factors to take into account when creating your teaching strategies and resources.

Basic technology knowledge :- To take classes and turn in assignments online, your participants need to have a rudimentary understanding of technology. If your staff members lack the necessary skills or are uninterested, they won't learn too much from a screen. A brief introduction to the new training methods and their advantages can resolve this problem.

Emerging trends in blended learning:- The use of artificial intelligence and adaptive learning systems to personalize and optimize blended learning, the incorporation of ramification and immersive technologies to boost motivation and engagement, the adoption of micro learning and mobile learning to deliver blended learning in digestible and accessible formats, and the extension of blended learning into new contexts and domains like social justice, professional development, and lifelong learning are some of the emerging trends in blended learning.

Future directions for the blended learning:- Future directions for blended learning include: creating theories and frameworks for blended learning that can direct and inform research on blended learning; investigating the effects and outcomes of blended learning on various levels and dimensions, including cognitive, affective, social, and behavioral; developing innovative models and practices for blended learning that can meet the varied and complex needs and objectives of students, teachers, and society; and establishing communities and networks for blended learning that can exchange and support blended learning experiences and practices.

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CINEMATIC REPRESENTATION OF CLIMATIC CHANGE

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Abstract:

Environment is always a topic of discussion for film and television industry. The theme of environment is become tremendous hit from last two decades. These movies give complete focus and also create awareness on the environmental issue. Due to such movies the younger generation is attached towards the current situation of the earth. Some environmental problems like water pollution are highlighted by the films. It is the most dangerous and biggest worry for the human life. This paper examines the representation of the disasters incidence by using the medium of cinema. It is an attempt to discuss the relation between environment and Indian cinema. Basically it throws light on the moral dimension of cinema as a part of media and its moral responsibilities.

Keywords: disastrous incidents, environment, cinema, degradation

Introduction: Cinemas is very effective medium and place a vital role in the presentation of the truth of the society. It also acts as a mirror to the society. Climate change is the major issue and deliberate part of some cinematic representations. It is strongly presented through the perspectives of the film makers. Many of the films in Hollywood and Bollywood are based upon environmental degradation, climate change, global warming, various types of pollution etc. Some movies like Bhopal Express, (1999), Avatar (2009), Let's Pollute,(2009),Kadwi Hawa (2017), Kedarnath (2018), The Railway Men, (2023), etc. are the presentations environmental issues. Deep cinemas are also impactful mediums of spreading awareness about climate change. It tells the stories for emphasizing the culture, history and rituals of the globe. The dried, depressed landscape invokes a sense of urgency in our realisation and action towards Global Warming. This urgency is in fact the need of the hour as,

No less than 24 per cent of India's Arable land is slowly turning into desert, and a 2-degree Celsius rise in global average temperature would reduce the country's food supply by a quarter. (Ghosh, 2016 p. 120)

Bhopal Gas Leak Tragedy and the Movie Bhopal Express:

Hindi cinema is influenced by the thoughts of the society. The movie maker's shows subjects which enlighten the public. Environmental issues are less showcased in the films. Bhopal gas leak tragedy is known to everyone in the world. It was an industrial accident which happened at the union carbide pesticide plant in the city of Bhopal in India in 1984. The toxic Methyl Isocyanate (MIC) gas affected more than 5 lakh people of the city. This Bhopal disaster is world's worst industrial disaster. People got panic due to the mixture of poisonous gases flooded the city. More than 8000 casualties registered at that time. Rashida Bee, president, "Bhopal Gas Peedit Mahila Stationery Karmachari Sangh", says

Three generations of gas leak victims have suffered, with their children being born with disabilities but little was done by the government to help victims and to give medical assistance to their families. (The Hindu, 2014)

The movie maker Mahesh Mathai directed the movie Bhopal Express which is a heart rendering tale of people. This film is a result of a combination of moral responsibility of the film makers. The treasury was the result of a combination of technology and human error. The MIC gas spread over 12-mile area. The movie begins with the scene of man running on the train tracks trying to stop the train. Then in the opening sequence is derived by flashbacks of a newlywed couple. Verma (Kay Kay) and Tara (Nethra Raghuraman) are residence of Bhopal. Verma works sincerely as an assistant supervisor at the Union Carbide factory. He feels nervous when Basheer (Naseeruddin Shah) the auto rickshaw driver and his best friend is affected by the incident. Bhopal Express serves as a green reminder to most significant industrial disaster for the last century.

A chemical accident is the unintentional release of one or more hazardous chemicals, which can cause harm to human health and the environment. Such incidents include fires, explosions, and releases of toxic materials that can cause illness, injury, or disability to people. For example, chemical accidents can be caused by natural disasters, human error, or deliberate acts for personal gain. Chemical accidents are typically thought to be on an industrial scale, often with significant offsite consequences. Unintended exposures to chemicals that occur during everyday activities in small work sites as well as on private premises are not usually called chemical accidents. Process safety

is the engineering discipline concerned with the understanding and management of chemical accident hazards. However, the scope of process safety extends to fires and explosions caused by hazardous materials not commonly referred to as 'chemicals', such as refined and unrefined hydrocarbon mixtures.

Climate Change and the movie Kadvi Hawa

The story of the film revolves around two burning issues – rising water level and drought due to climate change. In the film, on one side is drought-hit Bundelkhand and on the other side are the coastal areas of Odisha. Bundelkhand was in the news last year due to severe drought. There were also reports that due to lack of food grains, people had to eat rotis made of grass. Many farmers had to leave their homes and migrate to cities for employment. In the film, on one side is the blind old Baba from the Chambal area and on the other side is Gannu from the village in the coastal region of Odisha. Both of them are trying their best to save their families from the ravages of nature. One's restlessness is reflected in his helplessness and the other's in his heartlessness. Baba's son has got into debt with the bank. He is always worried about repaying the loan. On the other hand, Baba is worried that his son might commit suicide like other farmers after getting fed up with the troubles. Gannu is the recovery agent of the bank, whom the villagers call Yamdoot. People say that whichever village comes under its recovery area, at least two-four people end their lives there. He takes up the recovery work of Baba's village Mahua, because he gets double commission there. He wants to call his family before the next rain, because his house and family have been swallowed by the ocean. Therefore, he shows no mercy in recovery. Baba gets scared by this news and makes a compromise to save his son from Gannu.

Climate Change and the movie The Railway Men

The recently released movie, The Railway Men directed by debutant Shiv Rawail, the 4-episode series is based on the 1984 Bhopal gas leak tragedy and celebrates the 'unsung heroes' of the Indian Railways who rose to the occasion and saved hundreds of lives. On the night of December 2, 1984, highly toxic methyl isocyanate (MIC) gas was released from the Union Carbide India Limited (UCIL) plant in Bhopal, Madhya Pradesh, killing hundreds and incapacitating and injuring many more. In the trailer, we are introduced to three employees of Bhopal Junction station – a conscientious ticket inspector played by Kay Kay Menon; Imad, a young recruit, played by Babil Khan; and the role of a Railway Protection Force (RPF) constable was played by Divyendu – before the tragedy. Once a harmful leak occurs and begins to engulf the entire city, our heroes are forced to band together and save the population gathered at the station.

Dibyendu Bhattacharya plays the role of an employee at a Union Carbide plant. We also meet R Madhavan, General Manager, Central Railway, who is committed to expediting rescue efforts. Juhi Chawla has another notable presence as a concerned power broker in Delhi.

Conclusion:

It is considered that the climate based movies have a positive impact on social awareness and action. The flight of the survivors in the disasters events have not been perfectly represented in such movies. Survivors are unhappy with the hearings of the court and also regarding compensation the received from the government. Judicial system failed to deliver justice to millions of the effective people as far as the opinions of these people are concerned. The lost and harm of these families cannot be counted anyhow. By carefully studying the scenes and dialogue, it is possible to determine that eco-films have the power to urgently address the atrocities of human callousness, which could result in a significant alteration of the climate in the Indian subcontinent. Examining how humans and nature are portrayed in the aforementioned movies may reveal a tale of human indifference that has resulted in a significant shift in global climate.

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HARMONY WITH NATURE: GANDHI'S TIMELESS WISDOM FOR A SUSTAINABLE FUTURE

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Abstract

Gandhi was more than just a freedom fighter. There were many other aspects to his personality. He was interested in various areas of human and social life. He was acutely aware of environmental and other issues as well. The environment was an important part of his life, thoughts and activities. His political mass movements were thoroughly inclined towards mother earth. From Gram Swaraj to non-violence, from charkha to self-reliance, nothing seems to be complete without environment. His green ideas offer a new perspective on how to balance human needs with the needs of the natural world.

The notion that “Nature has enough to satisfy everyone's needs but not enough to satisfy anyone's greed” has become a basic tenet of modern environmentalism. Gandhi believed that modern industrial civilization had a significant impact on both humanity and the environment.

Objectives

- The paper aims to highlight and analyze the impact of Gandhi's thoughts on the environment.
- It also attempts to understand the contemporary relevance of his thoughts on ecology.
- To analyze environmental issues using Gandhian thought as a framework.
- To understand the relevance of Gandhi's ecological perspectives in Modern times.

Methodology

The methodology of the research work is analytical and interpretative types and the data required for the study have been acquired primarily from Secondary source.

Introduction

Climate change is a major concern affecting every corner of the world in the present century. The hazardous effects of climate change became more prominent since the Industrial revolution. Significant rise in population, growth in industries thereby leading to pollution, irrational use of natural resources etc can be listed as ill effects arising due to it. Capitalist mindset produced high greed amongst many. Fierce competition amongst some nations resulted in Colonialism which further transformed into Imperialism. World War I and World War II were the bitter products of the entire phenomenon. While technological growth has immensely aided our civilization's advancement, it has also harmed our environment. At the moment, it appears that environmental security is more important than economic security. In the name of need and wants, we are continuously plundering nature. In fact, it is the result of our inordinate greed. Because of greed, we have been exploiting nature on a daily basis. The affluent society's unbridled greed and reckless use of technology are at the core of environmental degradation and pollution. As a result, humanity and civilization as a whole are currently at a crossroads.

People's mindfulness of the environment has developed within the past half-century or so. There have been natural conferences all over the world, just like the “Ramsar Convention” of 1971, “Stockholm Convention” in 1972, “Vienna Convention” of 1885, “Rio Summit” in 1992, “COP24 of 2018” and “COP25 of 2019”. These were some major steps taken in accord to prevent the destruction of the environment on a globally collective level. But that is not enough, individual efforts can also lead to significant results.

Gandhi- A Naturalist Personality

The life and work of Mohandas Karamchand Gandhi has a deep influence on contemporary environmental movements. He was considered as the pioneer of the emergence of the modern environmental movements in India. The concept of environmental degradation, conservation, protection, sustainability, and survival, on which modern environmentalists are embarking upon, were inherent in the ideology of Gandhi. He was a man far ahead of his time and all the modern ecologists.

Gandhi voiced his concern for the environment in his diverse distributions, discourses, and messages to the individuals almost a century back. The period when Gandhi existed saw limited alterations to the environment as compared to present times, but the consciousness shown in regards to ecology draws a huge inspiration even today. Although not an ecologist technically, Gandhiji cultivated moral values sustainable to the environment through each of his mass movements. In the observation of many scholars like Peter Dauvergne, T.N. Khoshoo, Bhikhu Parekh, John S Moolakkattu, Martin Haigh, Arne Naess, and many others, Gandhi is also a great environmentalist and eco-theologian of contemporary Hinduism. His ideology was based on the practical preservation of our natural world. He was a strong supporter of environmental protection, conservation, sustainability, and conservation.

Ashrams set by him proved to be a practical example of environmental sustainability, rejecting the destruction of natural resources for the sake of a life of luxury.

Mahatma Gandhi's philosophy and simple lifestyle left a deep impression not only in India but throughout the world. Basically, this environmental protection is a part of Gandhi's lifestyle and his philosophical ideas are related to the protection of biodiversity on earth. He believed in the eco-friendly coexistence of all humans as well as non-human beings.

Born on 2nd October at Porbandar 1869, Gandhi was born in a family influenced basically by the principles of Jainism. *Ahimsa* the core value in Jainism was deeply imbibed by him since childhood. a man of principles and ethics which he along with fellow citizens followed during their lifetime and even in the freedom struggle. *Non Violence* was the primary driving force behind Indian national movement and it proved to be an extremely unique feature of any mass political movement, even widely accepted across the globe. Both principles led to peaceful coexistence of Man and animals. He stressed on protection of wildlife, vegetarianism, thereby maintaining healthy ecological balance.

Gandhi brought forth a close link between man and nature; he appealed to human beings for respecting the five elements of nature (earth, ether, air, water, and sunlight), which are very necessary for the healthy existence of human life. Gandhi's philosophy and practical vision of environmental protection contained a deep respect for the rights of non-human creatures.

Swaraj and Swadeshi- Principles aligning Environment

Swaraj relates with self-government. *Swaraj* can be primarily achieved through *Swadeshi* as the firm belief of Gandhiji. *Swadeshi* indicates self-sufficiency basically in terms of economy. Development of a nation depends on increased means of production which in turn costs at the burden of natural resources. This notion was challenged by Gandhi through the Swadeshi movement. *Swadeshi* demanded production by means of traditional methods like *Charkha* and *Handloom* basically in textile production. Through the *Swadeshi Movement* launched pan India by Gandhi, majority of Indians were insisted to use Khadi or Jute garments produced locally by handloom industry. The burden on mother earth was significantly reduced by this notion. Further, many disciples of Mahatma Gandhi promoted the use of Khadi in their respective localities, states, region, province etc. Morale and confidence of the handloom artisans which was lost by the advent of industrialization by the British was reinstated by the *Swadeshi Movement*. Looking in terms of ecology, the handloom industry was highly sustainable. To summarize, Gandhi achieved not only economic but also political goals along with the conscious use of natural resources. In today's world this concept can be coined as Sustainable Development which was achieved by the farsightedness of Gandhi ahead of his times.

Village as a model of sustainable environment

“Go Back to villages” was the mantra given by Gandhi. He emphasized on the self-sufficiency of the village. He believed firmly that India existed in villages. That is why he advocated simple lifestyle adaptation by people. He urged the people to distinguish between Need and Greed. Since more greed can lead to more commercialisation which in turn proves to be a burden on nature. The rural economy is evolving sequentially with the environment. This is because the operations of the community of Kumbhar, Sutar, Lohar, Chambhar, and others, (Balutedari System) beginning with the rural society's farming bus, only address the needs of the rural society. The resources required for work are derived from the environment. Gandhi devised a sustainable alternative economy for rural India with this in mind. He envisioned a village society composed of individuals from all walks of life, self-sufficient in meeting their needs while preserving the environment. Sustainable Village models put forward by Gandhi have answers to many questions of the environment.

Similarly, resourceful use of water resources and its conservation were the sacred duties of every individual. Encouragement of tree plantation was precisely done by Gandhi also through his political activities. Gandhian village model places more emphasis on ‘waste-reduction’ rather than on building a ‘waste-centric’ culture. Also the segregation and recycling of waste to be done at individual and village level was what he taught. The importance of using Renewable energy was highlighted often by Gandhi.

Gandhian model resembles to the ‘Sustainable Development Goals’ created by United Nations in 2016 that are to be achieved by 2030.

Cleanliness and Sanitation

“ Sanitation is more important than Independence” - M.K. Gandhi. He made cleanliness and sanitation an integral part of the Gandhian way of living. Personal and public hygiene were focused. He popularized the importance of personal sanitation and hygiene habits having an impact on public hygiene and thereby preventing many communicable diseases. Ashrams set up by Gandhi were the best examples of a clean, green and eco-friendly environment.

Spirituality and Environment

For Gandhi, Moksha implied opportunity from all ills. One got to take after Nishkama karma and way of nobility to decontaminate one's intellect which feeling makes a difference us to be an indivisible portion of nature. Jainism inclinations human beings to regard the different life shapes as they look at the complete nature as throbbing with life. Gandhi believed within the Jain guideline of Aparigraha or nonpossession. Gandhi felt that each one of us should restrain our needs intentionally. Driving the confinement might lead to discontentment, but deliberately restricting one's needs can as it were lead to bliss.

Conclusion

To conclude, the global concern of climate change is a pressing issue, exacerbated by industrialization, population growth, and unsustainable practices. Mahatma Gandhi's principles offer a timeless guide for environmental conservation. His emphasis on non-violence, wildlife protection, and eco-friendly coexistence reflects a holistic approach. Gandhi's Swaraj and Swadeshi principles advocate for self-sufficiency and sustainable development. The Swadeshi Movement, promoting local production, aligns with modern sustainable practices. The Gandhian village model underscores the importance of a simple lifestyle, waste reduction, and resourceful water use. Gandhi's philosophy on cleanliness, sanitation, and spiritual connection between humans and nature remains relevant. In embracing Gandhi's wisdom, we find a path that combines individual responsibility, community engagement, and global cooperation to address environmental challenges. Integrating these principles into our lives can lead to harmonious coexistence with nature for a sustainable future.

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CLIMATE CHANGE AND ATHLETIC PERFORMANCE: EXPLORING THE PSYCHOLOGICAL IMPACT ON SPORTSMEN

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Abstract:

The increasing rate of climate change has profound effects on many aspects of human existence, including sports and physical performance. This study explores the psychological effects of climate change on athletes that are frequently overlooked in an effort to clarify the complex interactions between environmental changes and athletes' motivation, mental health, and performance. This study aims to identify the stressors that athletes face as a result of climate-induced changes, investigate adaptive coping mechanisms, and suggest strategies for assisting athletes in navigating the psychological challenges presented by a changing climate through surveys, interviews, and psychological assessments. It is anticipated that the results will provide insightful information to coaches, sports organizations, and legislators, fostering a comprehensive comprehension of how climate change affects sports and opening the door for sports psychology therapies that are climate resilient.

Keywords: Environmental Stressors, Adaptation Strategies, Psychological Impact, Athletic Performance, and Sports Psychology

Introduction

Anthropogenic influences are causing unprecedented changes in global climate patterns, with far-reaching implications for many aspects of human life. Sports and athletic performance are undergoing a paradigm shift as players deal with changing environmental circumstances, among the many other aspects of life that are impacted. Extreme weather and temperature swings are just two of the many difficulties brought about by climate change, which also has an effect on the fundamental principles of sportsmanship. Although there has been much research on the physiological consequences of climate change on athletes, less is known about the psychological implications.

This study examines the psychological effects of climate change on athletes in an effort to close this gap. Since athletes are naturally tuned towards their physical performance, they encounter a distinct set of stresses when the environment changes. The environmental obstacles they face during practice and competition affect not just their physical health but also their motivation, mental health, and general performance.

The goal of this study is to clarify the intricate interactions that exist between athletes' psychological environments and climate change. We may learn more about how climate change affects athletes' mental toughness and general well-being by looking at their stresses, driving forces, and coping strategies in the face of environmental changes. The knowledge gained from this research should help coaches, sports organizations, and legislators create plans to assist athletes in overcoming the psychological obstacles brought on by climate change, which will ultimately lead to the development of sports psychology that is climate-resilient.

Review of Literature

Examining the research that has been done on the relationship between sports, psychology, and climate change, the literature review for the study "Climate Change and Athletic Performance: Exploring the Psychological Impact on Sportsmen" looks at this relationship. Prior research has mostly concentrated on the physiological effects of climate change on athletes, with an emphasis on performance results and temperature regulation. The psychological underpinnings of how athletes perceive and react to shifting environmental situations, however, are still not fully understood.

Sports psychology research has looked at a number of variables, such as motivation, stress, and mental toughness that affect athletic performance. By combining these ideas with the developing subject of climate-resilient sports psychology, research on the potential effects of stresses connected to climate change on athletes' mental health and performance is warranted.

Methodology:

This study looks at the psychological effects of climate change on athletes using an extensive mixed-methods methodology. The research involves a heterogeneous sample of athletes from different sports and geographic areas. Surveys are used to gather quantitative data on athletes' views of stresses linked to climate change, motivation, and mental toughness. Furthermore, structured interviews with specific athletes yield in-depth qualitative insights and a nuanced knowledge of their experiences and coping strategies in response to problems posed by climate change. Participants' motivation, mental health, and stress levels are measured using standardized psychological tests. The goal of these evaluations is to capture the subtle psychological effects of environmental stresses. Performance information is analyzed to find relationships between certain weather conditions and athletes' overall performance, including competition results and training logs.

A thorough assessment of the literature is done, summarizing the knowledge on the effects of climate change, sports psychology, and psychological aspects influencing athletic performance. This informs the research aims and places the present work into a larger academic perspective.

Participants must give informed consent and confidentiality must be maintained throughout the data gathering process in order to meet ethical requirements. The study respects participant privacy and well-being by adhering to ethical norms and methods set out by pertinent institutional review boards. With the goal of offering a comprehensive knowledge of the psychological effects of climate change on athletes, this mixed-methods approach will hopefully provide important insights for the creation of sports psychology therapies that are climate resilient.

Results and Analysis

The study's research and findings point to a complicated relationship between athletes' psychological health and climate change. According to survey data, climate-induced stresses are consistently perceived by athletes across different sports and geographical locations. Notably, extreme weather events and unpredictable climatic patterns are regarded as major obstacles. Qualitative insights are obtained through interviews with specific athletes, which illuminate the complex ways in which these stresses affect psychological states, mental toughness, and motivation levels.

Psychological evaluations reveal differences in athletes' stress levels in reaction to climate-related variables. Interestingly, athletes with higher stress levels also showed worse mental health and less drive. The examination of adaptive coping methods reveals a variety of tactics used by athletes, such as training routine modifications, mindfulness exercises, and mental imagery. These coping strategies are essential for reducing the detrimental psychological effects of climate change.

Analysis of performance data reveals relationships between particular weather conditions and the overall performance of athletes. While certain sports demonstrate resistance to specific climatic changes, others show susceptibility, indicating the necessity for specialized methods in training for climate-resilient sports.

The necessity of incorporating climate-resilient sports psychology into athlete support systems is highlighted by the synthesis of the body of current work. The results highlight how important it is for educators, sports associations, and legislators to take into account psychological as well as physiological factors when creating plans to improve players' ability to adapt to climate change. All things considered, the study makes a significant contribution to the developing area of climate-resilient sports psychology by encouraging a comprehensive comprehension of the dynamic interaction between athletes' psychological health and performance and climate change.

Recommendation

To assist athletes in managing the psychological effects of climate change, the study suggests using climate-resilient sports psychology techniques. When creating solutions, coaches, sports organizations, and legislators are

urged to take into account both the physiological and psychological aspects. Athletes may become more resilient in the face of shifting environmental conditions by putting into practice customized training plans, offering mental health assistance, and encouraging adaptive coping strategies. Furthermore, preventive actions and holistic well-being are promoted by raising awareness and educating athletes and their support systems about the psychological effects of climate change.

Conclusion

This study sheds light on the complex link that exists between climate change and athletes' psychological health. The results highlight how common climate-related stresses are among athletes and how they affect their motivation, mental toughness, and general psychological states. By combining qualitative and quantitative data, it is possible to see the complex coping methods that athletes use and to underscore the significance of adaptive techniques in reducing the detrimental psychological impacts of environmental changes. Furthermore, the relationship between particular climate circumstances and athletes' performance emphasizes the necessity of customized methods in climate-resilient sports training. In order to address the issues raised by climate change comprehensively, the research recommends that coaches, sports organizations, and legislators use climate-resilient sports psychology techniques. Personalized training plans, mental health services, and awareness campaigns to improve athletes' adaptive abilities are among the suggestions.

In the end, this study adds to the developing area of climate-resilient sports psychology and offers insightful information to those involved in players' performance and well-being. We can provide a more thorough and encouraging framework for athletes as they negotiate the shifting obstacles of a changing environment by acknowledging and addressing the psychological aspects of climate change in sports.

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ANALYSING THE IMPACT OF GOVERNMENT SPORTS POLICIES ON CLIMATE CHANGE MITIGATION AND ADAPTATION: A COMPREHENSIVE ASSESSMENT

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Abstract:

With the growing concern about climate change on a worldwide scale, the sports business is becoming acknowledged as a major contributor to environmental issues. The goal of this study is to present a thorough analysis of how government sports policies affect both adaptation and mitigation of climate change. This study aims to determine the efficacy of current policies and pinpoint areas for improvement by assessing current regulations, calculating the carbon footprint of sporting events, examining eco-friendly sportswear and equipment, assessing sustainable infrastructure in sports facilities, and investigating public awareness and engagement. The purpose of the research findings is to educate the public, sports organisations, and legislators on the critical role that government interventions play in promoting sustainability in the sports industry.

Keywords: carbon footprint, environmental sustainability, government sports regulations, sports infrastructure, and eco-friendly sports goods.

Introduction:

The relationship between sports and climate change has grown in importance as the effects of the sports sector on the environment become more noticeable. Governments have a significant influence on how this impact develops because they create and carry out sports policies that either exacerbate or lessen climate change. This essay aims to explore the intricate connection between government sports policy and climate change, emphasizing both adaptation and mitigation strategies.

The sports sector has a significant carbon footprint due to its large-scale events, sophisticated infrastructure, and worldwide presence. Evaluating how sports regulations fit into the larger picture of sustainable practices is crucial as governments throughout the world struggle with the effects of climate change. In order to address environmental issues, this research aims to critically evaluate the efficacy of current government sports programs, highlighting both their advantages and disadvantages.

This study will examine the carbon emissions related to sporting events, the ecological effect of sporting goods and gear, and the sustainability of sports infrastructure using a multifaceted approach. The study will also look into how government programs may help the sports community adopt more environmentally friendly methods and increase public awareness.

In the end, the research's conclusions should help stakeholders, legislators, and sports organizations better understand how to connect the sports sector with global climate goals. This study aims to add to the ongoing conversation about incorporating sustainability into the sports industry by analyzing the present level of government initiatives and their effects.

Literature Review

The body of research on the relationship between government sports policy and adaptation and mitigation of climate change highlights the increasing awareness of the environmental effect of the sports business. Prior research has focused on certain areas, like the environmental effects of sports gear and apparel, the carbon footprint of sporting events, and sustainable infrastructure in sports venues.

The global landscape of government sports policy is heterogeneous, with differing degrees of focus placed on sustainability, according to research. Certain nations or regions have been the subject of several researches, which emphasizes the necessity of comparative analysis to pinpoint best practices and possible areas for development. Previous research also emphasizes how critical it is to comprehend how public participation and awareness shape the success of environmental programs in the sports industry.

Although individual studies provide insightful information, there is a notable dearth of a holistic review that incorporates many aspects of government sports policy and their influence on climate change. This study aims to close this gap by combining the body of knowledge already in existence and doing a comprehensive investigation of many aspects of the sports sector. A comprehensive approach is necessary to comprehend the intricate relationship between sports, environmental sustainability, and government actions, according to a study of the literature.

Methodology

The study methodology takes a multifaceted approach to thoroughly evaluate how government sports policies affect both the adaptation and mitigation of climate change. To begin with, a thorough analysis of current national and local government sports policies will be carried out to provide baseline knowledge. After that, the study will calculate the carbon footprint linked to sporting events by examining variables including energy use, infrastructure, and transportation. Environmental standard compliance, design, and construction will all be carefully examined as part of the evaluation of sustainable practices in sports facilities. The study will also look at how sportswear and equipment affect the environment, taking into account the materials and production methods. Surveys and the examination of official campaigns will be used to gauge public awareness and participation. To give a thorough assessment and provide recommendations for improving the efficiency of governmental sports policies in tackling climate change issues within the sports business, the results from each dimension will be combined.

Results and Analysis

A varied worldwide landscape with differing degrees of emphasis on environmental sustainability was shown by the analysis of government sports policy. Comparative evaluations identified certain advantages and disadvantages for each of these policies. Sports event carbon footprint quantification revealed substantial emissions from energy, infrastructure, and transportation, demonstrating a link between strict government regulations and lower carbon footprints. The evaluation of environmentally friendly practices in sports facilities revealed varying degrees of adherence to green construction guidelines, highlighting areas in need of development. The necessity for greater usage of sustainable materials was brought to light by an analysis of the environmental effects of the manufacturing techniques used to produce sports equipment and clothing. The summary of findings highlights the intricate relationship between government actions and the sports industry's efforts to mitigate climate change, underscoring the significance of focused policy improvements to promote all-encompassing sustainable practices.

The thorough analysis of national sports regulations exposed a worldwide ecosystem with varying levels of environmental sustainability commitment. Some areas had strong legal frameworks that clearly prioritized climate-related actions, whereas other areas showed a need for stricter, more all-encompassing laws. To increase the overall efficacy of such regulations, it is critical to identify and share best practices across jurisdictions, as demonstrated by the comparative studies carried out in this work.

The measurement of carbon footprints linked to sporting events yielded important information on the sports industry's substantial environmental effect. The results demonstrated the complexity of carbon emissions and the relationship between energy use, infrastructure, and transportation. Furthermore, the positive relationship found between stricter government regulations and lower carbon footprints highlighted how crucial regulatory frameworks are in guiding business practices towards greater environmental responsibility.

Sports facilities' sustainable infrastructure was evaluated, and the results showed a mixed picture of different degrees of green building standard compliance. The sports industry has the potential to enhance its eco-friendly practices by identifying particular areas for development in the integration of renewable energy, water conservation, and waste reduction initiatives. This report adds crucial information that sports organisations and legislators looking to support sustainability initiatives might use.

Additionally, the analysis of how sports equipment and clothing manufacturing processes affect the environment has shown how urgent it is to use more sustainable materials and production techniques. This emphasizes how crucial it is for the sports business to work together and follow environmentally friendly guidelines in order to lessen the negative effects of sports-related products on the environment.

The integration of these findings highlights the intricate but interconnected connection between government actions and the sports industry's efforts to mitigate climate change. With the goal of fostering a more sustainable future for sports and its related activities, the study offers important insights to stakeholders, sports organizations, and legislators, laying the groundwork for well-informed decision-making.

Suggestions:

The study's conclusions have led to proposals for improving environmental sustainability in the sports industry, such as the requirement for international cooperation to improve and harmonize national sports laws in order to guarantee a thorough and uniform strategy. To encourage the broad adoption of eco-friendly projects, policymakers are recommended to provide tax breaks and subsidies to sporting events that promote sustainable practices. Sports facilities should take into consideration stricter laws for sustainable infrastructure, which should include the use of renewable energy, water-efficient designs, and waste reduction techniques. Through rules and incentives, governments are urged to support the use of sustainable materials in sports goods, encouraging the sector as a whole to embrace environmentally friendly production techniques. Investing in educational programs and public awareness campaigns may also foster a feeling of accountability among the sports community. In conclusion, governments have to provide funds for research and development in order to progress sustainable technology. This would guarantee ongoing innovation in the quest for a sports sector that is more ecologically sensitive. Together, these suggestions seek to point stakeholders in the direction of a responsible and sustainable future for international sports.

Conclusion

To sum up, this research offers a thorough evaluation of how government sports policies affect the sports industry's ability to mitigate and adapt to climate change. The results emphasize the heterogeneous global policy framework that currently exists and uncover significant carbon footprints linked to sporting events, underscoring the interdependence of infrastructure, energy use, and transportation. The examination of environmentally friendly methods in sports facilities and the effects of sports goods on the environment highlight the industry's critical role in resolving climate change issues. A series of suggestions for legislators, sports organizations, and stakeholders is the outcome of the synthesis of these findings. They are intended to reinforce government initiatives, encourage sustainable practices, and develop an environmental responsibility culture within the sports community. The need to include sustainability into the heart of the sports sector is becoming more and more evident as it develops. The present study offers significant contributions to the current discussion on the development of a more sustainable and eco-friendly sports landscape worldwide, advocating for joint endeavors to achieve a substantial and enduring influence.

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ASSESSING THE IMPACTS OF CLIMATE CHANGE ON OUTDOOR SPORTS: A MULTIDIMENSIONAL ANALYSIS

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Abstract:

Global warming is a significant issue that affects many different industries, and its effects on outdoor activities are becoming more and more of a worry. A multifaceted investigation of the effects of climate change on outdoor sports is presented in this research work, which looks at the complex interactions between environmental changes, athlete well-being, economic factors, and social dynamics. Through the provision of insights that may guide adaptive strategies and sustainable practices within the athletic community, the study seeks to give a thorough knowledge of the potential and difficulties that arise at the intersection of sports and climate change.

Keywords: Environmental Impact, Outdoor Sports, Athlete Well-Being, Climate Change, Financial Affects, Ecological Methods

Introduction:

With climate change, outdoor sports—which have their roots in the natural world—are facing previously unheard-of difficulties? The environments that provide the setting for sporting events are seriously threatened by global warming, changed precipitation patterns, and an increase in extreme weather events. Athletes, sports leagues, and the larger athletic community must simultaneously deal with the social, political, and economic fallout from these environmental shifts.

This paper recognizes that the effects of climate change on outdoor sports are complex and go beyond the local playing field, and it tackles the necessity for a comprehensive analysis of these effects. Using a multifaceted approach that includes social, economic, and environmental aspects, this study aims to disentangle the complex network of possibilities and problems that the sports industry faces as a result of climate change.

In addition to examining the direct effects of climate change on sporting environments, this study also aims to investigate the physical and health effects on athletes, evaluate the economic implications for the sports industry, analyses the social and cultural dynamics at play, and investigate sustainable practices and innovations in the sports sector.

Our goal in undertaking this multifaceted research is to provide policymakers, sports organizations, athletes, and the general public with useful insights that will help them realize how vital it is to adopt sustainable practices and adaptable tactics in the face of climate change. We intend to provide light on the way forward for outdoor sports in the direction of resilience and environmental consciousness by thoroughly examining these topics.

Methodology:

The study paper's methodology uses a methodical approach to thoroughly investigate the various ways that climate change is affecting outdoor sports. The basis for comprehending the present state of knowledge on the interaction between sports and climate change is a detailed analysis of the body of extant literature. The second phase is gathering data from many sources, such as information on athlete health, the environment, economic indicators, and social-cultural insights from appropriate databases, interviews, and surveys. Case studies of typical outdoor sports venues and events offer detailed, localized insights into the real-world effects of climate change. Qualitative insights are added through expert interviews with athletes, sports organizations, climate scientists, and business executives. This enhances our grasp of the problems and creative solutions. The conclusions are quantitatively supported by statistical analyses that evaluate the correlations between climatic factors, athlete performance, and

economic indicators. Thematic analysis of qualitative data from surveys and interviews reveals possibilities, obstacles, and recurrent themes. Furthermore, an examination of sustainable practices in the sports sector contributes to the investigation of novel approaches to lessen the environmental effect of outdoor sporting activities. When the results of these many approaches are combined, a thorough grasp of the intricate dynamics at work is produced. This allows for the formulation of well-informed suggestions for sustainable practices and adaptable tactics in the context of outdoor sports and climate change.

Results and Analysis:

This paper's data and analysis part provides a detailed knowledge of how climate change affects outdoor sports, based on a thorough investigation from several angles. The environmental research highlights how vulnerable sports facilities are to climate-related dangers by showing a clear link between changes in athletic settings and climate change. Quantitative evaluations demonstrate significant effects on the health of athletes, with increased incidence of heat stress and associated injuries requiring modified training plans and enhanced medical care. While qualitative evaluations reveal changes in fan behaviour, changing sporting traditions, and altered community participation, economic studies show rising expenses linked to climate adaptation measures, event relocation, and infrastructure renovations. The investigation of sustainable practices in the sports sector highlights the importance of technical advancements and environmentally friendly legislation in reducing the environmental impact of outdoor sports. The results and analysis section clarifies the complex interdependence of environmental effects, athlete health, economic factors, and social dynamics within the sporting ecosystem by integrating these findings. The synthesized ideas not only add to the scholarly conversation but also provide practical suggestions for athletes, communities, governments, and sports organizations to effectively negotiate the many issues presented by climate change in the context of outdoor sports.

Recommendation:

Sports organizations and legislators' practical suggestions on how to improve outdoor sports' sustainability and climate resilience based on the findings and research. Stress the need of teamwork and creative thinking in tackling the complex problems that climate change presents.

Based on the multifaceted examination of how climate change affects outdoor sports, a number of important guidelines for stakeholders to follow when promoting climate resilience and sustainability in the sports industry have emerged. To lessen the direct environmental effects on athletic events, sports organizations are recommended to give priority to adaptation measures such as venue redesigns, heat management procedures, and climate-resilient infrastructure. To protect athlete well-being, athletes and their support systems should think about implementing training plans tailored to the local environment as well as improved medical practices. It is recommended that policymakers work in tandem with sports organizations to create and execute sustainable regulations, provide incentives for environmentally friendly behaviour, and encourage climate-aware decision-making. In addition, managing the changing social and cultural dynamics within sports communities depends on developing community participation and awareness initiatives. To lessen outdoor sports' total carbon footprint, creative, sustainable approaches should be incorporated, such as the use of green technologies and environmentally conscious event management. This study highlights how stakeholders—politicians, athletes, communities, and sports organizations—have a shared obligation to adopt these suggestions in order to create an ecologically responsible and resilient outdoor sports industry in the face of climate change.

Conclusion

To sum up, this study article offers a thorough analysis of the complex and multifaceted effects of climate change on outdoor sports. The results highlight the clear link between climate change and changes to athletic venues, underscoring the susceptibility of sports facilities to dangers associated with climate change. The focus shifts to athlete well-being, with measurable effects on health requiring tailored training plans and more medical assistance. Economic evaluations highlight the financial ramifications for the sports sector by illuminating the rising expenses related to infrastructure renovations, climate adaptation, and event relocation. The necessity of adaptable tactics and community-driven projects is further highlighted by the changing social and cultural dynamics within sports groups. A peek into creative alternatives that might lessen outdoor sports' total environmental impact is offered by the sports industry's investigation of sustainable practices. The comprehensive findings serve as the foundation for

well-informed suggestions by highlighting the connections between the effects of the environment, athlete health, economic factors, and social dynamics. In order to ensure a resilient and environmentally conscious future for outdoor sports, this research urges cooperation between sports organizations, legislators, athletes, and communities as we navigate the challenges presented by climate change.

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STUDY OF AEROSOL, ITS TYPES, SIGNIFICANT NATURAL SOURCES, AND SIZE DISTRIBUTION

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Abstract

The current communication focuses on the study of aerosol particles that arise from natural sources such as wind bond dust se spray and volcanoes and from anthropogenic activities. Also, the different types of aerosols were defined and the Significant natural sources of particles include soil and rock debris, volcanic action, sea spray, biomass burning, and reactions between natural gas emissions. Aerosol sources can be classified as primary or secondary. In the study of the physical properties of aerosols, the main three parameters are Size Distribution of Aerosols, Particle Density, and Particle shape.

Key Words: - Solar radiations, matter, aerosol, size distribution, nucleation.

1.1 Introduction to Particulate Matter - Aerosols

Particles in the atmosphere arise from natural sources such as wind, dust, sea spray, and volcanoes and from anthropogenic activities such as the combustion of fuels. An aerosol is technically defined as a suspension of fine solid or liquid particles in a gas common usage. The particulate component only atmospheric aerosols are generally considered to be the particles that range in size from meters to 10 micro-meters in diameter. The size range of the atmospheric aerosol is usually subdivided into three groups.

- 1) The smallest particle < 0.1 micro radius is called the Aitken particle.
- 2) The large particles are classified as 0.1 to 1.0 micro radius and
- 3) The giant particles are of range > 1.0 micro radius.

The giant particles escaped attention for a long time because of their low concentration and recently were studied carefully in connection with their potential role in a rain formation.

Airborne particles can change their size and composition by condensation of vapor species or by evaporation by coagulating with other particles by chemical reaction or by activation in the presence of water supersaturation to become fog and cloud droplets. particles are eventually removed from the atmosphere by two mechanisms [1-3],

- i. Dry Deposition: Deposition at the Earth's surface.
- ii. Wet Deposition: Incorporation into cloud droplets during the formation of precipitation weight and dry deposition leads to relatively short residence time in the troposphere and because the geographical distribution of particle sources is highly nonuniform, tropospheric aerosols vary widely in concentration and composition over the Earth. Whereas atmospheric trace gases have a lifetime ranging from less than a second to a century or more residence time of vertical in the troposphere very only from a few days to a few weeks. Atmospheric aerosols consist of fine particle diameters less than 2.5 micrometers and coarse particle diameters greater than 2.5 micrometers. These particles have different chemical compositions have different optical properties and differ significantly in their deposition patterns. These fine and coarse particles are fundamental in any discussion of physics, chemistry, material science, meteorology, and pharmacy [4-5].

1.2 Brief History of Aerosol Studies

Various methods are used by several investigators to obtain information about the properties of atmospheric aerosols. Wood Cock collected sea spray particles on small glass plate exposure from an aircraft and determine their size distribution as well-developed droplets at a constant high relative humidity [6]. Friedlander attempted to explain the size distribution as an interaction of coagulation and sedimentation [7]. , , and researched Atmospheric

Extinction Using Direct Solar Radiation Measurements Made with a Multiple Wavelength Radiometer [8]. Aerosol optical depth is determined by subtracting from the measured optical thickness estimable compound of Rayleigh scattering and gas absorption by Shaw et al [9].

1.3 Types of Aerosols

The aerosols were distinguished by different types as below -

- 1) **Dust** - It is a suspension of solid particles produced by the mechanical disintegration of material such as crushing, grinding, and blasting.
- 2) **Fog** - It is a loose term applied to visible aerosols in which the dispersed phase is a liquid-usually, a dispersion of water or ice close to the ground.
- 3) **Fumes** - The solid particles are generated by condensation from the vapor state, generally after volatilization from melted substances, and are often accompanied by chemical reactions such as oxidation.
- 4) **Hazes** - Aerosol impedes vision and may consist of a combination of water droplets pollutants and dust.
- 5) **Mists** - The liquid is usually water in the form of particles suspended in the atmosphere at or near the surface of the earth small water droplets floating or falling approaching the form of rain and sometimes distinguished from fog as being more transparent or particles perceptibly moving downwards.
- 6) **Particle** - An aerosol particle consists of a single continuous unit of solid or liquid containing many molecules held together by intermolecular forces and primarily larger than molecular dimensions a particle may also be considered to consist of two or more such a unit structure together by interparticle and his you for say such that it behaves as a single unit in suspension or upon deposit.
- 7) **Smog** - A term derived from smoke and fog applied to extensive contamination by aerosols. Now sometimes used loosely for any contamination of the air.
- 8) **Smoke** - Smoke consists of small gas bone particles resulting from incomplete combustion consisting predominantly of carbon and other composite material and present in sufficient quantity to be the observable independent day of the presence of other solids.
- 9) **Soot** - It is the agglomeration of particles of carbon impregnated with tar formed in the incomplete combustion of carbonaceous material [10-11].

1.4 Sources of Atmospheric Particulate Matter

Significant natural sources of particles include soil and rock debris, volcanic action, sea spray, biomass burning, and reactions between natural gas emissions. Aerosol sources can be classified as primary or secondary.

Primary Sources - These are mainly of natural origin or emitted directly as particles.

Secondary Sources - These are predominantly anthropogenic and are formed in the atmosphere by gas-to-particle conversion processes emissions of particulate matter attributable to the activities of humans arise primarily from four source categories fuel combustion industrial processes non industrial fugitive processes and transportation sources. Fugitive particles are those not emitted from definable points such as stack. Fugitive process emissions result from industrial-related operations such as materials handling, loading, and transfer operations. Three main categories are mineral products, food and agriculture, and primary metals. Nonindustrial fugitive particulate emission is commonly by dust and paved and unpaved roads, agriculture operations, construction, and fires. The transportation sources emissions occur in two categories vehicle exhaust and vehicle-related particles from tyre, clutch and break wear.

1.5 Size Distribution Processes of Aerosols

The aerosol size distribution changes with time and position there for overall distribution within the given volume is modified by several processes [10]. These processes are a) homogeneous nucleation b) coagulation c) sedimentation d) diffusion which is briefly described as follows -

a) Homogeneous nucleation -

Cooling or chemical reaction leads to the conversion of molecules originally in the gas phase. In the atmosphere gases that react to form aerosol include SO₂, NO₂, Olefins, and NH₃ conversion may take place by the permission of many tiny new particles less than 100 Å in diameter or by condensation on existing nuclear the formation of new particles from the gas phase is called as homogeneous nucleation.

b) Coagulation -

Molecular acceleration from the gas phase can be considered a continuous growth process, equivalent to continuous momentum through V space. Particle collisions result from the Brownian motion and lead to clumping of particles by coagulation. This process is most rapid near aerosol sources, where concentrations are high since the rate of coagulation is directly proportional to the product of concentration of the colliding particles.

c) Sedimentation -

Sedimentation is important for large particles but not for those in the sub-micron range.

d) Diffusion -

Particles diffuse across the walls of the elemental volume V; small particles diffuse most rapidly because their Brownian motion is most violent.

1.6 Physical Properties of Aerosols

To study physical properties of aerosols the main three parameters are as below-

i) Size Distribution of Aerosols -

The knowledge of the size distribution of aerosols is of fundamental importance to any discussion on chemistry, physics and air quality of aerosols for a better understanding. The methods used in the studies of the size distribution of atmospheric aerosols and information on the size distribution of particles, smaller than 0.1 microns are can be obtained by measuring the diffusion coefficient or the distribution of the electrical mobility of the charged particle.

ii) Particle Density -

Particle density is needed to convert aerodynamic size sizes to geometric sizes and to establish the relationship between aerosol mass and volume concentrations in practice density is usually calculated from measured particles composition. However, uncertainty is calculated density several approaches have been used to measure the density of sub-micron atmospheric aerosols.

iii) Particle Shape -

It is known that the particle shape influences properties such as the flow of ability of powders, packing, interaction with fluids, and the covering power of pigments. Since the normally encountered solid particle is not usually spherically symmetric, a description of a particle shape may be useful. Wide variations in particle shape are evident in solids. Because of lack of rigidity, however, the particle shape exhibited by droplets does not show such a radical shape as those found in solids. Various shape factors have been described to report the type of shape measured.

The ratio of the measured maximum diameter to the minimum diameter may be used to represent shape. This factor is relatively unimportant for ratios less than 4, because the percent deviation between the geometric average and the arithmetic average is less than 10%. As many particles have a maximum diameter ratio of 4 or less shape factors are generally not reported. If the diameter ratios are greater than 4 and content these discrepancies in size are

measured by methods employing the same statistical averaging. Therefore, a shape factor may be considered as the factor required to make the statistical averaging independent of measurement.

Conclusions

The different types of aerosols were studied and it is observed that aerosol particles that arise from natural sources such as wind bond dust se spray and volcanoes and from anthropogenic activities. The Significant natural sources of these particles were from natural processes produced due to pressure difference and some are from man-made activities. These sources are classified as primary or secondary. The study of the physical properties of aerosols is explained by Distribution of Aerosols, Particle Density, and Particle shape.

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TO STUDY OF AGRARIAN CRISIS AND SUICIDE BY FARMERS IN INDIA

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Abstract:

Agriculture continues to play a predominant role in influencing the overall performance of the Indian economy. In spite of the advancement in chemical, biological and information fields, there has been a distinct slow down in agriculture growth during the past two decades. By the year 2008-09, only 35.3 percent of the net sown area of 140.9 million hectares was utilized for double cropping. Further, even after five decades of planning, crop diversification in favour of remunerative cash crops is quite insignificant which can be understood from the fact that 64.7 percent of the total gross cropped area of 190.6 million hectares was under different food grain crops during the year 2008-09. Between 1990-91 and 2010-2011, the annual rate of growth of food grains production at 1.2 percent was lower than that of population at 1.9 percent. The share of agriculture in the GDP has registered a steady decline from 36.4 percent in 1996-97 to 18.5 percent in 2010-2011. Extension and other support services to crop cultivation have weakened. All these have resulted in poor performance of the sector leading to agrarian distress, manifested through migration, farmers' suicide and reduced participation in agricultural activities. Keeping this in view, an attempt has been made to focus on the current status of farmers and the likely strategies to address the constraints to development.

Introduction:**Agrarian Distress-**

There are many dimensions of the present agrarian crisis. In terms of population, India stands at number two, but in terms of area, it stands at number seven in the world. Centre for Monitoring Indian Economy (CMEI) in its various publications has shown that by the year 2008-09, only 67.3 million hectares which is 35.3 percent of the total cropped area is under non-food grain crops. While the workforce in agriculture has remained more or less stagnant its contribution to nation's GDP has been steadily declining. In the year 2009-10, nearly 64 percent of the rural population was from households whose major activity status was either self-employed in agriculture or agricultural labour. It has also resulted in a declining ratio of worker productivity in agriculture to non-agriculture. On account of increasing number of holdings and constant and even declining cultivable land area, the burden of farmers has been increasing. For illustration, during 1960-61-2003-04, while the number of holdings had been increased from 50.77 million to 101.27 million, the area operated declined from 2.63 hectares in 1960-61 to 1.06 hectares in 2003-2004. The land to labour ratio as well as income gains per capita has been reducing significantly.

The crisis has been exacerbated further by rapid environmental degradation of the existing agricultural technology. These factors impinge adversely on the production potential of the agricultural sector. The slowing down and stagnation of agricultural growth has adversely affected the income and employment of vast majority of rural people dependent on agriculture. Scanty irrigation facility for the agriculture sector is another cause of concern. Out of the total 190.6 million hectares of gross sown area, only 76.8 million hectares of land have got irrigation facility and the remaining 113.8 million hectares have been cultivated in rain-fed condition by the year 2003-04. Unlike irrigated agriculture, rain-fed agriculture is characterized by low level of productivity. The existing irrigated areas are also experiencing serious water stress as both reservoir and ground water resources are depleting in many parts of the country. The growing demand for drinking water and other needs associated with rapid urbanization and industrialization further increases stress on available irrigation resources.

However, collapse of world cotton prices in late 1990s brought material distress for the farmers. Further, adverse weather conditions, unstable market and poor profit margins are weakening the ability of farmers for producing traditional crops. Inappropriate application of input-mix, ignorance on technical know-how and spurious use of fertilizers and pesticides add to the farmers' woes. As the cost of cultivation of most of the commercial crops is relatively high, shortfall in yield and price of these crops has brought misery to the farmers in the form of increasing debt burden, distress sale and even, the extreme step of committing suicide. Some such incidents have

been recently witnessed in states like Maharashtra, Andhra Pradesh and Karnataka. On the overall, agrarian distress is increasing.

Studies on Agrarian Distress

Of late, some studies on agrarian distress have been conducted in the country. Major factors common to most of the findings on increasing agrarian distress are as follows:

1. Crop Related:

Every year farmers were losing one or the other crop either due to bad monsoon, lack of water pest attack. They were not able to recover the cost of cultivation of these crops Both paddy and cotton showed negative returns and chilies gave marginal return estimating loss, it was observed that small farmers followed by marginal farmers suffered the most. As the small and marginal farmers are more vulnerable to risk and uncertainty, when crop fails, debt burden gets accumulated and they find themselves in a difficult situation.

2. Credit Related:

In the present liberalized era, farmers are influenced by the market forces of demand and supply and have started cultivating commercial crops When the cultivation of commercial crops requires more investment and bankers have been shying away from financing agriculture, the farmers are forced to depend on informal sources. But the high cost of debt servicing and harassment for repayment of loan make the life of the common farmer miserable.

3. Marketing and Price Related:

Marketing is another factor of increasing farmers' worry. In the absence of secure and ready market, farmers are forced to opt for distress sale. When the cost of investment in producing agricultural commodities is rising and the profit margin is declining, the farmer's ability to continue as a farmer gets shattered. In the process, the middlemen reap the benefit and the common farmers are exploited. The Minimum Support Price (MSP) given to farmers is also found inadequate. In some cases, farmers sell their produce to middlemen at lower prices than the MSP.

4. Extension services Related:

The extension services provided to farmers are very poor. They do not get proper information on package of practices, demand for their produce and benefits of crop diversification. In a piecemeal manner, they get the technical advice from the local input dealers who are not technically qualified, and their prescriptions are guided by the available stock of seeds, fertilizers and pesticides with them.

5. Other Factors:

Besides cultivation, small and marginal farmers do not have any other option for earning their livelihood. The other factors, which adversely affect small farmers, are the following:

- No Supplementary livelihood options in non-farm sector.
- Absence of safety nets for the small and marginal farmers.
- Increasing expenditure on marriage and other social functions.
- Increasing expenditure on illness.
- Inadequate risk mitigation measures.

Table 1: Causes of Agrarian Distress and Farmers' Suicide

State	Causes
Maharashtra	Crop failure, indebtedness, price fluctuation, poor extension network, decline in social position, conflicts, drug addiction, alcoholism and health problems
Andhra Pradesh	Monsoon failure, increasing cost of cultivation, mono-cropping, lower yield and non-remunerative prices
Punjab	Crop failure, lower yield, mounting debt burden, alcoholism, domestic discord, drug addiction
Kerala	Crop failure, drought, flood, water logging, deficit rainfall, pest attack, decline in yield, increase in expenditure on fertiliser and pesticide, sharp drop in price of crops and decline in the quantity exported

Source: Centre for Monitoring Indian Economy, Various Issues.

Table 1 presents the major findings of some studies on increasing agrarian distress and farmers' suicide in some selected states like Maharashtra, Andhra Pradesh, Punjab, and Kerala.

Farmers' Suicide

Suicides are normally related to strains on an individual due to a variety of psychological, social and economic reasons. The number of suicides in the Agrarian Crisis and Suicide by the decade 1996-2012 had increased from 88,241 in 1996 to 1,18,112 in 2012 at an annual rate of 3.82 percent. During 2006, collectively 7 states i.e. Maharashtra, West Bengal, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala and Madhya Pradesh, witnessed 71.4 percent of the total suicides in the country.

Problems of Framers

1. Under-Utilisation of Land Property
2. Unsuitable Irrigation system
3. Irregular Crop Insurance and Absence of Risk Mitigation
4. Lack of crop Diversification and Necessary Guidance
5. Ignorance in Optimal use of Fertilizers and Promotion of Bio-Fertilizers
6. Sustainable Use of Cultivable Land
7. Soil Management
8. Knowledge Deficit

Family problems and illness were reported as the main causes of suicide.

Table No.2: Top Five States with Year-Wise Figures on Farmers' Suicide (Farmer Suicide Rate per One Lakh Farmer Population)

Year	Maharashtra	Chhatisgarh	Andhra Pradesh	Karnataka	Madhya Pradesh
2008	3.65	6.97	1.98	4.74	2.27
2009	3.76	5.83	2.46	4.21	2.25

2010	3.84	4.93	2.31	4.58	2.46
2011	4.10	6.33	3.39	3.21	2.83
2012	5.15	6.40	3.13	2.94	2.19
2013	5.45	6.29	3.24	2.57	2.45

Source: National Crime Records Bureau.

Table 2 presents year- wise farmers suicide rate during the period between 2008 and 2013 in top five states in the country. It is observed from Table 2 that during the period, farmers suicide rate was the highest in Chhatisgarh followed by Maharashtra and Andhra Pradesh. Experts say that rising cost of investment repetitive crop failure, high indebtedness, price volatility and distress sale are some of the factors increasing agrarian distress.

Conclusion

The basic conclusion that emerges from the analysis is that there are three significant factors influencing crop output namely, (a) gross sown area, (b) irrigation facilities and (c) level of farmers' education. In the absence of the required infrastructure and support services like irrigation and extension services, farmers in distressed states are found to divert relatively more land in favour of cultivation of different non-food grain crops. The finding that credit as an insignificant factor influencing crop output goes in against of common belief, which needs to be examined under local condition. The farmers may be imparted education on crop husbandry, i.e., suitability of land and climate for specific crops, costs and benefits, sources of credit, input-mix, availability of backward and forward linkages, marketing facilities/services, etc.

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ROLE OF DIGITAL MARKETING IN GROWTH OF E-COMMERCE BUSINESS IN INDIA

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ABSTRACT

India today is the world's largest digitally connected democracy, with 830 million Internet users. Digital transactions have grown manifold in recent years, making India the undisputed leader in real time digital payments. The widespread adoption of smartphones and affordable mobile data plans has also contributed to the growth of India's digital economy. E-commerce, mobile payments, digital banking, healthcare, tourism, and business are some of the sectors that have seen significant growth in recent years.

Digital marketing is growing in India with fast pace. To get the competitive advantage, many Indian companies are using digital marketing. However, Success of marketing campaign cannot be solely achieved by digital marketing only. Rather for success of any marketing campaign it should fully harness the capabilities of various marketing techniques available within both the traditional and modern marketing. Start-ups that use digital marketing many times got failed. This study shows penetration and growth of digital marketing in India and precautions to be taken for effective implementation of digital marketing to reap tremendous potential to increase in sales. The massive Indian market is changing fast. Internet access is mainstreaming among professionals and the use of mobile is intensifying. The pace of change continues to be rapid with digital channels constantly growing in volume and strength. More people spend more time online in India every year, and the digital tools and sites they use play an ever-growing role in their lives. Now Indian consumer is spending more time on social media and internet surfing. Thus the visibility of any product is more through digital medium than traditional marketing techniques. Digital marketing main growth comes from social media, people nowadays spend their time on social media and that is a plus point for marketing, there are 467 million active social media users in India, 658 million internet users in India, In year 2022, there are nearly 239.65 million Facebook users in India alone, making it the leading country in terms of Facebook audience size. Day by day growing Digital Market in India is an evident that the Digitization is taking place with a high speed. E-commerce website are providing all the goods and services through online portals online today. The increasing number of ecommerce websites. This paper is an attempt to study the growth as well as trend of digital marketing in India.

Keywords: - *Digital Marketing, E-Marketing, Growth, Social Media*

1. INTRODUCTION

The Digital Marketing is a one part of a Digital Economy. India is a fast moving nation towards digital economy and this movement has been accelerated with the demonetization of the Indian Exchange in the last quarter of year 2019. Digital market requires digital promotion and marketing strategies increasing high levels. The telecom sector an important role in the digitalization movement and digital marketing. Recent launch of reliance telecom Jio in 2017 the Jio founder of Makes Ambani with the free & unlimited internet facilities has played a revolutionary role. The other prominent companies like Vodaphone, BSNL, Airtel, & Idea are also offering attractive internet plans. Providing more customer in Indian Banking Services of secure & friendly money services and transitions and any helps. Thus the visibility of any product is more through digital medium than traditional marketing techniques in digital marketing. Digital marketing techniques includes Content Marketing, Marketing Automation, SEO, Social Media, Email Marketing and Website Design. The key player's role players and infrastructure providers in Digitization of an Economy are government, banking system, Shopping Portal in India, Internet Service Software and Service Providers.

1. OBJECTIVES OF STUDY

1. To know and find out the growth of Digital Marketing in India.

2. To find out growth rate of digital marketing in India.
3. To know purpose of Digital Marketing.
4. To know how digital marketing is useful for customers.

2. REVIEW LITERATURE

- Ajani, (2021) found that Digital marketing is the process of promoting, advertising, or marketing any product, exemplary, or service utilizing any kind of electronic or digital medium. The word "digital marketing" refers to the focused, quantifiable, and interactive marketing of goods or services that uses digital technology to attract viewers, convert them into clients, and keep them as clients. Online and internet marketing are subsets of digital marketing, not their entirety. Internet and mobile devices are not the only forms of communication that are included in digital marketing
- Kaushik (2016) found that internet marketing is crucial in delivering a better customer experience, increasing website traffic, and keeping visitors there. The consolidation of a company in the e-commerce sector would be significantly aided by the website's appealing design and user-friendliness. "Companies utilize search engine marketing (SEM), a type of online advertising, to advertise their goods and services on search engine result pages. SEM, which displays advertisements on search engine result pages, is becoming crucial for attracting new clients. Similarly, businesses may utilize efficient SEO (Search Engine Optimization) to improve their online presence and, as a result, drive more visitors (Umamageswari& Krishnaveni. 2021).
- Durai & King (2019) explored that e-commerce is a subset of e-business, which means it is a powerful selling tool and a straight distribution system. The linear distribution system is an alternative to the traditional method of distributing goods to consumers, which relies on intermediaries like jobbers, wholesalers, and retailers. The e-commerce system, to put it simply, is comparable to the direct distribution system in that it uses websites to collect product orders. It transmits products and services directly from producers to end users, cutting out the intermediaries from the distribution process. E-commerce is heavily reliant on the internet and mobile phone revolution, which fundamentally changed how businesses reach their customers.
- Chaurasiya (2020) found that Early adopters and trialists of e-commerce have a thorough understanding of and first-hand familiarity with its enormous benefits. As a result, businesses are reducing their e-commerce-related mass media advertising that targets early adopters and trialists. Major digital platforms like Google, Facebook, Twitter, YouTube, and others are introducing more advertiser-friendly solutions that enable both minor and significant firms to promote to early adopters quite effectively. Spending on digital marketing is rising as a result (Singla&Kumar.2014). "The system is shifting away from application download and visit analytics and toward user metrics due to innovation in digital media paired with e-commerce players. Investments made thus far to encourage early e-commerce users are now shifting toward focusing on late adopters through local and regional offline media. Finally, advertisers are acknowledging that long-form advertising is going away and that branded content will take over". Even warnings urging viewers to keep edits brief have started to appear in digital video advertising.
- (Bhat & Dhar, 2021) Brands are mostly experimenting with how they may communicate themselves through young and digital content. This has led to more content options, more focused entertainment ideas, and an increase in the audience dividend on smartphones. How quickly the developing digital content sector embraces scientific measuring tools will determine whether advertiser spending lasts. Due to the digital store and service experience, innovations in the core items are having a significant influence on customer acquisition and retention. Players who are improving their services and offering more consumer-friendly goods prosper (Kumar, 2018).
- Jubayer suhan (2015) The aim of this paper is to show the present scenario of online shopping in Bangladesh. The psychological impact of the consumer is shown here the most challenging issue would be building the trust among the consumers about the online shop people of Bangladesh do know the positive side of the digital marketing. He stated digital marketing is well known phenomenon around the world.
- Binbin He and Christian Boch (2014) Many customers are worried about. This paper wants to research influence of Digital marketing. Online stores do well in same factors; they have advantages in these factors. So many security problems are in digital marketing.

Shahrzad Shahriari, Mohammadreza, Mohammadreza shahriari and Saeid gheiji (2015) “It makes large changes in the economic, social and cultural aspects one aspects of this transformation is changes in electronic relations between individuals, corporations and governments. Commercial exchange between people document to transactions of by us the systems based on electronic information.

ACCELERATION OF DIGITAL TRANSFORMATION IN INDIA

- India's digital transformation has been remarkable, with improved connectivity and technological capabilities leading to increased digital access and inclusivity for its citizens.
- Initiatives such as the Digital India program, Pradhan Mantri Grameen Digital Saksharta Abhiyan (PMGDSA), and Unified Payments Interface (UPI), etc. have played a significant role in transforming India into a digitally empowered society and a major player in the digital economy.
- Some of the initiatives like the Telecom development plan, aspirational district scheme, and initiatives in areas affected by left-wing extremism have improved accessibility, connectivity, affordability, and inclusivity pan India.
- Initiatives like the Common Service Centres (CSCs) have provided services such as e-governance, education, healthcare, and banking to underserve communities in rural areas.

THE DIGITAL INDIA PROGRAMME

- The Digital India program, launched in 2015, aims to transform India into a digitally empowered society and a knowledge-based economy.
- Its key objectives include strengthening digital infrastructure, delivering services digitally, and promoting digital financial inclusion.
- As a result of dedicated digital drives across the country, internet subscriptions have increased by 150% in both rural and urban areas.
- As per the data, 95.76 million internet subscribers were added in rural areas, while 92.81 million were added in urban areas between 2019-2021.
- Digilocker which was launched under this programme has witnessed over 16 crore registrations. Users can share and access any documents and certificates digitally since its launch.

Pradhan Mantri Grameen Digital Sakshata Abhiyan

- PMGDSB was launched in 2017 and is promoting digital literacy in rural India.
- The PMGDSA has resulted in improved accessibility, connectivity, affordability, and inclusivity pan-India.
- It has trained 5.96 crore candidates and certified 4.44 crore students in digital literacy. It's the world's largest digital literacy programme under which so far 6.92 crore candidates have been registered.

IMPACT OF DIGITAL TECHNOLOGY IN DIFFERENT SECTORS IN INDIA

- **Healthcare:**
 - Digital technology helped run the world's largest and most efficient Covid-19 vaccination program initiatives in the country.
 - The National Digital Health Mission and National Digital Health Blueprint have been instrumental in strengthening healthcare delivery.
 - Whether it is Telemedicine, AI-enabled medical devices, or electronic medical records, digital technology is quickly making inroads in the Indian health systems.

- Initiatives like the Ayushman Bharat Digital Mission have further accelerated the pace of digitisation of Health systems in India.
- The Indian healthcare system is becoming more citizen-centric, holistic, and proactive with the use of technology.
- **Tourism:**
 - Another sector that has seen a profound transformation as a result of the digital revolution is tourism and travel.
 - The internet has played a pivotal role in revolutionising how people explore, plan and experience travel.
 - From online bookings to virtual tours and travel content creation the internet has become an indispensable tool for travellers.
- **Businesses:**
 - Digital payments have transformed businesses by simplifying the payment process, reducing operational work, and increasing productivity.
 - The rapidly expanding digital payments landscape has transformed businesses, particularly small and medium-sized enterprises, by simplifying the payment process.
 - Nowadays, businesses are able to save both time and money, while also concentrating on their core competencies. This is made possible by offering digital payment options, which enable them to tap into a larger market and attract new customers.

THE CURRENT SCENARIO OF INDIA'S DIGITAL PAYMENTS

- **India's Digital Payment Revolution:**
 - The rapid expansion of digital infrastructure has resulted in a remarkable transformation in India's payment landscape.
 - A financial transaction model has witnessed a dramatic shift towards digital payments paving the way for a modern digital and cashless economy by placing utmost importance on promoting digital payments.
 - Over the past few years, India has witnessed an unprecedented surge in digital payment transactions. User-friendly and convenient digital payment methods such as:
 - **Bharat Interface for Money** - Unified Payments Interface (BHIM-UPI), IMPS (Immediate Payment Service), Prepaid Payment Instruments (PPIs), Aadhaar-enabled Payment System (AePS) and National Electronic Toll Collection (NETC) have experienced substantial growth revolutionising the digital payment landscape by facilitating both person to person and person-to-merchant payments.
- **UPI Takes the Lead in Global Digital Payments:**
 - India leads the world in digital payments with 89.5 million transactions in 2022 with UPI emerging as a revolutionary product. As per the data, India accounted for 46% of global real time payments in the year.
 - Brazil was second on the list followed by China, Thailand and South Korea.
 - The exponential growth is reflected in the fact that digital payment transactions in India are more than the other four leading countries combined.
 - UPI transactions are on course to reach 1 billion a day by 2025 accounting for 90% of retail digital payments in the country.

▪ Traditional Payment Methods:

- Traditional payment methods such as debit cards, credit cards, National Electronic Fund Transfer (NEFT), and Real Time Gross Settlement System (RTGS) have also experienced rapid expansion.

3 RESEARCH METHODOLOGY

This paper is primarily descriptive and analytical. This paper attempts to analyse digital marketing empowerment in India. The data used in it are from secondary sources for this study

GROWTH OF DIGITAL MARKETING IN INDIA

Countries with the highest number of internet users as of February 2022 (in millions) India was ranked second among the countries with the most internet users. India had 658 billion internet users, more than double the amount of third-ranked United States with just over 307 million internet users.

India has been known as the “Land of Villages” and this has been the biggest strength as a massive share of population i.e. almost 60% belong to the rural part of the country. The advent of Industrial era and urbanization changed the agriculture trend. The GDP share of the agriculture sector has dropped from 51.81% in 1950- 51 to 17.9% in 2014-15, while the Industry (24.2%) and Services (57.9%) sector has shown a significant increase over the same period.

The lacklustre agriculture sector has shifted the focus of employability and economic development to the urban India i.e. industry and services sector. The declining importance of agriculture has become a threat to the socio-economic development of rural India. The widening socio-economic gap between rural and urban India is a worrying factor as it deprives rural India from basic rights such as Banking, Healthcare, and Education. The economic empowerment and financial inclusion of rural population is necessary to close this gap. The rural development has equal importance as the urban growth to achieve overall progress of the country. The advent and rapid adoption of technology brings new and innovative ways to deal with this situation in India. The economic empowerment of citizens demands a continuous connect between the citizens and the government. For a successful service provision model, the government needs to identify the citizens, create a platform for transfer of services and ensure last mile delivery of services to the underprivileged.

Identity: The identity of the citizens is the topmost priority and requires elimination of duplicate entries and can be used for efficient delivery of all services. An automated system using technology and biometrics has helped several countries in Europe and the US. The home grown Aadhaar card provides secure and safe Services Industry Services Digital: A revolution in the making in India 07 solution for citizens’ identity in India.

Delivery platform: Bringing the entire country into the financial ecosystem will provide a platform to deliver government benefits to the citizens directly by eliminating middle men and thus removing leakages and pilferages. The Prime Minister Jan Dhan Yojana (PMJDY) is helping in financial inclusion and provides a platform for benefit transfer to the right people at the right time.

Last mile access: It is a major challenge to ensure that benefits, such as subsidies reach the citizens at the appropriate time. The unprecedented penetration of mobile phones provides the opportunity for the last mile delivery.

The JAM Trinity is the consolidation of three critical projects i.e. Jan Dhan, Aadhaar and Mobile connectivity (JAM) expected to drive financial inclusion measures to bring about overall empowerment. It is a key reform to deliver the Direct Benefit Transfers (DBT) scheme along with subsidies², minimum wage payments and other government schemes. According to the Economic Survey, about INR 3.78 lakh crore or 4.2% of the GDP, is currently spent on key subsidies. The JAM Trinity would ensure last man delivery of benefits eliminating multiple mid-channel layers and empower citizens directly using technology.

4. CONCLUSION

The internet has changed customer shopping habits and with rapid technological developments accessing the internet has become easier than ever. People can access the internet whenever and wherever they like. Digital

marketing is really important as it affects how consumers are making purchase decisions to a certain extent. All reports and surveys conducted around the globe are showing that the digital marketing will grow more in coming years. It was estimated that in 2025, number of active internet users would surpass 900 million in India. Youth of India is very much technology friendly. Marketers have opportunity to increase sales by implementing effective digital marketing strategy. Digital marketing campaign help companies to reduce costs, generate organic traffic and better ranking in search engines. The usage of social media has created new opportunities for digital marketers to attract the customers through digital platform

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MIGRANT LABOUR IN INDIA

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Introduction

In classical economics, labor is one of the three factors of production, along with land and capital. Labor is often defined as the physical or mental effort exerted by human beings in the production of goods and services. In neoclassical economics, labor is a broader concept that incorporates all human activity that adds value to a product or service. This includes not only physical and mental effort but also the use of tools, machines, and other equipment. It also surrounds the time spent on planning, organizing, and supervising production. In certain economic models, labor is assumed to be a homogeneous input. This means that all workers are assumed to have the same skills, abilities, and productivity. However, labor is not homogeneous in real life. Workers differ in their skills, abilities, experience, and motivation. These differences can lead to different amounts of output per hour of work, even when all other inputs are the same.

Labor productivity depends on many factors, including the workers' skills and abilities, the technology used, the organization of production, and the motivation of the workers. Regardless, labor productivity is increased by investments in education and training, via the use of better technology, and by improvements in the organization of production. Labor is an important factor in the economic development of a country, and a high level of labor productivity is typically necessary for better living standards. In some cases, however, a country may be able to maintain a high standard of living even with relatively low labor productivity, given it has other resources, such as natural resources, that can be exploited. Additionally, a country's level of labor productivity may be limited by the availability of technology and other factors.

Discussion

Migration is, first and foremost, a normal human activity. Human beings have always moved from 'one country, locality, place of residence to settle in another'. We tend to migrate from the homes of our families or guardians into our own homes. We migrate between regions, cities and towns. And we also migrate between countries.

People have migrated and continue to migrate for a range of reasons, but the most common motivator for relocation has long been the desire for a better life. This desire might be driven by unlivable circumstances in a home country or in a home – as is the case for refugees and other exiles; it might stem from a sense of adventure and a desire to see what life is like beyond a place of birth; it might be the product of love – for children, or a partner, or a family; it can be a feeling that lasts forever or one that fades away. As these stories reveal, country-to-country migrants often have the same motivations as those migrants who move from region to region, city to city, or town to town within their country of birth.

While there are many terms for different types of migration, history almost always shows us that people move in the hope that they will be able to better themselves, sometimes with that hope forced by extreme circumstances. It also shows us that new arrivals face and continue to face similar challenges and find similar successes in that quest. When thinking of country-to-country migrants in Britain – whether we are concerned with the Romani of the 16th century, the Scottish of the 18th century, the Irish of the 19th century, or Caribbean, Asian and Eastern European people in the 20th and 21st centuries – we see many similarities in experience, similarities which can make the study of migration history an enlightening way to gain insight into all aspects of human life.

TYPES OF LABOUR

1) Unskilled labour :-Unskilled labour basically means that the job will be completed by someone who has no specific skills and hardly any formal education. The work is often easy, although in the field of construction and other workplaces, it is physically demanding with long hours. There are not many unskilled labour jobs left, as everything seems to need knowledge of some sort. Whether it is computers or another type of technology, everyone is going to need to know something in order to get job in the future.

2) Semiskilled labour:-

Semiskilled labour is a step above unskilled labour with the jobs requiring partial skills, but not enough to necessitate advanced training or certification. Most employees in semi-skilled jobs have graduated high school but didn't advance far enough through college to obtain their degree. The skills that employees have for these jobs, along with the new skills that they learn as they are working, are often capable of being transferred to jobs that they may have in the future.

3) Skilled labour :-

Those workers that have advanced training, certification and higher education are considered part of the skilled labour workforce. These jobs require the knowledge of specific skills that can only be learned from school, workshops, and eventually experience within the field. The demand for skilled labour is going to continue to grow as technology keeps advancing in the future.

This country has already seen major changes between these three labour categories. Decades ago, unskilled workers were able to find jobs almost anywhere where they lived. However, during the last ten to fifteen years, those same workers are struggling to keep the unskilled labour jobs that they manage to find. And many of them are losing the battle because those same jobs now require a person that fits the semiskilled labour category to fill them.

It used to be that construction companies could hire workers that were unskilled, semiskilled, and skilled to get their projects completed. However, due to changes in the field and the necessary items that construction workers are needed to know to do their jobs, those hiring requirements are changing.

Currently, skilled labour is required at multiple construction job sites and the demand is higher than ever. Unfortunately, there are not enough workers to fill these job openings, or at least that is what is thought.

REASON OF INDIAN LABOUR MIGRATION

Migration would not necessarily be by a choice or willingness but rather forced out of situations. The causes for migration can be classified as "economic migration, social migration, political migration, and environmental migration

1) For Career Enhancement

Willing to work abroad for a long time has been considered elite in the Indian context. Irrespective of the professions, people are willing to migrate abroad, be it to explore new places, better employment opportunities, for stability in life (economic gains), etc. According to a report by The Economic Times, more than 66% of Indians are seeking to work abroad. Under the best destination for migrants category in the World Happiness Report, the USA ranks 16th after Finland, Canada and among the best origin countries, India ranks 133rd.

2) Poverty

Poverty is one of the major factors badly affecting the Indian economy. It is a condition where an individual household is not even able to meet basic living requirements. It can be a result of various reasons like low wages, constant increases in prices, unemployment, lack of awareness, etc. India has been witnessing a decline in poverty, but this has been at a very slow pace, and still, 20.8% (as of 2020) of the Population account for below-the-poverty-line families. Rural India witnesses massive migration (males) of skilled workforce aiming to at least be able to provide a standard of living to their families. Indians' most preferred destination of international migration is UAE and gulf countries and 70% of Indian skilled worker migrants belong to UP and Bihar.

3) Environmental factors

The environment has always been a driving factor for migrators; these include natural disasters like floods, droughts, earthquakes, climate changes, etc. The International Organization for Migration defines environmental migrants as the ones who are obliged to leave their origins or home as a result of sudden or progressive

environmental changes or conditions, as it has caused a major effect on their living conditions and lives. This movement could be temporarily or permanently, to internal (within the country) or international (abroad) migration.

THE IMPACT OF LABOUR MIGRATION

1) On migrants and their families Poor migrant workers have certain entitlements from their employers or Government authorities in the destination areas. They have few personal resources and suffer deprivation in the destination area. Migration to source areas has both negative and positive consequences for migrants and their families. Although the process of migration gives higher wages to migrant workers, but differences in living standards and adverse effects on health, education and family members would have a depressing effect on migrant's well-being. As a result, the conclusion is somewhat ambiguous.

2) On Living Conditions The migrant workers whether agricultural or non-agricultural, live in society terrible conditions. There is no provision of safe drinking water or hygienic sanitation for labourers. Most live in open spaces or temporary shelters despite the contract labour act that stipulates that the contractor or employer must provide suitable accommodation for workers. Apart from seasonal workers, workers who migrate to cities for jobs live in parks and footpaths. The slum dwellers, who are mostly migrants, live in deplorable conditions with insufficient water and bad drainage area. Food prices are higher rate for migrant workers; they are not able to get temporary ration cards .

3) On Health and Education Migrant labourers working in harsh conditions and living in unhygienic conditions suffer from serious occupational health problems and are vulnerable to diseases. The workers who work in quarries, construction sites and mines suffer from various health hazards they have mostly lung diseases. Migrant workers cannot access various health and family care Programmes due to their temporary status. There is no provision for maternity leave for women workers, forcing them to resume work immediately after childbirth. Workers especially those working in tile factories and brick kilns suffer from occupational health issues such as body aches, sunstroke and skin irritation. As there are no nursery school facilities children often go to the workplace with their parents exposing them to health risks. They are also deprived of basic education, the schooling system at their birthplace does not take into account their migration patterns and their temporary status in the destination area does not eligible them to attend school there. The effects of male migration can be particularly adverse for women, who often have additional household responsibilities and care for younger siblings. The absence of male supervision further reduces their chances of achieving education . There are several cases where women participate in migration flows along with their male family members. In the labour migration process, it is usual such case is for younger siblings and older children to work with their parents. Family migration generally refers to the migration of younger family members, leaving the elderly to cope with additional responsibilities while protecting their livelihood and other basic needs

4) On source areas The main impact of migration on the source area is through changes in the labour market, income and wealth, and changes in expenditure and investment patterns. Although seasonal out-migration has a potentially employment-smoothing effect on the annual cycle, rural out-migration can under certain circumstances tighten the labour market. Although empirical evidence from out-migrant areas does not often attest to this. This may be because external migration often takes place in labour-surplus situations. There is also evidence of external male labour being replaced by female and even child labour.

CONCLUSION

The paper takes up an important socio-economic and political issue – labour migration. This issue is somewhat neglected in the economic literature in the sense that there are many areas which remain unexplored as compared to other socio-economic cultural and political issues. Hence the paper attempts to present in a nutshell trends of labour migration in India, its causes and impacts. We feel that it would be of great help to the researchers in conducting research in the areas left unexplored by the literature. The reason for such trend is the rapid development and expansion of the informal sector which absorbed a large number of workers from the rural areas. This implies labourers were casualized. The rate of male migration for work has declined since the 90s and the corresponding rate has gone up for females. The reason behind such phenomenon is the introduction and implementation of NREGA in different states. In terms of duration, short duration in-migration exhibits a declining trend. The out-migrants migrating for short duration were mostly from rural areas and majority of them were males. Lastly, the

trend analysis shows that a high proportion of male migrate over a long distance and they are rural to urban in nature. On the contrary, females generally migrate over a short distance and it is rural to rural in nature.

The reason behind such short distance migration has been marriage. The paper observes that uneven development has been the predominant driving force behind labour migration. Besides, disparities in socio-economic conditions, wage differentials and disparities in the development policies also induce individuals to migrate. Moreover, two factors, identified as 'push' and 'pull' factors, operate either simultaneously or in isolation to generate migration flow. If an individual migrate to attain improved standard of living by getting high wage/salary then it is called migration due to 'pull' factor. On the other hand, individuals often migrate to repay the old debt at source area, which is called 'push' factor. Finally, the paper discusses the probable impact of labour migration on the migrant, his/her family members and on the source and destination areas. We conclude that migration has miserable impact on the living standard of migrants, their family members and they are deprived of health, education and other essential public services and basic amenities like hygiene, drinking water and so on. The remittances sent by the migrant back home is often used to repay outstanding debts and support increased consumption.

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A CRITICAL STUDY OF CLIMATE CHANGE AND IT'S IMPACT ON DEVELOPMENT

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Climate change is an important issue of discussion not in our country only but in the whole world for last three to four decades. It is the greatest threat to human existence. Climate change refers to long-term shifts in temperatures and weather patterns. Whereas development is a continuous process. It is going on since the existence of human race till this date. Development is the process of becoming stronger, bigger and better. Climate change and development is interrelated. On the one hand all the countries have to move ahead towards development and to give comfort to their citizens and healthy life. On the other hands we have to be keen to protect our environment and try to reduce our pollution so that we will be able to maintain our climate as it is and it should not affect human existence.

The Fourth National Climate Assessment, published in 2018, warned that if we do not curb greenhouse gas emissions and start to adapt, climate change could seriously disrupt the U.S. economy. Warmer temperatures, sea level rise and extreme weather will damage property and critical infrastructure, impact human health and productivity, and negatively affect sectors such as agriculture, forestry, fisheries and tourism. The demand for energy will increase as power generation becomes less reliable, and water supplies will be stressed. Damage to other countries around the globe will also affect U.S. business through disruption in trade and supply chains.

The first major impact of climate change is the increase of temperature on earth. If we observe the temperature of earth of last hundred years there is an increase in it. Due to this sea level rising. There is a threat that small Ireland like Maldives, Andaman and Nicobar, Lakshadweep may have to face serious problems. As we know Glaciers are shrinking. In Himalayas snow is melting speedily. It brought heavy flood conditions in Himachal Pradesh and Uttarakhand.

Climate change have caused heavy flood situation in some part of the country during last twenty years. For example, heavy rainfall in Mumbai in 2005, heavy flood situations in Gujrat in 2011, drastic flood situation in Chennai in 2015, Kerala sustained too much loss in 2018 flood, every year there is a heavy flood in Assam and in 2023 what happened in Himachal Pradesh everyone knows. Due to flood situation thousands of people lost their life, lost their pet animals, roads vanished and bridges collapsed. If we do not overcome this situation, it will stop our development.

Because of climate change many regions of India have faced drought situation during last twenty years. For example, Vidarbha and Marathwada region in Maharashtra, Gujrat, Telangana faced heavy drought situation. We mostly depend on monsoon rains in our country. We find an impact of El Nino on our monsoon. Due to drought situation thousands of farmers have committed suicide in Vidarbha and Marathwada region.

Climate change may severely create shortage of food in India. Before 1971's green revolution there was shortage of food in our country. But during last 50 years situation is changed. Wheat, rice and Food grains are plentifully available. But heavy rain and drought situation will affect the storage of food grains in our country. We may become dependent on other countries.

Climate change may affect physical infrastructure includes bridges, roads, ports, electrical grids, broadband internet, and other parts of our transportation and communication systems. It is often designed to be in use for years or decades. But even newer infrastructures can be vulnerable to climate change. Extreme weather events can stress existing structures and facilities. Increased temperatures. Sea level rise could potentially cause a loss of value of assets. Houses, airports, railway network, roads at coastal areas may get damaged.

Climate change have affected tourism industry in our country severely. Some states of India like Jammu and Kashmir, Goa, Kerala depend on Tourist. Their economy depends on tourism. Due to flood situation, temperature

rise, rise in sea level, excess snow following tourist rarely visit these places. Due to this these state face financial problems. It leads to migration from one state to another.

The climate change is impacting human life. We succeeded to overcome diseases plague, malaria, polio etc. But due to climate change new diseases like covid-19, zinka virus have arrived. It has caused thousands of people death. It also affects productivity as well. Youth is the future of the nation. If they fell ill automatically development of nation will stop.

It is not that there is no solution to it. Human beings and development projects have affected climate. We can prevent it. In my opinion these problems have not arisen in a day. There are some specific reasons behind it. Ex: lack of understanding about climate change, overpopulation, improper way to dispose automobile and domestic waste, heavy deforestation, waste of electronics, oil, gas, coal and nuclear waste. etc these are the reasons. This has resulted into some serious problems in the life of human beings. It happened not only in India but around the world. In Japan people witnessed a catastrophic Tsunami, In U.S.A Hurricane Rita and Katrina was there, In India also Tsunami had demolished the life of thousands of people did too much loss of public property.

We can stop it at three levels. All individuals need to consider the implications of climate change when choosing where to spend and invest their money. They should not buy or develop a land near sea or river. They should not cut the trees to make their life luxurious. On the other hands Industrialist claim that if we need to develop, we have to ignore the loss of environment. It is the duty of us to convince them to stop industrial pollution because environment has to sustain heavy loss. At government level so many things can be done. They should prevent people or industrialist to do construction at the bank of river or sea. They should stop ill-legal mining, cutting of trees, and stealing of sand.

To overcome issues related to climate change United Nations has also taken a step forward. The whole world has now become aware about the environmental problems and it's repercussion. Every year conferences are held in different countries about environmental problems and world leaders discuss over it. Like Lima climate conference in dec.2014 at Peru, Warsaw climate conference in nov. 2013 at Poland, Durban climate conference in dec. 2011 at South Africa, Cancan climate conference in dec. 2010 at Mexico, Copenhagen climate conference in dec. 2009 at Denmark, Bali climate conference in Jan. 2008, at Denmark etc. in this conference several issues regarding environment and global warming were discussed among the world leaders. There is a lot of hope and optimism is there from these conferences and a meaningful negotiation could be agreed in future as climate change concerns are increasingly rapid. Suggestions like reforestation, Emission of carbon, to reduce human population saving water etc. are to be given.

The UNESCO-UNEP Congress on Environmental Education and Training (1987) agreed that:

“Environmental education should simultaneously attempt to create awareness, transmit information, technologies, develop habits and skills, promote values, provide criteria and standards and present guidelines for problem-solving and decision-making. It therefore aims at both cognitive and effectible behaviour modifications. The later necessitates both classroom and field activities. This is an action-orientated, project-centered and participatory process leading to self-confidence, positive attitudes and personal commitment for environmental protection. Furthermore, the process should be implemented through an interdisciplinary approach.”

The Government of India and state Government have taken few positive steps to preserve environment around us. In Indian primary schools environmental education is introduced, in secondary schools environment education is taught for 20 marks, at higher secondary level environmental science has been introduced as an optional subject for 50 marks. At college and university level environmental science has been introduced as an optional subject. One can choose environmental science as a main subject at P.G. level and go for research as well. This shows that government is quite serious about saving our environment.

The climate change and its repercussion are very serious that needs to be addressed at the local, national and international levels. To achieve a good quality life on earth for all living beings it is essential to spread awareness about environmental problems and it's solutions. everyone have that potential to change this scenario. They can empower the citizens to protect environment by creating awareness among them.

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THE FUTURE OF WORKFORCE DEVELOPMENT: SKILLS AND TRAINING IN THE NEW EDUCATION POLICY (NEP)

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Abstract: -

The rapidly evolving landscape of work and employment demands a workforce equipped with the right skills and training. The New Education Policy (NEP) of 2020 in India recognizes the critical role of education and training in shaping the future workforce. This research paper explores the NEP's approach to workforce development, with a specific focus on the role of technology in education and training, the importance of industry-academia collaboration, and the concept of lifelong learning and continuous professional development. Through this analysis, we aim to shed light on how the NEP aligns skills and training with the needs of the future workforce.

Keywords: New Education Policy, Workforce Development, Skills Training, Technology in Education, Industry-Academia Collaboration, Lifelong Learning, Professional Development.

• Introduction

In an era characterized by unprecedented technological advancements, the inexorable forces of globalization, and the dynamic shifts within markets, the landscape of work is undergoing a profound and relentless transformation. The very essence of the world of work is evolving, shaped by innovation and driven by change. In the midst of this sweeping transformation and pervasive uncertainty, the bedrock upon which the success and adaptability of a nation's workforce stands is none other than access to quality education and comprehensive training. Recognizing the pivotal significance of this nexus between education and workforce preparedness, the Government of India introduced the New Education Policy (NEP) in the year 2020. The NEP stands as a visionary testament to the recognition that education is not a static pursuit but an ever-evolving, dynamic force that has the power to define the future of a nation's workforce. This research paper embarks on an exploratory journey into the profound role that the NEP plays in shaping the trajectory of workforce development in India, an endeavour that carries implications not just for individuals but for the nation as a whole. At its core, the NEP is not merely a policy but a comprehensive roadmap that charts the course for the transformation of India's education ecosystem. It recognizes that education must evolve to meet the multifaceted demands of the 21st century. This paper serves as a guiding light, illuminating the key dimensions of the NEP's impact on workforce development. It dives deep into the policy's approach to integrating technology into education and training, acknowledging the pivotal role that technology plays in the contemporary workforce. Furthermore, it explores how the NEP champions collaboration between the realms of academia and industry, dissolving the traditional boundaries between education and work. This collaboration fosters an environment where education is not an isolated pursuit but a dynamic partnership between learners, educational institutions, and industries. The paper also delves into the concept of lifelong learning and continuous professional development, recognizing that in an ever-evolving world of work, individuals must be equipped with the ability to adapt and grow throughout their careers.

Through this comprehensive analysis, this paper endeavours to shed light on the transformative potential of the NEP. It illuminates how the policy is poised to equip the Indian workforce with the skills, knowledge, and adaptability essential for navigating the complex tapestry of challenges and opportunities in the 21st century. The NEP, in essence, is not just about preparing individuals for the future but actively enabling them to shape it. It is a clarion call to a future where the workforce is not just ready to face change but is the driving force behind it.

• Review of Literature

1. **Singh, A. (2021):** Singh's extensive research represents a pivotal exploration of the profound implications that the New Education Policy (NEP) holds for the dynamic arena of workforce development in India. Through a rigorous and insightful analysis, Singh offers a profound understanding of the NEP's core objectives and its visionary aspirations in the context of equipping both students and professionals with the requisite skills and

knowledge to excel in the future job market. Singh's research stands as a beacon, guiding us through the labyrinthine landscape of the NEP. With meticulous attention to detail, the study unveils the multifaceted dimensions of the policy's objectives, going beyond the surface to delve into its visionary essence. It is within this vision that the NEP lays the foundation for a future workforce that is not just competent but also innovative, adaptable, and forward-thinking.

2. **Chatterjee, S. (2020):** Chatterjee's work examines the role of technology in education and workforce development, with a particular focus on the NEP. It highlights the potential of technology to bridge the skills gap and prepare individuals for the jobs of tomorrow.
3. **Kapoor, R. (2022):** Kapoor's study explores the importance of industry-academia collaboration in workforce development. It delves into the NEP's initiatives aimed at fostering partnerships between educational institutions and industries to create a job-ready workforce.
- **Joshi, P. (2021):** Joshi's scholarly research casts a penetrating spotlight on one of the paramount dimensions of workforce development within the ambit of the New Education Policy (NEP) - the concept of lifelong learning and continuous professional development. Through meticulous inquiry and analysis, Joshi dissects the NEP's provisions for promoting lifelong learning and elucidates the profound implications of these provisions for India's future workforce. In Joshi's research, we encounter an exploration of an essential facet of contemporary workforce preparedness. Lifelong learning and continuous professional development have emerged as critical components of employability and adaptability in a world where skills obsolescence is a looming reality.

• **Objective of The Paper**

The objective of this research paper is to provide a comprehensive analysis of the New Education Policy (NEP) of 2020, with a specific focus on its role in shaping the future of workforce development in India. The paper aims to investigate the NEP's approach to integrating technology into education and training, elucidate the importance of fostering industry-academia collaboration, and analyse the NEP's promotion of lifelong learning and continuous professional development. By pursuing these objectives, this study seeks to shed light on how the NEP positions itself to equip India's workforce with the essential skills, adaptability, and technological literacy required to navigate the challenges and opportunities of the contemporary job landscape.

• **Role of Technology In Education And Training**

- The dynamic role of technology in education and training stands as a linchpin in the ever-evolving landscape of workforce development, and the New Education Policy (NEP) of 2020 aptly recognizes its transformative potential. In this pivotal section of the research paper, we embark on an in-depth exploration of the NEP's approach to technology in education and training, unravelling the multi-faceted strategies and initiatives that underpin its vision for the integration of technology into the learning process.
- At its core, the NEP envisions a future where technology serves as an enabler, empowering learners with the digital literacy and technological prowess vital for success in the contemporary workforce. It does not merely view technology as a supplement to traditional education but as a catalyst for innovation, inclusivity, and personalized learning experiences.
- One facet of the NEP's approach is its commitment to harnessing technology for skills development. This involves the strategic integration of technology-driven pedagogical tools and platforms that facilitate skill acquisition and proficiency. The NEP recognizes that in a rapidly changing job landscape, skills need to be not only imparted but continuously refined and updated. Technology serves as a dynamic medium through which this objective can be achieved.
- Moreover, the NEP places great emphasis on the integration of e-learning platforms, creating an ecosystem where education transcends geographical boundaries. This democratization of education allows learners from diverse backgrounds and regions to access high-quality content and resources, fostering an inclusive learning environment. The NEP's focus on e-learning is a testament to its commitment to bridging the digital divide and ensuring equitable access to educational opportunities.

- One of the most innovative facets of the NEP's technological integration is its utilization of artificial intelligence (AI) in personalized learning experiences. AI-driven adaptive learning systems have the potential to tailor educational content to individual learners' needs and learning styles. This not only enhances engagement but also ensures that each learner progresses at their optimal pace, thus maximizing the effectiveness of education and training.
- **Industry-Academia Collaboration**
 - The nexus between educational institutions and industries plays a pivotal role in the holistic endeavour of workforce development, and the New Education Policy (NEP) of 2020 aptly recognizes the profound significance of fostering collaboration between these two domains. In this section of the research paper, we embark on a comprehensive exploration of the NEP's provisions for promoting and nurturing industry-academia collaboration. It is within this collaborative ecosystem that the NEP lays the foundation for an agile and industry-responsive workforce.
 - Central to the NEP's vision is the concept of curriculum co-creation, a dynamic process where educational institutions and industries collaborate in shaping educational content and outcomes. This initiative transcends the conventional boundaries of education by ensuring that the curriculum is not a static entity but a living document that evolves in tandem with industry needs. By actively involving industry experts in curriculum design, the NEP ensures that educational programs are not just academically rigorous but also relevant to the ever-changing demands of the job market.
 - Internships and apprenticeships stand as integral pillars of the NEP's approach to industry-academia collaboration. These experiential learning opportunities bridge the chasm between theoretical knowledge and practical application. Learners gain hands-on experience within real-world workplace settings, imbibing not only technical skills but also a deep understanding of industry dynamics, work ethics, and problem-solving abilities. This practical exposure enhances their employability and makes them industry-ready from day one.
 - Furthermore, the NEP champions partnerships between educational institutions and businesses, creating a symbiotic relationship where academia informs industry and vice versa. These partnerships extend beyond superficial affiliations, involving meaningful engagement in research, innovation, and knowledge exchange. Such collaborations ensure that educational institutions are not isolated from the demands and advancements of the industries they serve. Instead, they become active contributors to industry growth and transformation.
- **Lifelong Learning And Continuous Professional Development**
 - In an era characterized by the relentless pace of change and evolution in the world of work, the notion of lifelong learning and continuous professional development emerges as an imperative. The New Education Policy (NEP) of 2020 astutely recognizes the critical role that lifelong learning plays in equipping individuals with the skills, knowledge, and adaptability required to thrive in a rapidly changing work environment. This section of the research paper embarks on a comprehensive exploration of how the NEP promotes and facilitates lifelong learning and continuous professional development, shedding light on the transformative potential of these initiatives.
 - At the heart of the NEP's approach to lifelong learning is the recognition that learning is not confined to a particular phase of life or formal educational institution. Instead, learning becomes a perpetual journey, extending throughout an individual's lifespan. The policy encourages individuals to engage in continuous learning, fostering a mind-set where up skilling and reskilling are viewed as essential components of career growth and adaptability. Lifelong learning becomes a dynamic tool for staying relevant and competitive in a job market characterized by rapid obsolescence of skills.
 - One of the key mechanisms through which the NEP promotes lifelong learning is by creating an ecosystem that facilitates access to learning opportunities beyond traditional educational settings. Educational institutions, both formal and informal, are encouraged to offer courses, workshops, and training programs that cater to the evolving needs of learners. Additionally, online platforms and digital resources are leveraged to provide easy access to a vast repository of knowledge, enabling individuals to pursue learning at their own pace and convenience.

- Employers also play a pivotal role in the NEP's vision of lifelong learning and continuous professional development. The policy underscores the importance of employers investing in the skill development of their workforce. This can manifest through initiatives such as in-house training, skill enhancement programs, and support for employees pursuing further education. By cultivating a culture of continuous learning within the workplace, employers not only enhance workforce readiness but also foster innovation and adaptability within their organizations.

- **Research Methodology**

- **Type of Data**

This research paper is based on secondary data. Data sources include official policy documents, research papers, and publications from government agencies, educational institutions, and industry reports.

- **Type of Research**

The research is primarily descriptive in nature.

- **Period of Research**

The research spans from the announcement of the NEP in 2020 to the present day, capturing its implementation and emerging trends in workforce development.

- **Conclusion**

The New Education Policy (NEP) of 2020 presents a transformative opportunity to reshape workforce development in India. By embracing technology in education and training, fostering industry-academia collaboration, and promoting lifelong learning, the NEP is poised to equip the workforce with the skills and training needed to thrive in a rapidly evolving world of work. As the NEP's provisions are implemented and refined, their potential to bridge the skills gap and prepare individuals for the future job market becomes increasingly evident.

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GLOBAL PERSPECTIVES IN LOCAL CLASSROOMS: THE ROLE OF THE NEW EDUCATION POLICY IN PROMOTING INTERNATIONAL EDUCATION

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Abstract:

In an increasingly interconnected world, equipping students with global perspectives is crucial for their success as citizens and future leaders. This paper explores the potential of the New Education Policy (NEP) 2020 in India to promote international education within local classrooms. Through a review of relevant literature and an analysis of the policy's provisions, the paper examines the concept of internationalization in education, its benefits and challenges, and how the NEP aims to encourage global learning experiences. Teacher training and capacity building are recognized as critical components for successful implementation. Finally, the paper outlines a mixed-methods research approach to investigate the impact of NEP interventions on fostering international perspectives in local classrooms.

Keywords: International education, New Education Policy, global perspectives, teacher training, curriculum development, cross-cultural understanding, India.

I. Introduction:

The dawn of the 21st century has ushered in a world defined by rapid globalization and unprecedented interconnectedness. Education, once confined within the walls of classrooms, must now rise to meet the demands of this dynamic landscape. In this new era, merely imparting knowledge is no longer sufficient. Equipping students with the ability to navigate a complex, interdependent world is paramount. This necessitates transcending geographical boundaries and integrating international perspectives into the very fabric of local classrooms. Within these classrooms, where diverse backgrounds and experiences converge, lies fertile ground for nurturing the crucial skills needed for global citizenship. By exposing students to different cultures, ideologies, and ways of thinking, we cultivate critical thinking, the ability to analyze information from multiple angles and challenge assumptions. Intercultural understanding flourishes as students learn to empathize with and respect diverse perspectives, fostering dialogue and collaboration across cultural divides. This broadened world view empowers them to engage with global issues with nuance and understanding, preparing them to be responsible participants in a world where solutions to complex challenges lie in collective action.

India's recent adoption of the New Education Policy (NEP) 2020 presents a beacon of hope in this regard. As a comprehensive overhaul of the country's educational landscape, the NEP explicitly recognizes the significance of internationalization and outlines a roadmap for its integration within the classroom. This paper delves into the potential of the NEP to actualize this vision. By dissecting its key provisions on internationalization, teacher training, and curriculum development, we aim to shed light on the concrete steps India is taking to prepare its students for a globalized tomorrow.

Our exploration will unravel the intricate nuances of how the NEP seeks to equip educators with the necessary skills and understanding to navigate the complexities of teaching in a globalized world. We will then delve into the curriculum, examining how it has been reimagined to incorporate diverse perspectives and encourage students to engage with global challenges. Ultimately, this paper seeks to answer the critical question: Can the NEP truly unlock the potential of Indian classrooms to cultivate globally competent citizens, ready to lead and collaborate in a world without borders?

II. Review of Literature:

1. **Green (2018):** In "Internationalization of Higher Education: An Enduring Dream?," Green critically examines the concept of internationalization and questions its potential for creating truly transformative educational experiences. While acknowledging the benefits of mobility programs and intercultural exchanges, Green highlights the risk of superficial engagement and limited impact on broader educational practices.
2. **Kumar (2020):** "Global Competence for a Sustainable Future: The Case of India" emphasizes the importance of integrating global perspectives into Indian education. Kumar argues that cultivating critical thinking, empathy, and intercultural understanding among Indian students is vital for addressing global challenges like climate change and sustainable development.
3. **Rizvi (2015):** "Internationalization and the Curriculum: Exploring Tensions and Possibilities" examines the complexities of integrating internationalization into curriculum development. Rizvi highlights the need for careful consideration of local contexts, power dynamics, and diverse student experiences within internationalized curriculum initiatives.
4. **UNESCO (2014):** In "Rethinking Education: Towards a Global Common Good," UNESCO outlines a vision for education that prioritizes global citizenship, social responsibility, and sustainable development. This influential document calls for education systems to promote intercultural understanding, respect for diversity, and active engagement with global challenges.

III. Objective of the Paper:

This paper aims to investigate the potential of the NEP 2020 to promote international perspectives in Indian classrooms. It will do so by:

- Analyzing the policy's provisions related to international education, including curriculum development, teacher training, and student mobility programs.
- Examining the challenges and opportunities for implementing the NEP's internationalization agenda.
- Proposing a research agenda to investigate the impact of NEP interventions on fostering international perspectives in local classrooms.

IV. Internationalization of Education:

Internationalization of education transcends the mere inclusion of international topics and facts in the curriculum. It's a transformative and multifaceted endeavor aimed at weaving global awareness and understanding into the very fabric of the learning process. This encompasses a spectrum of initiatives designed to dismantle boundaries and cultivate truly globally competent citizens.

- ❖ **Curriculum development:** Reimagines learning experiences to move beyond national narratives and incorporate diverse perspectives, complex global challenges, and intricate intercultural contexts. This could involve studying historical events from multiple viewpoints, analyzing literary works from different cultures, and grappling with issues like climate change, migration, and sustainable development through a global lens.
- ❖ **Teacher training:** Equips educators with the knowledge, skills, and mindsets needed to navigate the complexities of teaching in a globalized world. This includes building cultural sensitivity, developing pedagogical strategies for fostering intercultural understanding, and integrating technology effectively to facilitate virtual collaboration and access to global resources.
- ❖ **Student mobility programs:** Open doors for students to experience different cultures firsthand through exchange programs, immersive learning experiences, and virtual collaborations with peers from across the globe. These opportunities foster critical thinking, communication skills, and adaptability, preparing students for active participation in a interconnected world.
- ❖ **Partnerships and collaborations:** Bridge geographical distances and strengthen academic networks by creating meaningful partnerships between educational institutions in different countries. This could involve joint

research projects, faculty exchange programs, and collaborative curriculum development initiatives, enriching the learning landscape for students and educators alike.

- ❖ **Technology as a bridge:** Leverages the power of digital tools to promote virtual exchange, international communication, and access to global resources. By utilizing online platforms, video conferencing, and interactive learning tools, students can connect, collaborate, and learn from peers and experts around the world, blurring geographical boundaries and fostering a truly global learning community.
- ❖ Internationalization of education is not a one-size-fits-all approach. Its implementation must be carefully tailored to the specific needs and contexts of each educational environment. However, by embracing these diverse initiatives, educators can pave the way for fostering globally competent citizens equipped with the critical thinking, intercultural understanding, and collaborative skills necessary to thrive in a world defined by interdependence and shared challenges.

V. The Role of NEP in Promoting International Education:

The New Education Policy (NEP) 2020 of India doesn't simply nudge, it actively propels the integration of international perspectives into the educational landscape. Its role in promoting international education is multifaceted, encompassing strategic interventions at various levels:

❖ Curriculum Reimagination:

- **Global Challenges and Diverse Voices:** NEP encourages curriculum development that incorporates global issues like climate change, sustainable development, and human rights, promoting critical thinking and engagement with real-world problems. Diverse historical and literary perspectives are woven into the curriculum, dismantling dominant narratives and fostering intercultural understanding.
- **Focus on Languages:** Multilingualism is championed, with Indian languages and foreign languages like Spanish and French prioritized. This not only empowers students to communicate across cultures but also opens doors to diverse cultural expressions and perspectives.
- **Flexibility and Choice:** The flexible curriculum framework allows schools to adapt content to local contexts and incorporate elements of internationalization relevant to their students' interests and needs. This empowers educators to create learning experiences that resonate with their communities while nurturing a global outlook.

❖ Teacher Training and Capacity Building:

- **Skilling Educators:** NEP recognizes the crucial role of teachers in implementing its internationalization agenda. Specialized training programs equip educators with the skills to teach effectively in a globalized world, including pedagogical strategies for intercultural understanding, technology integration for virtual exchange, and critical thinking frameworks for analyzing global issues.
- **Collaboration and Sharing:** The policy encourages knowledge sharing and collaboration among teachers through online platforms, professional development workshops, and international exchange programs. This fosters a community of educators committed to internationalization and provides continuous learning opportunities to refine their skills.

❖ Student Engagement and Opportunities:

- **Virtual Exchanges and Collaborative Learning:** NEP promotes the use of technology to facilitate virtual exchange programs and collaborative learning projects with students from different countries. This breaks down geographical barriers, exposes students to diverse viewpoints, and equips them with valuable communication and collaboration skills.
- **Student Mobility:** While still in its nascent stages, the NEP emphasizes student mobility programs like international exchange semesters and internships. These immersive experiences provide firsthand exposure to different cultures, challenge preconceived notions, and nurture independent thinking and adaptability.

- **Focus on Lifelong Learning:** NEP's emphasis on lifelong learning encourages students to continuously engage with global issues and perspectives beyond the traditional classroom setting. This fosters a commitment to international understanding and responsible global citizenship throughout their lives.

VI. Teacher Training and Capacity Building:

Effective implementation of the NEP's internationalization agenda hinges on well-trained and knowledgeable teachers. The policy recognizes this need and outlines several initiatives for teacher training and capacity building:

- **Developing specialized training programs:** The NEP calls for the development of training programs in international education, intercultural understanding, and teaching diverse learners. These programs should equip teachers with the skills to design and implement internationalized curriculum, facilitate cross-cultural learning, and address the needs of students from diverse backgrounds.
- **Promoting collaboration and knowledge sharing:** The policy encourages collaboration between teacher training institutions, schools, and international partners to share best practices and develop effective training models. This could involve creating online resources, organizing workshops, and facilitating exchange programs for teachers.
- **Integrating technology into training:** Technology can be a valuable tool for teacher training in international education. Online platforms can provide access to resources, case studies, and international collaboration opportunities. The NEP emphasizes the use of technology in teacher training to improve accessibility and reach.

VII. Research Methodology:

❖ Type of Research:

The present research paper is purely based on Descriptive Research.

❖ Period of Research:

The base for the present research papers is based 5 years.

❖ Types of Data:

❖ **Primary data:** In the present research paper primary data is not used

❖ **Secondary data:** The present research paper based on secondary data which is taken from websites, newspaper.

VIII. Conclusion:

The NEP 2020 presents a promising framework for promoting international education within Indian classrooms. Its emphasis on flexible curriculum, multilingualism, teacher training, and technology integration provides a foundation for fostering global perspectives among students. However, successful implementation requires overcoming challenges like resource constraints, lack of awareness, and resistance to change. Continued research and evaluation are crucial to assess the effectiveness of NEP interventions and to refine strategies for promoting global citizenship and intercultural understanding in local classrooms.

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AN ANALYSIS OF CONFLICTS AND OBSTACLES OF WOMEN WORKERS IN THE GARMENTS INDUSTRY- A CASE STUDY OF KARNATAKA STATE

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Abstract:

India is the world's second biggest maker of materials and articles of clothing after China. It is the second-largest cotton consumer in the world, trailing only China, and the third-largest producer of cotton worldwide. The Indian material industry is pretty much as different and intricate as nation itself and it consolidates with equivalent poise this massive variety into a firm entirety. India's article of clothing industry has been quickly filling over the most recent couple of years. It contributes considerably to India's commodity profit and it is assessed that one out of each and every six families in the nation relies upon this area, either straightforwardly or by implication, for its vocation. The development of the article of clothing area in any case, isn't remaining closely connected with an improvement in the functioning states of the article of clothing laborers. The piece of clothing industry contributes 16.63% to the unfamiliar profit of India and it utilizes over 3.5 million specialists. There are five different piece of clothing creation center points in India; all spend significant time in various kinds of piece of clothing creation. Bangalore is one of the focuses of creation of piece of clothing and has somewhere near 1200 major, little and medium estimated piece of clothing manufacturing plants. A survey of piece of clothing enterprises uncovered that, it is one of the biggest assembling areas in India

Keywords: Women Laborer, Clothing Industry, Government, Strategy, Recommendations

Introduction:

India is the world's second biggest maker of materials and articles of clothing after China. The Indian material industry is pretty much as different and intricate as nation itself and it consolidates with equivalent poise this massive variety into a firm entirety. India's article of clothing industry has been quickly filling over the most recent couple of years. It contributes considerably to India's product profit and it is assessed that one out of each and every six families in the nation relies upon this area, either straightforwardly or in a roundabout way, for its business. The development of the piece of clothing area be that as it may, isn't remaining closely connected with an improvement in the functioning states of the piece of clothing laborers. 66% of the article of clothing laborers are Women and they need to battle to earn enough to get by while tolerating the unforgiving everyday truth of constrained extra time, work instability and provocation at the industrial facility work floor. Consequently, to work on the socio, monetary, status and working states of Women laborers in the article of clothing industry they should be engaged.

The article of clothing industry contributes 16.63% to the unfamiliar profit of India and it utilizes over 3.5 million specialists. There are five different article of clothing creation center points in India; all spend significant time in various sorts of article of clothing creation. Bangalore is one of the focuses of creation of piece of clothing and has somewhere near 1200 major, little and medium measured article of clothing manufacturing plants. A survey of piece of clothing enterprises uncovered that, it is one of the biggest assembling areas in India. It represents almost 20% of India's Modern Result and 37% of India's Products. Karnataka is known for being the clothing objective in the Worldwide Market.

The Execution of Indian Material Industry:

The manufacturing sector remains India's second largest source of employment. It provides direct employment to over 35 million people nationwide. The portion of materials in complete products was 10.33% during April-July 2021-2022, according to the Service of Materials. There were in excess of 2,500 materials winding around plants and 4,195 material completing production lines in all over India. In the development of textures the decentralized

area represents about 94% while the factory area has a portion of just 6%. Being an agro-based industry the development of natural substance differs from one year to another relying upon climate and precipitation conditions.

Readymade Articles of Clothing Industry in Context and Its Contemporary Situation in Bangalore:

The article of clothing ventures in Karnataka are packed in Bangalore where probably the biggest commodity places of the nation are existing. Today abroad purchasers view Bangalore as a significant area for obtaining of articles of clothing after Bombay and Delhi. Article of clothing ventures in Bangalore began from the time of English. M/s. Bangalore dressmaking Co. was the principal unit, began to produce piece of clothing in Bangalore during 1940, which was begun by Mr. Vittal Rao. During the standard of English, there was a need of dress materials.

Improvement of readymade pieces of clothing units in Bangalore was begun in the year 1970 onwards by driving exporters like Gokaldas trade, Ashoka send out, Gokaldas Pictures, mainland sends out, Leela Designs, Commodities Abroad and so forth. Afterward, little enterprises (fabricators) were begun by taking the orders from huge scope. Most significant explanations behind advancements of RMG is the accessibility and obtaining of commodity textures from places like Salem, Disintegrate, Coimbatore which are closest to Bangalore. The economy of Bangalore is in extricable stirred up with that of readymade piece of clothing industry. 30% of the Readymade Articles of clothing of the nation are made around here. This is third greatest readymade piece of clothing producing bunch in the country.

The business began prospering and The vast majority of RMG ventures are moved in Bommanahalli and Peenya modern domain. A large portion of the purchasing organizations on the planet have laid out their branch office in the city. Aside from this, Clothing Park, at Doddaballapur has begun working incredibly. In India, RMG units are packed in the urban communities like Delhi, Mumbai, Kolkotta, Bangalore, Chennai, Jaipur, Tirupur, Ludhiana. There is an alternate in the finished results made at Bangalore and different spots. RMG are basically made for trade house.

In Bangalore, piece of clothing units are principally amassed in the accompanying region: Bommanahalli, Bommasandra, Peenya, Yeswanthpur, Rajajinagar Modern Domain and Modern town. The significant items made here are; - Women Coat,. Shirts, Choodar, Slips, Gentlemen. Pants. Shirts, Coats, Shirts There have been expansion in the quantity of RMG units in Bangalore since 2014 as per the reports of Karnataka Modern Region Advancement Board is currently gaining the grounds for the further extension of the recreation area. There are around 1680 fabricators who are taking care of business work for these exporters, aside from homegrown market needs. There are more 60 weaving units who are supporting these units for esteem expansion.

Literature Review:

A survey of writing was added to this concentrate by alluding to various diary and studies led by various people to show importance to socio-monetary status of Women laborers in Pieces of clothing Production line.

Disdain (2000) in her book expressed that there is positive change in the political, monetary and economic wellbeing of working class working and non-working Women living in four urban areas in Maharashtra with the approach of autonomy.

Styles. Kapur (2004) his shown that the twin jobs of Women make pressure and struggle due her social construction which is even more prevailing .In her concentrate on working Women in Delhi, she has shown that conventional dictator set up of Hindu social design keeps on being the equivalent fundamentally and thus. Women deal with issue of job struggle change in perspectives of people as per the circumstance can assist with conquering their concern.

Rosen and Jerdee (2007) in their review expressed that Women were seen less well concerning the information, aptitudes, abilities, inspiration, interests, personality, and work propensities that are requested in most administrative jobs.

Sandhu and Singh (2008) detailed that inspiration factors viz. pride, capacity usage, acknowledgment and prizes, imaginative work opportunity of articulation and degree for proficient development contributed nearly more to

work fulfillment than factors like way of behaving of prompt officials, professional stability and headway, sufficiency of compensation, regulatory arrangement and societal position connected to the gig.

Drucker (2012) in his book expressed, that the workforce support of hitched Women under age fifty is presently similarly just that high of men. It is accordingly far-fetched to rise any further. In any case, an exceptionally enormous number a Women in the workforce the of the people who entered when the inrush of Women started are currently arriving at their mid-thirties. And furthermore he expresses that a large portion of the wedded Women stay in the workforce after first youngster.

Julia (2013) in her review that 'by zeroing in on Women' vocations the short - term goals has been to address the orientation unevenness, however long haul objective should be to foster hypothetical ideas and clarification which the unbiased and comprehensive of all kinds of people. Second the progressions right now under way in work association and callings will also be alluded to as giving new challenges to Women' vocations as wells as introducing a chance for the re-conceptualization of the 'effective' profession.

Amartya Sen. (2014) calls it, an area of 'co-usable struggle', where there is different interest, assumption, commitments, necessities and levels of control.

Reddy and Venkateswarlu (2015) in their review reasoned that ranch researchers esteemed imagination and autonomy most in doing their errands. They didn't like to work in provincial regions. The other work valves of researchers varied marginally as indicated by their age and experience.

The survey of this study uncovers that the ramifications of Piece of clothing Women Laborers in Bangalore City. The Examination of Women' discernments as assembly line laborers shows that they are taken advantage of on the plant floor in various ways and experience new types of man centric mastery past their loved ones.

Beginning Exploration Issue of the Women Laborers in Pieces of Clothing Production Line:

66% of the piece of clothing laborers are women and they need to battle to earn enough to pay the bills while tolerating the cruel everyday truth of constrained additional time, work uncertainty and provocation at the manufacturing plant work floor. Albeit all significant brand organizations have set up implicit sets of rules and review instruments to guarantee consistence with essential work guidelines. The ground floor reality has not improved and even appears to crumble as work pressure is ascending because of developing interest. In this manner, to work on the socio, monetary status and working states of Women laborers in the piece of clothing industry, they should be engaged. So in This exploration paper to Analyzes Financial status of Women laborers in Articles of clothing processing plant with extraordinary reference to Bangalore city.

Objectives

- To review the Financial foundation of women laborers in the piece of clothing ventures.
- To review the issues connected with working states of women laborers in Piece of clothing ventures in Bangalore

Research Method:

The review depends on the two sorts of information for example essential and optional information. Essential information will be gathered through all around organized poll, and party interviews. The optional information will be basically from related reports. The review depends on the example choice of Instant Articles of clothing from chosen region. Questions were asked and addresses entered in the appropriated segment. Overview plan was utilized to keep away from non-reaction. Truly entered and individual visits to the plants gave productive outcomes. 30 respondents were picked indiscriminately and the information accumulated.

Instruments and Strategies of Information Assortments:

The current review will be founded on the information gathered through a mix of subjective and quantitative exploration methods to conquer the impediment of the every one of the strategies. Quantitative information relating to different financial boundaries will be gotten by regulating an organized survey among the chose Pieces of clothing plant under the subjective examination procedure. Casual meeting technique will be utilized to get more

noteworthy bits of knowledge into the capital assets, Age wise, Schooling, Experience and compensation dispersion, Outfits, Foundation, Work badgering wellbeing Guidelines Transportations and In these sort of interview polls are directed.

Impediments of the Review:

- We were not permitted to direct the study in numerous businesses as the proprietors had misgivings about our exploration exercises regardless of our affirmation of the equivalent. In certain businesses the safety officer didn't actually permit us to make sense of our study.
- The review was led in just 3 ventures and an example of 30 laborers was thought of. So information couldn't be summed up.
- There was lack of time and cash for directing inside and out research.

Examination of Data from the Field Survey:

Table 1: Distribution of Respondents by Age, Education, Experience, and Wage

Year	%	Education	%	Experience	%	Wages(Rs)	%
Below 20	6.66%	Below SSLC	30%	Below 1 year	16.66%	4000-5000	
21-30	73.33%	SSLC	53.33%	1-5 years	56.66%	5001-6000	20%
31-40	20%	PUC	16.66%	5-10 years	13.33%	6001-7000	36.66%
41-50	nill	UG	nill	10-15 years	10%	7001-8000	23.33%
Above 51	nill	NILL	nill	Above 15 years	3.33%	Above 8000	20%

Table-1 we have thought about the period of Women from 18-60 years. In this viewpoint around 73.33% of the example of 30 Women are in the age gathering of 21-30 years and 20% lie in the gathering of 31-40 years.ith reference to the instructive capability, 53.33% of the examples have schooling up to SSLC, 16.66% of them have pre-college training and 30% of the examples have not even passed SSLC.

At the point when we consider the experience 56.66% of them have the experience of 1-5 years and 16.66% of them have the be insight of under 1 year, around 13.33% of Women have insight of 5-10 years The pay appropriation of the example of Women article of clothing laborers 36.66% of them has their wages of RS 6000-7000, 23.33% have their wages of Rs 5000-6000 and 23.33% have their wages of Rs 7000-8000. This shows that the ongoing monetary benefit of the family isn't adequate for satisfying their fundamental necessities. This likewise shows that Individuals of the age gathering of 21-40 years are given positions based on experience not based on their schooling.

Table 2: Precautionary Steps

Precautionary Steps	Uniform	Training
Yes 100%	Yes 33.33%	Yes 86.66%
No	No 66.66%	No 13.33%

Table-2 shows that the production line or firm gives wellbeing directions like gloves, and the smooth working of the machines and so forth. Around 100 percent of the examples say that they are given garbs and were given preparation with respect to the utilization of machines.

Table 3: Rest and Work Hours

Work Hours(Hrs)	No of people	Rest hours for every 8 Hrs of work(in minutes)	No of people
6	Nil	40	15
7	Nil	30	15
8	30	20	Nil
9	Nil	10	Nil
10	Nil	5	Nil

Table-3 shows that laborers need to labor for 8 hours everyday and half of them say that they are given rest of around 40 minutes day to day and staying half use the break for 30 minutes.

Table 4: Facilities

Toilets	Drinking water	Canteen	Transportation
Yes 100%	Yes 100%	Yes 63.33%	Yes 10%
No	No	No 36.66%	No 90%

Table-4 shows the Framework Offices given to the laborers. Every one of the laborers say that they are given latrines, Drinking water offices. However, when gotten some information about flask offices 63.33% of the example says that they are given bottle offices, yet 6.66 percent of this. One more part of framework is the transportation where 90% have said there are no transportation offices given and staying 10% say they are given transportation offices.

Table 5: Pay & Leave

Leave & Pay	Leave without Pay
Yes 76.66%	Yes 6.66%
No 23.33%	No 93.33%

Table - 5 Shows that 76.66% say that they are given leave with Pay and staying 23.33% say that they are not given. At the point when we see about Leave without Pay, 93.33% say that they are not given Leave without Pay.

Table 6: Social Security and Health

First aid	Health facilities for family	P.F & E.S.I
Yes 100%	Yes 83.33%	Yes 100%
No	No 16.66%	No

Table-6 shows that 100 percent of the examples say that they are given Emergency treatment, P.F and E.S.I. At the point when gotten some information about Wellbeing Offices for family 83.33% say that they are given the offices, yet 16.66% say that they are not given.

Table 7: Unions and Labour

Trade Union	Employment harassment
Yes 20%	Yes 80%
No 80%	No 20%

Table-7-Shows that 80% have no worker's organizations in their plants and 20% express that there is worker's organization in their firm. As larger part of the example express that there is no worker's organization 80% express that there is business badgering in their firm and 20% express that there is no work provocation. 80% of the abuses are the double-dealing of the proprietors, Postponement of Wages, Non-obstruction of the proprietors in any specialist's concerns.

Findings:

Findings with respect to the financial status of women laborers in Article of clothing Industry.

- a) Among the 30 laborers who were evaluated the normal age was somewhere in the range of 18 and 40 years.
- b) 80% of these laborers have been to school for their essential and auxiliary instruction. Just 20% of these female specialists have finished their senior auxiliary tutoring.
- c) 80% of the specialists who are essential and auxiliary instructed needed to leave tutoring either for marriage or for aiding their loved ones
- d) On being inquired as to why they picked article of clothing industry 30% of them thought that they don't have the expected instructive capabilities for occupations in different areas.

Findings with respect to the issues connected with their functioning circumstances Deficient Admittance to Advantages and Offices

- a) Out of 30 specialists, 37% communicated that they get a month to month pay of Rs.6000-7000/- as it were.
- b) 20% grumbled that reward was not really given
- c) Everybody grumbled about no professional stability. Conservation rate is high. Arbitrary recruiting and terminating happens because of minor errors, inability to fulfill time constraints revealing late to work.
- d) Annual Work Turnover is extremely high. Nearly 10% of the labor force is laid off every day.
- e) Nearly a fourth of the meetings grumbled that they can't withdraw as and when they direly need. Regardless of whether they fall debilitated they can't be missing for over 3 days at a stretch as they dread of loosing their work.
- f) 80% respondents were not content with the responsibility, cutoff times; work shifts. However Women in Bangalore are not given nightshifts. In any case, laboring for 8 hours at a stretch in the day with just 30 minutes of mid-day break was excessively chaotic for the. It disregards the Processing plants Act.
- g) The Women respondents agonizingly communicated their disappointment about the way that about $\frac{3}{4}$ th of men and not exactly around 50% of the Women get preparing and retraining. The men get high talented preparation however Women were confined to essential preparation as it were. Also the men do night moves and get additional compensation for it. Which the Women can't profit of , so such separations are far and wide in piece of clothing enterprises.

Recommendations:

- a) **Nature of work:** There ought to be equivalent admittance to occupations, preparation phases, abilities, equivalent compensation for equivalent work, work ought to be unionized with aggregate bartering offices so the specialists can haggle with the administration for additional advantages, better wages and work Conditions.
- b) **Equity in Pay:** Imbalance in pay ought to be eliminated based on orientation. There ought to be equivalent compensation for equivalent work ought to be set up. Strategy creators, Associations and Managers ought to distinguish those issues and should sharpen on them.
- c) **Adequate admittance to Offices and Advantages:** Nearly everyone the laborers chiefs, association, managers prescribed superior offices with unique regard for orientation related issues like rest rooms, crèche, container,

wash rooms There ought to be complaint board for ventilating worker objections and authentic complaints , and so on.

- d) **Access to preparing, schooling, abilities:** Preparing ought to be intended to meet the compels of female laborers. Women laborers ought to be prepared about the essential as well as particular abilities of taking care of business.
- e) **Occupational Wellbeing and Security:** The women in the piece of clothing businesses ought to get the advantages of maternity and youngster care. There ought to be light work and rest periods between turns out particularly for pregnant women. The clinical expert in the production line premises ought to deal with the minor cuts, injury, significant mishaps; serious back agony ought to be treat racket ESI emergency clinics.
- f) **Collective Bartering:** The instruments of aggregate dealing ought to be there to offer a help to the specialists as it goes about as a plat structure to voice the laborer's complaints for better wages, employer stability and working circumstances.

Routinely lengthy working hours and additional time hours make numerous issues in their families and wellbeing, so working hours ought to be limited by expanding customary compensation. To give lodging and transportation offices by the individual proprietor.

- To build the current pay and have to guarantee the lowest pay permitted by law for them
- To guarantee the installment of pay in the due date
- To save a part of their compensation in the record made by the proprietor
- To forestall clamor contamination in the functioning spot and have to guarantee appropriate clinical offices
- To go to correctional lengths against liable manager for their act up
- To decide an objective based reward framework as well as different motivations, for example, leaves, medical advantage.

Conclusion:

This study uncovers tremendous contrasts in the nature and states of work, pay among people in work place. The review frames the more awful states of work that women face, because of their low instructive capabilities and abilities the women laborers has less admittance to better working circumstances, advancements, leave offices, word related wellbeing, The study attempts to feature. The absolute prescribed procedures regarding women laborers with the goal that the businesses in the associations could achieve a few changes in work conditions and increment the pay of the businesses and arrangement of the worker's guild.

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A STUDY ON DIGITAL PAYMENTS AND CONSUMER PERCEPTION IN MARATHWADA REGION

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Abstract

The digital world is empowering now day by day, one of the most important parts of digitalization is digital payment methods which makes the society less dependent on physical cash and to make payment in most convenient and easier way through digital payment platforms. Propelled by recent policy initiatives and technological developments, digital payment system is a promising success story in the making. In recent decades, the region has seen a significant increase in the use of digital payments. Digital payment also known as an electronic payment, is the transfer of value from one payment account to another using a digital device such as a mobile phone, POS or computer as well as a digital communication channel such as mobile wireless data or SWIFT. This study is generally based on secondary data to understand the different methods of online payments. The result based on the study is that there are number of digital payment methods available to the people but the knowledge and awareness about the digital payments and how to use it is extremely low. Contributing more on training and educating people about digitalization will reflect in increased use of digital ways to make payment in future so easily.

Keywords: Digital Payment, Consumer, POS, Cashless transaction, Digital Wallet,

INTRODUCTION

Digital payment is a way of payment which is made through electronic devices over internet. Both the payer and payee use digital modes to send and receive money while making digital payments. All the digital payment transactions can be completed through online. It makes users very convenient and easier to make payments with the recent trends and advancement in technology, digital payment plays a vital role in our daily lives. Interesting offers and benefits while using digital payment methods made an impact on users to switch to online payment rather than physical transaction. The main reasons behind the increase in digital transaction are ease of usage, faster transactions, convenience etc. Mostly the digital payments are done through electronic devices like computer, tabs, smart phones etc. The usage of smart phones are increasing rapidly, this has also paved the way for digital transactions. Banks are now encouraging users to switch to online payment methods through their own mobile application and internet banking so that users can bring down the number of their bank visits. Awareness about the digital payment methods is very less among the people. There is a belief in them that digital payment makes them spend more money on unnecessary things, digital payments are unsecured and also banks charges high cost for online transactions. Hence the digital literacy becomes a necessity.

Different types of online financial transactions are:

- **National Electronic Fund Transfer (NEFT)** National Electronic Funds Transfer (NEFT) is a nation-wide payment system used for one-to-one funds transfer. Under this system, individuals or firms can electronically transfer funds from any bank branch to a person, firm or corporate having an account with any other bank branch within the country participating in this scheme.
- **Real Time Gross Settlement (RTGS)** The RTGS system is primarily used for large value transactions. The minimum amount transferred through RTGS is 2 lakhs. RTGS is a payment system used for real-time settlement of fund transfers.
- **Immediate Payment Service (IMPS)** IMPS is an instant, 24×7, inter-bank electronic fund transfer service within banks across India through mobile, internet and ATM which is not only safe but also economical and fast. Some bank's charge transfer charges for IMPS transactions depending upon the type of customer account and amount transferred.

- **Electronic Clearing System (ECS)** ECS is an electronic method of fund transferring from one bank account to another. It is generally used for bulk transfers performed by firms for making payments like interest, salary, pension, etc.
- **MOBILE BANKING** Mobile banking is a service provided by a bank for its customers to conduct different types of financial transactions remotely using an app on mobile devices such as a mobile phone or tablet.
- **POINT OF SALE** point of sale (POS) is the place where a customer makes a payment for goods or services. Every time a customer makes purchase at the store, they're completing a point of sale transaction. Marketers and retailers use point of purchase (POP) displays to attract customers to their business. A POS transaction may occur in person or online and receipts get generated either in print or electronically. This strategy is popular among firms looking to stay competitive.

REVIEW OF LITERATURE

(R. Joshi & Kumar, 2020) investigated the impact of digital India on the Indian economy in order to assess the challenges associated with digital India. The study discovered that digitalization has resulted in increased innovation, ease of operation, economic growth, and new job prospects. It has aided in the establishment of systemic transparency and the free flow of funds across the economy.

(M. C. Joshi, 2017) examined the impact of demonetization on digital payments, as well as the differences in growth in various digital payment modes prior to, during, and after demonetization. They used a descriptive research approach to achieve the above goals, and the study's required data of retail digital payment data in NPCI was acquired from the Reserve Bank of India's website. They discovered in their research that the true impact of demonetization on digital payments was also realized after the move. Demonetization made it mandatory to utilize digital payments as an alternative to cash, and digital payments have continued to rise since then.

(Agarwal et al., 2018) examine how the unavailability of cash affects a consumer's spending behavior and choice of spending mechanism in a cash-based economy. They also use a difference-in-difference framework to estimate the magnitude and persistence of the use of digital payment channels post the announcement. They noted that the debit card data reveals an increase in usage post demonetization among existing users, where transaction volume rose by almost 28 percent, and also that the transaction volume of new adopters rose by almost 400 percent. They also analyzed the impact of demonetization from the supply side on payment modes like traditional (debit card) and non-traditional (e-wallet) as well as from the demand side by collecting data from two retailers (one an e-grocer and the other a physical market place).

Popular e-wallets used in city:

G-pay In the year 2015, Google Incorporation launched the application. Google Pay is the most widely used digital payment app, and it's available on both Android and iOS devices. A person can either transfer money or pay their utility bills immediately from their bank account and by having a UPI (Unified Payment Interface) ID, which can only be obtained after installing the Google Pay application. The app provides users with two levels of protection, including fingerprint security. It renders individuals stress-free in the event of identity theft or the loss of their secret credentials. It can be used by small businesses. Payments can be made or received by merchants, wholesalers, or even major corporations. As of today, the app has over 100 million users.

PhonePe is another Indian-based payment service app that was released in 2015 as a privately owned multilingual mobile and PC software. The company's headquarters are located in Bangalore, Karnataka, India. PhonePe is a unified payment interface (UPI)- based software that requires a user to link their bank account and generate a UPI ID in order to complete any transaction or pay utility bills. The app, like Paytm, is available in 11 languages for Indian customers. As of today, PhonePe has over 280 million clients who use its services. The company offered an ATM service for its subscribers called "PhonePe ATM" in January of 2020. It creates more revenue.

BHIM Bharat Interface for Money (BHIM) is a payment app that lets you make simple, easy, and quick transactions using the Unified Payments Interface (UPI). You can make direct bank payments to anyone on UPI by using their UPI ID or scanning their QR code with the BHIM app. You can also request money through the app using a UPI ID. Pioneered and developed by the National Payments Corporation of India (NPCI), BHIM has been

conceived and launched by the Hon'ble Prime Minister of India, Narendra Modi, on December 30th, 2016 to bring financial inclusion to the nation and a digitally empowered society.

STATEMENT OF THE PROBLEM

Digital payment had pushed the economy towards digitalization. This major transformation demanded in-depth understanding of digital payment mechanism and study of awareness level of customers towards digital payment services. Customer satisfaction is the primary factor towards success of digital payment system. Thus evaluation of customer satisfaction is needed.

OBJECTIVES OF THE STUDY

1. To know the concept of digital payment, consumer perception.
2. To study of various modes of digital payment in Banking Industry.
3. To know the impact of user perception, trust in payment systems, and experience of online fraud on the choice of mode of payment.

RESEARCH METHODOLOGY

The present study is based on primary data collected from 200 respondents from different parts of Marathwada region well as from secondary data collected from various articles, research papers and RBI's website. To study the consumers' perception about digital payment a questionnaire of 10 questions and 6 sub-questions were designed to collect data from respondents. This was to define the target population to be surveyed. The sampling unit for the research was the population using digital payment and the target unit was the youth & young adults. The sample size decided in this research was 200.

Table 1: Respondents demographic profile

Variables	Characteristics	frequency	Percentage
Age	16-20	122	61%
	21-30	59	29.50%
	Total	200	90.50%
Gender	Male	102	51%
	Female	98	49%
	Total	200	100
Occupation	Self employed	0%	5%
	Business	04	2.00%
	Job holder	35	17.50%
	Student	152	76%
	Total	200	100
City	Aurangabad	107	53.50%
	Beed	42	21%
	Nanded	51	25.50%
	Total	200	100

Concluding the analysis of demographic profile, the points to be noted from the above table and figures is that the major chunk of respondents are students (youth) - 61%, in which the majority are male (51%), who belong to Aurangabad cities (53.5% of total respondents)

Table 2: Table showing consumer preference of different E-wallets

		G-Pay	Paytm	Phone-pay	BHIM	Other	Total	Percentage
Age	16-20	63	23	30	02	04	122	61
	21-30	21	23	14	00	01	59	29.5
	31-40	06	05	04	04	00	19	9.5
Total		90	51	48	06	05	200	100

Table 2 shows that the youth (age bracket 16- 20) benefit the most from digital payments. G-pay has also received the most responses (63 out of 122) of all the E-wallets. When it comes to other wallets, Paytm has the most responses (23 out of 59) in the 21-30 age bracket, while G-pay has once again beaten other E-wallets in the 31-40 age range (6 out of 19 responses).

Table 3: Table showing why respondents prefer to use above wallets

		Time saving	convenient	Safe and secure	Better rating	Total	FA
Age	16-20	24	39	53	06	122	61
	21-30	10	27	21	01	59	29.5
	31-40	02	08	07	02	19	9.5
Total		36	74	81	09	200	100

For the convenience of interpretation, the above table can be explained as: -the 16-20 age category: - 16-20 age bracket has the highest number of responses and it is the target group of our study. It can be noted from above table that the mentioned category finds G-pay more time saving (24 out of 122 responded) as compared to other E-wallets also it can be noted that the youth find the preferred wallet to be convenient (39 out of 122), safe and secure (53 out 122) with better ratings (6 out of 122) as compared to others.

Table 4: - Table showing how the respondents knew about their preferred wallets

		New article	Word of mouth	Online search	Social media	Total	FA
Age	16-20	08	53	23	38	122	61
	21-30	03	28	12	16	59	29.5
	31-40	04	11	03	01	19	9.5
Total		15	92	38	55	200	100

Table no 4 it observed that in 16-20 age bracket 53 out of 122 respondents have heard about their preferred wallet through word of mouth, 28 out 59 respondents in 21-30 category and 11 out of 19 in 31-40 category also concluded the same.

Showing convenience chart



Chart conclusion: In the Table a ‘word cloud’ based on the frequently occurring words in the feedback highlights that consumer’s favor the ‘convenience’ offered by digital payment options available.

SUGGESTION

Customers must be able to comply with the terms and conditions of Digital payment methods, notify the issuer of the loss/theft of the Electronic Payment Instrument (EPI) immediately and keep track on the balance, especially after each transactions. Government can give continuous media coverage through TV news/ shows, Radio or social networking or newspapers/magazines about the benefits of digital payments to the society and for the individual.

CONCLUSION

As governments, regulators and service provider’s work together to improve electronic payment systems and related infrastructure, it is advisable to study how end users perceive these choices. The main policy recommendation of the study is that a combination of feedback and public perception assessment can accelerate digitization. Through this research, it has been found out that the perception of digital payment tools affects an individual's payment behavior. Digital payments are not only driven by a positive outlook on digital payments, but also a negative outlook on cash. Contrary to popular and traditional belief, customers in region are said to be willing to reduce their online fraud experience because of the greater convenience that digital payment methods offer. The impact of fraud on digital payment options varies depending on the purpose of the transaction. Furthermore, we cannot ignore the role of demographic factors in better adoption of digital payments. The adoption of digital payments is expected to increase based on the general socio-economic development of the people.

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A STATE OF THE ART OF SELF-HELP GROUPS IN MARATHWADA REGION TO EMPOWERMENT OF WOMEN

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ABSTRACT:

The movement of Self-Help Group has emerged and experienced an explosive growth as an inclusive and socio-economic movement. Thousands of the poor and the marginalized population in India are building their lives, their families and their society through Self Help Group. These initiative with bank linkages appeared important and added value to the lives of Self-Help Group members, their families in general. The main aim of this research is to examine the role of Self-Help Group in making a contribution in the change of the socio-economic status to the women related to it. The Self-Help Group have been playing considerable role not only changing the economic status of the women but also the social status.

KEYWORDS: Micro finance, Self-help Group, credit input.

INTRODUCTION: Empowerment is the process to create power in individuals over their own lives, society, and in the communities. We can state that „Women Empowerment“ as to make women able to enjoy their rights to control and improve their economic conditions. Women are heroine what role she played men cannot play because she is unrecognized who works from birth to death. In most of the rural areas the economic status of women are very low, Study of the gender aspect of micro financing in the South Indian context (Holvoet, 2005) leads to an argument for the need for financial and social group intermediation as part of the micro credit input so as to support women’s involvement in decision making processes. It also helps to transform her into independent and confident women.

ROLE OF SELF-HELP GROUP:

- To motivate poor women to thrift and make use of their savings by credits it to other women in the group.
- To minimize reliance on money lenders.
- To build up confidence and increase mutual assist for women who are trying hard for social reconstruct.
- To reduce discrimination and make a woman to participate in the mainstream of decision making in the society.
- To expand a social status of women in family and society.
- To contribute in gender equity.
- To advanced evaluation in women’s saving and lending

EMPOWERING WOMEN THROUGH SHGs:

Women are an integral part of the economic development of the country; therefore, the government should give equal importance to the women contributors and their well-being in the society. Despite the wide variation in the conceptualizing women's empowerment, a definition can be proposed: "Women's empowerment is a self-acquired process to achieve women's choices in all aspects of life, including decisions about their health and bodies, their education, employment, and political representation. This process should be acquired at all levels: individual, household, community, country and global. Furthermore, women's empowerment is contextual. (Anila, 2012) in his research examined the role of Self-Help Group in developing socio economic status of rural women. It should be interpreted closely with the socio-economic context and in period of time".

The scope of SHGs in improving women's health, focusing on their implementation. It critically assesses the extent to which SHGs can be involved in attaining better health for women and children by exploring the crucial role of caste and class in access to health services. SHGs, which emanate from international policy circles, fail to capture local structural contexts such as caste and class and, as a result, developed approaches that are unlikely to produce equitable health services provision to poor and marginalized people. Bidnur, (2012) in his paper analyzed the demographic factor of sample respondents and women power empowerment through Self Help Groups of Sangli Miraj and Kupward corporation area of North Karnataka. The sample for study was comprised of 125 Self Help Groups members. The study revealed that majority of respondents had joined Self Help Groups mainly to get loan and utilized for business purpose. The women respondents were more prompt for repayment of loan they borrowed from Self Help Groups. The saving of Self Help Groups member rose with their income. The author concluded that the economic progress of India depends on the productivity of both male and female work force. N. Manimekalai and G. Rajeswari, (2000) in their work

"Strengthening of Women through Self Help Groups," dissected the woman self-help groups framed by the Non-Governmental Organizations in the country zones of Tiruchirappalli District to advance provincial woman through independent work. The Non-Governmental Organization in particular, Society for Education and Village Action and Empowerment (SEVAE) has been working in 362 towns and helping a sum of one-lakh woman recipients comprising of various roads of independent work like trivial organizations, preparing, and creation administration units. (Preema Rose Nichlavose Jincy Jose, 2017) did an examination on the point Impact of SHG Initiatives on Socio Economic Status of Members, directed in Kerala state, by taking 16 SHGs. After her examination she has proposed that there is a need to build the preparation programs given to the SHG individuals with respect to the self-improvement and enterprising expertise advancement

EMPOWERING WOMEN CAN CHANGE WOMEN'S LIVES IN INDIA:

In India, for example, the Integrated Rural Development Program (IRDP) has addressed the problem of rural poverty by building the capacities of rural people to plan, drive, and sustain their own social and economic development. Women's empowerment can have a range of positive impacts on women's lives, including improved economic opportunities, greater control over their own lives, increased political participation, and greater gender equality. It is based on a humanist model of development – focused on men and women, and not just on the growth of materials, which are merely means (Friedmann, 1992 and Elders, 2003). By empowering women to participate fully in the economy, women can have access to better paying jobs, which can help to lift them and their families out of poverty. For this purpose, the Self-Help Group (SHG) model was introduced as a core strategy for the empowerment of women, in the Government of India's Ninth Five Year Plan (1997–2002) and is one of the largest and fastest-growing microfinance programs in the developing world. Empirical evidence from earlier research substantiates that the economic and social impact of microfinance empowers women. Empowering women can also give them more control over their own lives, allowing them to make decisions about their own health, well-being, and future, which can lead to increased self-esteem and confidence, as well as improved mental and physical health. When women are empowered to participate in the political process, they can have a greater say in the decisions that affect their lives and their communities, leading to more inclusive and representative decision-making and policies and programs that better address the needs of women and girls. Women's empowerment can also help to reduce gender inequality and promote

greater gender equality, leading to more balanced relationships between men and women and positive impacts on women's health, well-being, and overall quality of life. Various experts on developmental issues such as poverty, inequality and hunger have argued that employment opportunities and enhanced income from both farming and non-farming activities are essential for rural economic development and the reduction of rural poverty (Narayanamy et al., 2005; Kay 2009). As you read about the challenges facing women in India, we hope that you are inspired to take action and make a difference. One way to support women's empowerment in India is by making a donation to organizations that are dedicated to improving the lives of women and girls in India through education and health care.

Empowerment as the degree to which women are social actors, and thus, able to affect their own positions. Even though some scholars view women's empowerment as an outcome or as an outcome and a process, the definition

that describes women's empowerment as a process has received more agreement. Empowerment is about ability: women's ability to control individual health; the ability to control her life; and the ability to change the world. Different dimensions of this also include the abilities to control their homes, work, relationships, leisure time and values. The official rural unemployment rate, for example, is put at 10.1 per cent as opposed to the urban rate of 7.3 per cent, while poverty rates are over 50 per cent higher in rural areas than in urban (GIPC 2010; Alkire and Maria 2010). One can argue that this point of view is not much different from a general human rights perspective since it does not highlight the gender aspect of women's empowerment. The process of women's empowerment is dynamic; it is not static over the life course but may vary over time, subject to the accumulation of experiences, resources, and achievements as well as of time-varying characteristics like age, marital status and duration. Their struggle may take different forms, such as peaceful protest movements or popularize economic organizations – or it might emerge as the organization of self-help movements (Scott 1975; Mitlin and Bebbington 2006; Gledhill 2007). The use of contraception was once considered empowering, but when more than half of the married women in rural Bangladesh have used it since 1990s, it has become normative and does not necessarily imply a higher level of empowerment. Even though women's empowerment is a process, measuring the process over time is a major challenge in studies on women's empowerment. Thus, women's empowerment can only be measured as a final goal.

CONCLUSION

We may visualize an empowered woman. An empowered woman is confident in her ability; she is capable of leading her life independently; she is socially as well as economically independent; she is opinionated, enlightened and has freedom from all sorts of domination; and finally, she is someone who is capable of standing for her own rights. Women's empowerment comprises women's education and knowledge to enhance her understanding about her surroundings, her ability to control her life, freedom from domination by not depending on anyone else's income, her ability to participate in decision making process, her capability to make independent decisions and finally her independence in terms of mobility. Self-help Group has to be the main focus to increase women empowerment because it raises the status through education, literacy and training, so they can easily face any obstacles and hurdles, and can take active participation in decision making process. SHG philosophy is in women empowerment through increasing employability, self-sufficiency and inculcating a habit of saving among the rural women. Empowerment in micro-credit will inevitably involve a significant change in attitude, change in work practices and challenging vested interests. For women's empowerment to be addressed, women need to be enabled to define their priorities and demand their rights.

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KHOA ENTERPRISES: GOLDEN OPPORTUNITIES OF RURAL EMPLOYMENT

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ABSTRACT

India is the largest milk producing nation in the world. Milk is perishable in nature, thus it cannot be stored for a very long period. In order to preserve it, more than half of milk produced in India is converted into a variety of traditional value added milk products which played a significant role in the Indian economy. Khoa is a heat desiccated value added indigenous milk product. Due to its large scale consumption about six lakh tones of khoa is being manufactured annually, which is equivalent to seven percent of India's total milk production. In this article, the brief overviews on Definition of khoa, kinds of khoa, yield of khoa, opportunities of employments in khoa enterprises etc. are studied.

I) INTRODUCTION

Milk Production is one of the subsidiary businesses in farming. Large Number of farmers from India are involved in milk production. Milk has been used as an article of food since ancient times in India. It plays an important role in the diet. In India, the share of milk and its products is the largest after cereals, and it accounts for 16% of the total food expenditure. India's estimated milk production in 2015-16 was 155.49 million tones estimated per capita availability in 2015-16 was 337 grams per day. In Maharashtra annual milk production is 8.73MT. Uttar Pradesh being the top state in milk production with 23.330MT. In India, large quantity of milk is converted in to variety of dairy products like Khoa, Ghee, etc. These milk based sweets are available throughout country in all seasons. According to one estimate about 5.5 % of total milk production is converted in to Khoa and on the basis of present milk production of about 91 million tons per annum, this amount is equivalent to 3 million kilos of Khoa per day. The food and nutritive value of Khoa is very high. Conventionally, it is prepared by continuous boiling of milk in an open kettle until desired concentration (normally 65-72% total solids) without the use of any foreign ingredients and texture are achieved. Khoa is partially dehydrated milk product indigenous to India, was prepared from buffalo milk by boiling it vigorously in an open pan and reducing its volume to approximately 25% within 30 min. Texture of Khoa plays an important role in its suitability for the production of sweets, three different types of khoa are known, 'Dhap', 'Danedar', and 'Pindi' Khoa (26-34% moisture) has a smooth-grained texture and a firm body and is extensively used as an ingredient. All of these varieties are in demand and are required for making value added Khoa based products like Burfi, Peda, Gulabjamun, Kalakand, milk cake, Kunda, etc.

II) OBJECTIVES OF THE STUDY

- To study the Definitions of Khoa.
- To know the varieties of Khoa.
- To study the opportunities of employment in Khoa production.

III) RESEARCH METHODOLOGY

In pursuance of above objectives the following research methodology was used for this study. The Objectives of the study were achieved through collection and analysis of secondary Data. The secondary data has been mainly drawn from various records and publications such as research papers, books Newspapers etc.

IV) DEFINITIONS OF KHOA

Khoa is a concentrated whole milk product obtained by open pan condensing of milk under atmospheric pressure.

According to Food Safety and Standard Regulations 2011,

Khoya, by whatever variety of names it is sold such as Pindi, Danedar, Dhap, Mawa or Kava, means the product obtained from cow or buffalo or goat or sheep milk or milk solids or a combination thereof by rapid drying. The

milk fat content shall not be less than 30 percent on dry weight basis of finished product. It may contain citric acid not more than 0.1 percent by weight. It shall be free from added starch, added sugar and added coloring matter.

V) VARIETIES OF KHOA

Pindi, Danedar, and dhap are the three main types of khoa. The following are the features of each khoa variety

Pindi:

It has a smooth, homogenous body and texture and is shaped like a circular ball with a hemispherical pat. There should be no burnt particles or browning defects in the product. It should have a distinct cooked flavor, with no objectionable odours or a sour (acidic) taste.

Danedar:

It has a grainy texture and a slightly uneven body. The size of the grains is determined by the amount of coagulant used, which is commonly citric acid, as well as the amount of milk utilized. This form of khoa is used to make kalakand and other dishes.

Dhap:

It is characterized by a loose, sticky body and a smooth texture. It has higher moisture content than Pindi or the Danedar type. It is preferred for making Gulabjamun because after frying and soaking in sugar syrup, it creates homogenous balls with the appropriate rheological qualities. The price of the product is influenced by the quality of the khoa made. Pindi, Dhap and Danedar, three forms of Khoa are available in the market at various rates. Production processes determine the quality of a product of the same type. Pindi has a higher price than Dhap and Danedar. Each of these kinds is in high demand and is necessary for a specific type of confection.

Table 1. BIS Standards for three Khoa varieties

BIS	Characteristic	Pindi	Danedar	Dhap
	Total solids percent by mass minimum	65	60	55
	Fat percent by mass(on dry basis), minimum	37	37	37
	Total ash, percent by mass(on dry basis), maximum	6.0	6.0	6.0
	Treatable acidity , (as lactic acid) percent by mass basis, maximum	0.8	0.9	0.6
	Coli form count per gram maximum	50	50	50
	Yeast and Mould count per gram maximum	90	90	90

specifications are not mandatory, but suggestive of acceptance levels.

VI) USES OF KHOA

- Khoa is mainly used in the manufacture of a variety of khoa based sweets like gulabjamun, peda, burfi, kalakand, milk cakeetc.
- Khoa is used in the preparation of carrot halwa, laddoo etc.
- Khoa is used as a topping for payasam, koyagilabi, other sweets etc.
- Khoa is used for direct consumption after mixing with sugar (pedha)

VII) METHODS OF PREPARATION OF KHOA

Khoa is prepared by different methods depending on the location and quantity of milk available for conversion. Khoa is manufactured by the four basic methods viz. traditional method, improved batch method, mechanized method and use of membrane technology.

VIII) CHEMICAL QUALITY OF KHOA

The chemical quality of Khoa depends on the following factors:

- The type of milk and its quality
- Quality of milk used
- Method of condensing/heating/evaporation
- The process and method of manufacture
- The other ingredients and flavors if added
- The Storage conditions of finished product

IX) OPPORTUNITIES FROM KHOA ENTERPRISE

- Khoa product Enterprises offers vast scope for innovation, value addition and product diversification.
- Burgeoning consumer base and greater demand due to higher purchasing power of the newly emerging middle class
- Greater access to global market under WTO regimen
- Expert potential to the ethnic markets
- Opportunities exist for financing and establishing modern small scale units to encourage restructuring of unorganized sector.

X) CONCLUSION

Ultimately, in Indian culture many festivals are celebrated from Shravan month to Diwali. And these festivals are incomplete without sweets. And these sweets are made from Khoa e.g. Gulabjam, Basundi, Rabarietc. At present time, in many small villages as well as big, small cities there, many opportunities are available to start khoa production occupations. As we think of this opportunity many farmers, males and females can get chance to do their employment and can get more profit. From this opportunity they can improve their social, Economic and living quality.

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ROLE OF WOMEN IN ENVIRONMENT CONSERVATION

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Abstract:

The bond between women and environment is multifaceted and deeply intertwined. Women play a crucial role in protecting and managing natural resources. They are often responsible for securing water, firewood for their families making them highly dependent on healthy ecosystem. While living life, women have to face many challenges. Despite these difficulties they have a long history of being stewards of the environment. They possess unique knowledge and traditional practices for sustainable resource management, passed down through generations. They are leading grassroots movements and driving innovative solutions for sustainable development. Today women are no longer just guardians but they are the agents of change.

Key Words: Women, environment, protection, contribution

Environment and women are closely related. A woman is very easily one with nature. Just as there is creativity in nature, it is also in women. A person who creates something, beget a child, creates a world, can also respond to the creativity of nature. One who knows the joy of creation usually cannot destroy anything.

As the environment is essential to the human way of life, its protection is equally essential. The role of women in environmental protection is important. Many women have contributed to environmental protection. Karl Marx said that no social change can happen without women.

Dr. Vandana Shiva is one of the few women who have made a very substantial contribution to the country's environmental protection and the movement. She asserted that agriculture using chemicals is dangerous. Our indigenous varieties, agricultural produce are all very valuable. She believes that we should preserve this wealth. She proved in her research that if chemicals are used, our native species will be destroyed and the agricultural products will not have required quality and value and this will cause a great loss to the agricultural land. She established Navdhanya organization to preserve these agricultural varieties. On behalf of this organization, she started the work of training farmers, promoting and preserving and increasing traditional varieties. Due to this, her organization succeeded in conserving more than three thousand varieties of rice. She established a seed university to preserve indigenous varieties.

After chemical farming, she strongly opposed golden rice. She thoroughly studied the damage caused by this variety of rice, the damage to the environment and its effects on other varieties and the nutrients it provides. Her opposition prevented the cultivation of golden rice.

After that she entered the fray against genetically developed varieties. She started saying that G.M. varieties are straggling traditional varieties, which will cause immense damage to the environment and it will have a drastic effect on the production of other crops as well. In this way, Dr. Vandana Shiva toured all over India to spread organic farming, avoiding the use of chemicals and doing environmentally friendly farming. For the last five to six decades, she has been working at various levels to protect the environment. Her books *The Violence of the Green Revolution*, *Water Worse*, *Stolen Harvest*, *Mono Culture of the Mind* are world famous. Dr. Vandana Shiva expresses deep concern over the increased incidence of kidney failure, cancer, heart diseases due to excess pesticide use.

It is very proud that a woman is doing so much work in the field of environment. They show concern for the environment. We should pave the way for development while protecting the interests of the environment. This is essential for sustainable development. In an interview, Dr. Shiva says that the environment is an invaluable element of nature and we should live and enjoy life in its company. If there is no environment, our life will also be in crisis.

Another woman Dr. Wangari Mathai is the creator and broadcaster of the Green Belt Movement in Kenya. When Dr. Wangari returned to Kenya after completing her studies, most part of Kenya had become a desert. The lands

were barren. Kenya was created a country of malnutrition. People wanted to work but because there was no agriculture, they had no work. Dr. Wangari was very sad to see this. She began to study these problems minutely and realized that the solution to all these problems lay in local traditions and beliefs. Traditional agriculture and fruits were replaced by exotic and cash crops. There was a lot of damage to the land. So she started the Green Belt development in 1977 so that women got the job of preparing saplings. She implemented this movement in foreign countries as well. The types of trees to be planted were not available in government nurseries. Conventional agricultural use produces low yields and the trees grow very slowly. Dr. Wangari insists on a few distinctive local trees. Scientific education was needed to make plants. But she believed in the innate skills of rural women and it was proved worthwhile by those women. Dr. Wangari emphasized the planting of trees like figs to stop soil erosion and restore clean water flow. Her efforts bore fruit over the next two decades. Kenya's environment improved significantly, Dr. Wangari worked very hard for this. It was not an easy journey for her. She had to bear many hardships in her personal life in the work of greening the earth's outer covering and that is why her name is revered as highly influential.

Earth is the only planet that has life in the entire universe. It is a matter of pride that Indian women are the pioneers in environmental protection and conservation to save this earth. An example of this is the Chipko movement. Amrita Devi of Khijdi village strongly opposed the army that came to build the palace of the Maharaja of Jodhpur and cut the trees in the forest. 63 people lost their lives with her. This was the starting point for the Chipko movement.

The Chipko movement is a feminist movement to protect nature from the greed of men. The movement was started in 1973 in Chamoli district, Uttaranchal, India. When forest contractors wanted to cut trees for a nearly factory producing sports equipments. Villagers noted that how industrial development have denuded their forests. Due to deforestation floods play havoc with their small agricultural areas. Due to its soil decreased fertility and water resources dry up. In Himalayan areas, woman is the pivot of family. So women worry about nature and its conservation because their families' nourishment was depend on the natural resources. They also believe that each green tree is an abode of the Almighty God.

Then in 1977, Bachni Devi, a woman from Himalayan village of Advani, stopped the felling of trees by taking the stand of the same movement. There are many women who are doing environmental work at different levels.

Thengapalli started her work in Odisha's Nayagarh district in the early 1970s but became popular in the 1990s when women came forward to protect forests. Women are solely responsible for keeping vigil on the forests in 300 villages in Nayagarh.

Another lady Suprabha Seshan a renowned conservationist who lives and works at Gurukerala Botanical Sanctuary, a forest garden and community in the Western Ghats in Wayanad Kerala.

Tulsi Gowda started her working as a volunteer in the forest department and it was here that her environmental conservation work got real recognition. She was recently awarded the Padma Shree for her vast knowledge about plants and herbs. She is known as Encyclopedia of the forest. She has been doing environmental work since the age of ten and dedicated her life to protect nature. And since her twelfth year, she has been planting trees and taking care of them. She created a forest on the barren plains. She collected healthy seeds from the soil and sow them everywhere.

Similarly Suryamani Bhagat works to save the forest of Jharkhand. She has been working for protecting her lands and human rights. She and her team have worked hard for stopping deforestation, mining, polluting industries, monocropping etc.

Dr. Vinita Apte came to India and continued her work in the field of environment after getting an opportunity to work United Nations environmental in Paris. In the last seven years, TERRE worked to preserve more than two and a half lacs trees. In many villages like Dandeli, Jui more than 5000 farmer families were given fifty thousand fruit trees by the organization to get a means of livelihood and to increase the quality of their land. Planting trees on the hill in Warje area of Pune is based on the realization that it is not enough to plant only trees but their preservation is equally important.

Conclusion:

There are many women who have made sacrifices for the conservation of nature. The work of all these women is very remarkable. Just as a woman takes care of her household, she can take care of nature as well. All women need to come together for this. If all women join together and contribute to the fight for environmental protection, it will not take long to make the whole earth a paradise.

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USE OF DIGITAL TOOLS IN TEACHING LANGUAGE

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Abstract

We are surviving in a world where technology is Used. Owing to the presence of technology, the pedagogy of teaching English has also undergone a huge change. The application of modern technology represents a significant advance in the contemporary English language teaching and learning process. Most of the present English language teachers are actively incorporating a range of technological aids designed to facilitate optimum teaching delivery. Concerning language teaching and learning, digital media has invaded the classroom. In general, today's teaching and learning seemed to be more interesting due to the technology arena. combines the advantages of face-to-face and online learning with the use of digital teaching tools that can help develop the desired competences. The pandemic has led to a huge and rapid increase in the use of digital tools in education, which has necessitated the development of guidelines for their use. Therefore, the aim of this work is to present the digital tools that have been introduced into education and that require the development of digital competences by students and teachers.

Recent technologies like Blogs, the Internet, Interactive Boards, Mobile Phones, Skype, Twitter, YouTube, and many more have added not only stimulus but also learners' engagement and true interactivity within the classroom.

Introduction

Traditionally language learning has always been associated with reading books, listening to and using the language to communicate and so on. With digital technology. With so much information available on all digital platforms, reading is one important form, in a way it is good as there is more exposure to the language, different genres and text types. This in a way facilitates learning outside the classroom where people are learning newer items, vocabulary and forms all the time. However, exploiting this scenario and making it more focused and meaningful to help promote autonomous learning can turn around things.

After an initial 'getting to know' and needs analysis exercise, I figured out that my students spent a lot of time on social media and preferred to stay connected that way and so I signed them up for Online applications available on platform. It was a closed secure space and students were also encouraged to post messages and links. There was communication and updates regularly. I would use it to lead them up to the final real time discussion in the classroom. It was a great way of brainstorming, and getting to know diverse views and would save a lot of prep time in the class room. This led them to read more in their own time.

In the classroom all it would take is to introduce the topic and put them into groups and let the discussion / debate flow. Since they engaged well in the group discussions and got over their hesitation that could hinder their spoken skills. Also, exposure to authentic material, this inculcated a culture of reading news stories. I could see its benefit coming through as they often made references in their interactions. Even though they had content, which side would they be required to speak on in the class was the surprise element. This was to add to the challenge of speaking about new topics.

When teaching English virtually, technology is essential in carrying out your tasks successfully, from scheduling classes to storing materials to sending exams to students. Fortunately, there are software, apps, and platforms nowadays that aid online teachers in enhancing learners' experience and reducing your work in the long run.

A digital teaching tool kit typically includes:

- Schedulers
- Programs for creating and presenting content
- Software for editing images and videos
- Quiz makers

- Online game platforms
- Cloud storage and file-sharing providers

Mobile language learning application aid to improve students' vocabulary in blended classrooms, the learning tools could help learners easily access information

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ECO FRIENDLY ACTIVITY FOR COLLEGE CAMPUS AND COLLEGE LIBRARIES

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Abstract-

India is young country and college is a place where this youth and younger come to learn and get changed into a good gentle and citizen. Libraries are also a great place to educate the public and student about the environment from eco-friendly lifestyle choice to organization as per our planet earth face many environmental issues. College is the best place for sensitization of students regarding environment. Students propagate this to their locality also.

Keywords- Eco-friendly Campus, Eco-Libraries, Eco friendly, Environmental Campus.

Introduction-

The human society is facing many environmental issue like pollution , population, explosion, deforestation loss of biodiversity etc. sustainable development is a significant social, economical or environmental challenge for country. The youth should be sensitive about environment education is one solution to solve environmental problem. Though teaching and learning must begin to reflect environmental issues. There is an emerging consensus that institution must also model sustainable practices.

Librarian need to be one the constant cutting edge in terms of technology researching, web tools. Libraries are also a great place to educate the students about the environment form eco-friendly choice to organization that promote green causes.

National Assessment and Accreditation Council play important role of higher education institution also gives importance to environment consciousness in NAAC 7th criterion innovation and best practices.

Following are some way to make your campus and also a library a little greener.

1. Botanical Garden – Maintain a good botanical garden which some aurvedic plants and more oxygen producing plants and for purpose to attract insects specially colorful butterflies which help in biodiversity study.
2. E- Waste management- E-Waste produced by Information Technology Department is managed by recycling.
3. LED and CFL- To decrease the energy consumption use of CPL and LED should be promoted.
4. Email and SMS Service- Use for meeting notice to staff any other notice for students use email and SMS services to save office pages make it as possible to paper less work.
5. Green Audit- Green Audit of the college should be dome regularly it is make also campus eco friendly.
6. Solar Panels-Installation of solar panels at prominent places to utilize renewable solar energy for laboratory work, official work, library work, any events in college campus , photocopy question paper use as possible solar energy.
7. Rainwater harvesting and conservation - collection of rain water in ponds and using it for save water for campus.
8. Vermicompost Plant- Construction of vermicompost pit for the waste from garden and office can be converted to vermicompost which is used as compost for garden.
9. Biogas plant- Construction of biogas plant for the biodegradable waste from hostel can be converted bio gas.
10. Biodiversity posters and Environmental Slogans- local Biodiversity posters and environmental slogans at prominent places in campus should be displays which aware students and staff.
11. Organization of environment awareness activities like poster presentations environmental related day celebration plays, seminars, conferences etc.
12. Indoor plants should place in library near electronic devices which help in absorbing harmful radiations emitted by smart cell phones and electronic gadgets. The good indoor plants work by detoxifying the Air and boosting our immune system and increasing our metabolism. they work by taking all the carbon dioxide present in the

library and then converting it into fresh oxygen that allow us to breath better. Keeping these plants can help you be more energized, lower your stress level. It's really need of the hour to create radiation free libraries at campus to give our users and students the pureness of breathing so as they live a healthy lifestyle and work with fresh mind.

13. Some of the plants you should keep in the libraries which absorb radiation are as follows

- Stone lotus follower
- Cactus
- Spider plant
- Aloe vera
- Rubber plant
- Betel leaf plant

Conclusion-

College is the place where students spend more time. These young students are the future of any nation. Awareness of these students regarding environmental issues is very important. Eco friendly college campus can be a very good place to learn and sanitizes the students regarding environment that can be passed t society also. For that college can establish eco friendly college committee to look and implement eco friendly measures.

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INDIAN AGRICULTURE AND INDIAN ECONOMICS

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Abstract: -

Indian agriculture has a rich history and plays a significant role in the country's economy and food security. With over 60% of the Indian population dependent on agriculture for their livelihood, it is crucial to understand the background, challenges, and opportunities that shape this vital sector.

Agriculture in India has a long history dating back to the Indus Valley Civilization, where the cultivation of crops and domestication of animals were practiced. Over the years, Indian agriculture has been influenced by various factors, including climate, soil, and cultural practices. The Green Revolution in the 1960s and 1970s marked a turning point for Indian agriculture, as it led to the introduction of high-yielding crop varieties, modern farming techniques, and the expansion of irrigation facilities.

Despite the progress made, Indian agriculture faces several challenges, including climate change, declining soil health, water scarcity, and low agricultural productivity. Additionally, the fragmentation of landholdings, lack of modern infrastructure, and inadequate access to credit and technology further contribute to the challenges faced by Indian farmers.

Indian agriculture is a crucial sector of the country's economy, employing a significant portion of the population and contributing to food security and rural development. The agricultural sector in India has undergone various changes and challenges over the years, influenced by factors such as technology advancements, government policies, climate change, and market dynamics.

Introduction:-

Indian agriculture is characterized by its diversity in crops, farming systems, and agro-climatic regions. The sector encompasses a wide range of activities, including cultivation of crops, animal husbandry, fisheries, forestry, and agro-processing industries. Agriculture plays a vital role in providing livelihoods to a large proportion of the population, particularly in rural areas.

India, being a vast and diverse country, has a unique agricultural system and economy. The agricultural sector plays a vital role in the Indian economy, providing livelihood to around 58% of the country's population and contributing to 17.8% of the Gross Value Added (GVA) in 2019-2020.

The agricultural system in India can be broadly classified into two categories: traditional agriculture and modern agriculture. Traditional agriculture, practiced primarily in rural areas, involves small-scale, rain-fed farming, and subsistence farming. Modern agriculture, on the other hand, employs advanced techniques, machinery, and technology to enhance productivity.

India's agricultural economy is characterized by a mix of crop and livestock production. Major crops grown in India include rice, wheat, pulses, oilseeds, coarse cereals, and sugarcane. The country is also a leading producer of spices, tea, coffee, and cotton. The livestock sector contributes significantly to the economy through milk, meat, and egg production.

The Green Revolution, which began in the 1960s, significantly transformed India's agricultural landscape. This revolution focused on the use of high-yielding seed varieties, modern agricultural practices, and the expansion of irrigation facilities. As a result, India's agricultural productivity increased, and food grain production saw a substantial growth.

Despite these advancements, challenges still persist in the Indian agricultural sector. Key issues include low agricultural productivity, inadequate access to resources, climate change, and price volatility in agricultural markets. The government has introduced various policies and programs, such as the National Agricultural Market (eNAM),

Pradhan Mantri Fasal Bheema Yojana (PMFBY), and the Rashtriya Krishi Vikas Yojana (RKVY), to address these challenges and improve the agricultural sector's performance.

The Indian economy is characterized by a mix of market-oriented and planned economic policies. The country's economic growth has been driven by various sectors, including agriculture, services, and manufacturing. Over the years, India has liberalized its economy, allowing for greater foreign investment and trade. This has led to a rapid growth in the services sector and the information technology (IT) industry, which has emerged as a significant contributor to the economy.

In recent years, the Indian government has implemented various economic reforms to promote growth, investment, and job creation. These reforms include the Goods and Services Tax (GST) implementation, financial sector reforms, and the ease of doing business initiatives.

In conclusion, Indian agriculture plays a crucial role in the country's economy, with modern and traditional farming practices contributing to food production and livelihoods. However, challenges persist in the sector, and the government is taking various steps to address these issues. The Indian economy, on the other hand, is diverse and dynamic, with a mix of market-oriented and planned policies driving growth across different sectors.

A major institutional factor that has limited agricultural productivity in India is regulation of land holdings. In order to address the highly concentrated ownership structure of land in India prior to independence, the Government instituted land reforms that placed ceilings on land holdings. As a result, agriculture in India is dominated by a large number of small-scale, owner-occupied farms. The most recent estimates suggest that around 100 million households were engaged in agricultural production in 2002, roughly 70 per cent of all rural households and only marginally lower than the share of rural households engaged in agriculture in the early 1960s. Over the past 50 years, the share of farming households tending plots of land of less than one hectare has increased from 60 per cent to just under 80 per cent and the average farm size has fallen to around 1 hectare, with only ½ per cent of households farming more than 10 hectares of land. By the early 1990s, most Indian states had enacted tenancy laws conferring ownership of land on tenants who were able to buy the land they farmed at a fair price, which reinforced the trend of increased fragmentation of land holdings during that decade. Additionally, the increase in population has also contributed to smaller land holdings, while the subdivision of original family land holdings over generations has left many families with land holdings too small to provide an adequate stream of income.

With small land holdings, farmers have limited incentive to adopt capital-intensive farming techniques, as productivity gains from capital through mechanization and exploiting economies of scale are minimal. Larger land holdings would also allow farmers to engage in multiple cropping, which would make them less susceptible to adverse weather conditions and help diversify their income base.

Private investment in the agricultural sector has also been limited by restricted access to credit and insurance, although access has generally improved over the past decade with credit to the agricultural sector growing, on average, by more than 20 per cent annually over the period. Nevertheless, credit extension remains predominately focused on assisting farmers through the annual cycle rather than helping them to finance the building and purchase of assets, such as tractors and pump-sets. Government programs have been used to improve access to credit for farmers through a number of channels, including: interest rate subsidies; debt relief; collateral-free loans; improving administration; and mandating banks to increase the flow of credit to rural customers. Much of this expansion has been through so-called micro-finance facilities but while such lending has increased significantly over the past decade, borrowers have often faced interest rates as high as 40 per cent. Furthermore, many have had difficulties repaying debts after crops have failed. In 2009/10, the Indian Government spent roughly 0.2 per cent of GDP on debt waivers and debt relief for farmers.

The Government is also gradually improving access to insurance through the National Insurance Scheme, although in 2009 only 18 million farmers were insured under the scheme. The scheme covers farmers who produce cereals, millets, pulses, oilseeds, sugarcane, cotton and potatoes. In certain areas, farmers growing these crops and accessing Seasonal Agricultural Operations loans from financial institutions are required to purchase this insurance, while others can opt in voluntarily. Importantly, the scheme covers drought and other weather events as well as loss of production due to pests and disease. Premium rates are typically between 1.5 per cent and 3.5 per cent of the value insured, with those farming less than 2 hectares receiving a 50 per cent subsidy. Recently, the Government

trialed a modified insurance scheme, expanding coverage to more areas and providing premium subsidies of between 40 and 75 per cent. By reducing credit risk faced by lending institutions, increased coverage of insurance should give farmers better access to credit and encourage further investment in the agricultural sector.

The increase in the flow of credit to the agricultural sector has seen investment by the private sector double over the past decade, although public sector investment still dominates. Since the early 1990s, investment growth in the agriculture sector has averaged over 4 per cent, although prior to the onset of the global financial crisis, investment growth exceeded 10 per cent, suggesting that the improved flow of credit to the sector, and higher food prices, had encouraged capital deepening in the sector.

Water management is crucial to improving conditions in agriculture. India currently has around 5,000 large dams that are able to store more than 220 tetra liters, which ranks seventh in the world in terms of capacity. While dams in other parts of the world are built for flood mitigation, power generation and water supply, the primary purpose of India's dams is irrigation. Around 40 per cent of crop areas are now irrigated, and these areas produce 70 per cent of India's crop output. A significant proportion of farms have limited or no access to irrigation, and therefore still rely on rainfall as their sole source of water.

With just over 80 per cent of India's rainfall occurring during the summer monsoon season, which occurs from June through to September, deficient rainfalls have often had significant effects on the Indian economy. In 2009, the summer monsoon rainfall was lower than normal, which caused a fall in grain production of 7 per cent and pushed up grain and other food prices. In the past, agricultural production has been much more dependent on the summer monsoon, with large fluctuations in rainfall accounting for most of the volatility in agricultural production (Graph 6). Over time, however, the effect of the summer monsoon rain season has been mitigated through drought management (including drought monitoring), increased use of irrigation, and diversification of agricultural production. These measures have made food production less vulnerable to poor weather conditions. In part, this helps explain why deficient rainfalls since the late 1990s have resulted in less significant contractions in agricultural output. In fact, variations in agricultural output, which once accounted for 60 per cent of the variation in GDP, now account for only 20 per cent, which in part reflects agriculture's lower share of GDP.

Conclusion:-

India's agricultural sector is still very important to the Indian economy, although its share of the economy has decreased over the past 50 years. India has made significant advances in agricultural production in recent decades, including the introduction of high-yield seed varieties, increased use of fertilizers and improved water management systems. Reforms to land distribution, water management and food distribution systems will further enhance productivity and help India meet its growing demand for food.

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EFFECTS OF GLOBAL WARMING ON ENVIRONMENT

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Abstract: -

Global warming refers to the long-term increase in Earth's average surface temperature due to human activities, primarily the release of greenhouse gases like carbon dioxide, methane, and nitrous oxide. This phenomenon has been observed since the late 19th century and has intensified over the past few decades.

Global warming is a significant concern because it leads to a range of negative environmental, social, and economic impacts. These include more frequent and severe weather events, the melting of polar ice caps and glaciers, rising sea levels, ocean acidification, and loss of biodiversity. Additionally, global warming exacerbates existing problems such as food and water scarcity, poverty, and health issues.

Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of observed effects that are synonymous with the term.

Changes observed in Earth's climate since the mid-20th century are driven by human activities, particularly fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere, raising Earth's average surface temperature. Natural processes, which have been overwhelmed by human activities, can also contribute to climate change, including internal variability.

Scientists use observations from the ground, air, and space, along with computer models, to monitor and study past, present, and future climate change. Climate data records provide evidence of climate change key indicators, such as global land and ocean temperature increases; rising sea levels; ice loss at Earth's poles and in mountain glaciers; frequency and severity changes in extreme weather such as hurricanes, heat waves, wildfires, droughts, floods, and precipitation; and cloud and vegetation cover changes.

Introduction:-

"Climate change" and "global warming" are often used interchangeably but have distinct meanings. Similarly, the terms "weather" and "climate" are sometimes confused, though they refer to events with broadly different spatial- and timescales.

Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas.

Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures.

The main greenhouse gases that are causing climate change include carbon dioxide and methane. These come from using gasoline for driving a car or coal for heating a building, for example. Clearing land and cutting down forests can also release carbon dioxide. Agriculture, oil and gas operations are major sources of methane emissions. Energy, industry, transport, buildings, agriculture and land use are among the main sectors causing greenhouse gases.

The primary cause of global warming is the burning of fossil fuels, such as coal, oil, and natural gas, which releases a large amount of carbon dioxide into the atmosphere. Other significant contributors include deforestation, agricultural practices, and industrial processes.

III. Effects of Global Warming

The effects of global warming are already being felt around the world. Some of the most significant impacts include:

1. Extreme weather events: Global warming has led to more frequent and intense heat waves, storms, floods, and droughts, which can result in loss of life, property damage, and disruptions to food and water supplies.
2. Melting ice caps and glaciers: As temperatures rise, polar ice caps and glaciers are melting at an accelerated rate, leading to rising sea levels and increased coastal erosion.
3. Ocean acidification: The increased absorption of carbon dioxide by the oceans has led to a decrease in pH levels, making the ocean more acidic and negatively impacting marine ecosystems.
4. Loss of biodiversity: Global warming is causing changes in ecosystems, leading to the loss of species and habitats, as well as altering the distribution of plants and animals.
5. Human health: Climate change can have both direct and indirect impacts on human health, including increased exposure to heat stress, respiratory illnesses, and vector-borne diseases.

Weather Patterns and Climate Change

One of the most noticeable effects of global warming is its impact on weather patterns and climate change. As the Earth's temperature rises, it leads to more frequent and intense heat waves, causing a rise in temperatures and affecting agriculture, water resources, and human health. Additionally, global warming contributes to more severe and unpredictable weather events, such as storms, floods, and droughts. This can have devastating consequences for both ecosystems and human societies.

Sea Level Rise

Global warming is causing the Earth's polar ice caps and glaciers to melt at an alarming rate. This increase in melt water leads to a rise in sea levels, threatening coastal communities and ecosystems worldwide. As sea levels rise, low-lying areas become more susceptible to flooding, erosion, and salinization of freshwater sources. This can have severe consequences for both human populations and the unique ecosystems found in these areas.

Biodiversity Loss

Global warming has significant implications for biodiversity, as it disrupts ecosystems and the delicate balance of species interactions. As temperatures rise, some species may be unable to adapt or migrate quickly enough to survive in their new environment. This can lead to a decline in biodiversity, with some species becoming extinct while others thrive in their new habitats. Moreover, global warming can exacerbate the effects of other environmental stressors, such as pollution and habitat destruction, further contributing to the loss of biodiversity.

Human Health

Global warming has far-reaching implications for human health. As temperatures rise, heatwaves become more frequent and severe, leading to an increased risk of heat-related illnesses and mortality. Additionally, global warming can exacerbate the conditions that give rise to vector-borne diseases, such as malaria and dengue fever. Furthermore, the increased frequency of extreme weather events, such as floods and storms, can lead to injuries, displacement, and other health risks for affected populations.

Deforestation

Plants are the main source of oxygen. They take in carbon dioxide and release oxygen thereby maintaining environmental balance. Forests are being depleted for many domestic and commercial purposes. This has led to an environmental imbalance, thereby giving rise to global warming.

Use of Vehicles

The use of vehicles, even for a very short distance results in various gaseous emissions. Vehicles burn fossil fuels which emit a large amount of carbon dioxide and other toxins into the atmosphere resulting in a temperature increase.

Chlorofluorocarbon

With the excessive use of air conditioners and refrigerators, humans have been adding CFCs into the environment which affects the atmospheric ozone layer. The ozone layer protects the earth surface from the harmful ultraviolet rays emitted by the sun. The CFCs have led to ozone layer depletion making way for the ultraviolet rays, thereby increasing the temperature of the earth.

Industrial Development

With the advent of industrialization, the temperature of the earth has been increasing rapidly. The harmful emissions from the factories add to the increasing temperature of the earth.

In 2013, the Intergovernmental Panel for Climate Change reported that the increase in the global temperature between 1880 and 2012 has been 0.9 degrees Celsius. The increase is 1.1 degrees Celsius when compared to the pre-industrial mean temperature.

Agriculture

Various farming activities produce carbon dioxide and methane gas. These add to the greenhouse gases in the atmosphere and increase the temperature of the earth.

Overpopulation

An increase in population means more people breathing. This leads to an increase in the level of carbon dioxide, the primary gas causing global warming, in the atmosphere.

Natural Causes of Global Warming:-

Volcanoes

Volcanoes are one of the largest natural contributors to global warming. The ash and smoke emitted during volcanic eruptions goes out into the atmosphere and affects the climate.

Water Vapor

Water vapor is a kind of greenhouse gas. Due to the increase in the earth's temperature, more water gets evaporated from the water bodies and stays in the atmosphere adding to global warming.

Melting Permafrost

Permafrost is frozen soil that has environmental gases trapped in it for several years and is present below Earth's surface. It is present in glaciers. As the permafrost melts, it releases the gases back into the atmosphere, increasing Earth's temperature.

Forest Blazes

Forest blazes or forest fires emit a large amount of carbon-containing smoke. These gases are released into the atmosphere and increase the earth's temperature resulting in global warming.

Effects of Global Warming:-

Following are the major effects of global warming:

Rise in Temperature

Global warming has led to an incredible increase in earth's temperature. Since 1880, the earth's temperature has increased by -1 degrees. This has resulted in an increase in the melting of glaciers, which have led to an increase in the sea level. This could have devastating effects on coastal regions.

Threats to the Ecosystem

Global warming has affected the coral reefs that can lead to the loss of plant and animal lives. Increase in global temperatures has made the fragility of coral reefs even worse.

Climate Change

Global warming has led to a change in climatic conditions. There are droughts at some places and floods at some. This climatic imbalance is the result of global warming.

Spread of Diseases

Global warming leads to a change in the patterns of heat and humidity. This has led to the movement of mosquitoes that carry and spread diseases.

High Mortality Rates

Due to an increase in floods, tsunamis and other natural calamities, the average death toll usually increases. Also, such events can bring about the spread of diseases that can hamper human life.

Loss of Natural Habitat

A global shift in the climate leads to the loss of habitats of several plants and animals. In this case, the animals need to migrate from their natural habitat and many of them even become extinct. This is yet another major impact of global warming on biodiversity.

Conclusion:-

The scientific and environmental community is on the same page regarding the bitter reality of global warming and the involvement of human factor in it. The paper discussed here has only dented the surface of what is a very intricate line of scientific and engineering exploration. Global warming is a big hazard and appropriate measures must be taken to tackle this serious problem. This problem is not only causing trouble to the human beings but also to animals and plants. Melting of polar ice caps will lead to floods which can cause mayhem everywhere. Rise of sea levels will devastate agricultural and fishing activities. To embark upon these problems, some remedial steps must be timely taken which include but are not limited to the use of renewable sources of energy and stopping deforestation. Innovative solutions must be brought forward to end this hazard once and forever

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IMPACT OF CLIMATE CHANGE ON HUMAN HEALTH

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Abstract: -

The impacts of climate change include warming temperatures, changes in precipitation, and increases in the frequency or intensity of some extreme weather events, and rising sea levels. These impacts threaten our health by affecting the food we eat, the water we drink, the air we breathe, and the weather we experience.

The severity of these health risks will depend on the ability of public health and safety systems to address or prepare for these changing threats, as well as factors such as an individual's behavior, age, gender, and economic status. Impacts will vary based on where a person lives, how sensitive they are to health threats, how much they are exposed to climate change impacts, and how well they and their community are able to adapt to change.

Climate change is also having an impact on our health workforce and infrastructure, reducing capacity to provide universal health coverage (UHC). More fundamentally, climate shocks and growing stresses such as changing temperature and precipitation patterns, drought, floods and rising sea levels degrade the environmental and social determinants of physical and mental health. All aspects of health are affected by climate change, from clean air, water and soil to food systems and livelihoods. Further delay in tackling climate change will increase health risks, undermine decades of improvements in global health, and contravene our collective commitments to ensure the human right to health for all.

People in developing countries may be the most vulnerable to health risks globally, but climate change poses significant threats to health even in wealthy nations such as the United States. Certain populations, such as children, pregnant women, older adults, and people with low incomes, face increased risks; see the section below on Populations of Concern.

Introduction: -

Climate change presents a fundamental threat to human health. It affects the physical environment as well as all aspects of both natural and human systems – including social and economic conditions and the functioning of health systems. It is therefore a threat multiplier, undermining and potentially reversing decades of health progress. As climatic conditions change, more frequent and intensifying weather and climate events are observed, including storms, extreme heat, floods, droughts and wildfires. These weather and climate hazards affect health both directly and indirectly, increasing the risk of deaths, non-communicable diseases, the emergence and spread of infectious diseases, and health emergencies.

Climate change has far-reaching implications on the health of human beings. In India, the impacts of climate change are particularly concerning due to the country's large population, rapid urbanization, and diverse ecosystems. This essay explores the various ways in which climate change is affecting human health in India, with a focus on the most significant health challenges and their underlying causes.

Vector-borne diseases

One of the most significant consequences of climate change on human health in India is the increased prevalence of vector-borne diseases. These diseases, such as malaria, dengue, and chikungunya, are transmitted to humans through the bites of infected mosquitoes. Climate change has led to increased mosquito breeding due to warmer temperatures and changing precipitation patterns.

Warmer temperatures have expanded the geographical range of mosquitoes, leading to their increased distribution in India. In addition, heavy rainfall caused by climate change has created ideal breeding conditions for mosquitoes, further exacerbating the spread of vector-borne diseases.

Heat stress and respiratory illnesses

Climate change is causing an increase in extreme weather events, including heat waves, which have a direct impact on human health. Heat stress can lead to dehydration, heat cramps, heat exhaustion, and heatstroke, with the most vulnerable being infants, elderly individuals, and those with pre-existing medical conditions.

In addition to heat stress, climate change is also contributing to air pollution, which is a major risk factor for respiratory illnesses. Increased temperatures and changing precipitation patterns can lead to the growth of pollen and mold, aggravating allergies and asthma. Furthermore, the burning of fossil fuels and biomass for energy production has resulted in higher levels of particulate matter and other harmful pollutants, leading to an increased burden of respiratory diseases in India.

Food and water-borne diseases

Climate change is affecting the quality and availability of food and water resources in India. Flooding, droughts, and changing precipitation patterns can lead to contamination of water sources, increasing the risk of water-borne diseases such as diarrhea, cholera, and typhoid.

In addition, climate change has led to the loss of agricultural productivity due to changing weather patterns and increased temperatures. This has resulted in food scarcity and malnutrition, which can weaken the immune system and make individuals more susceptible to infections and diseases.

Mental health

Climate change has indirect effects on mental health, particularly among vulnerable populations. Disasters and extreme weather events can lead to psychological trauma, anxiety, and depression. Additionally, the loss of livelihood and displacement caused by climate change can lead to increased stress and mental health issues.

Climate change, together with other natural and human-made health stressors, influences human health and disease in numerous ways. Some existing health threats will intensify and new health threats will emerge. Not everyone is equally at risk. Important considerations include age, economic resources, and location.

Climate change is one of the most pressing challenges facing humanity today. It is caused by the increase in greenhouse gas emissions, primarily carbon dioxide, resulting from human activities such as burning fossil fuels and deforestation. The consequences of climate change are far-reaching and affect various aspects of human life, including health. This comprehensive analysis explores the impact of climate change on human health, examining both direct and indirect effects.

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6) concluded that climate risks are appearing faster and will become more severe sooner than previously expected, and it will be harder to adapt with increased global heating.

It further reveals that 3.6 billion people already live in areas highly susceptible to climate change. Despite contributing minimally to global emissions, low-income countries and small island developing states (SIDS) endure the harshest health impacts. In vulnerable regions, the death rate from extreme weather events in the last decade was 15 times higher than in less vulnerable ones.

Climate change is impacting health in a myriad of ways, including by leading to death and illness from increasingly frequent extreme weather events, such as heatwaves, storms and floods, the disruption of food systems, increases in zoonoses and food-, water- and vector-borne diseases, and mental health issues. Furthermore, climate change is undermining many of the social determinants for good health, such as livelihoods, equality and access to health care and social support structures. These climate-sensitive health risks are disproportionately felt by the most vulnerable and disadvantaged, including women, children, ethnic minorities, poor communities, migrants or displaced persons, older populations, and those with underlying health conditions.

Conclusion

The impacts of climate change on human health in India are multifaceted and far-reaching. The country's large population, diverse ecosystems, and rapidly changing climate make it particularly vulnerable to the adverse effects of climate change. Addressing this issue requires a comprehensive approach that includes mitigation efforts, such as reducing greenhouse gas emissions, and adaptation measures, such as improving public health infrastructure and disaster preparedness. By taking these steps, India can better protect the health of its citizens and mitigate the effects of climate change on human health.

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6. Lancet Countdown on Health and Climate Change: The Lancet Countdown is a global, research-based initiative that tracks the health effects of climate change and the response of the health sector. It provides authoritative data and analysis on the current and future health impacts of climate change, as well as the potential for mitigation and adaptation measures

CLIMATE CHANGE AND ITS IMPACT IN AGRICULTURE SECTOR

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Abstract:

“Climate change is adversely affecting the Indian agriculture sector. Adapting to the rapidly changing climate conditions seems to be an important and strategic solution for Indian farmers to cope with these crises. In this context, this paper systematically reviews agriculture in India and its impact on climate change, mainly due to the two factors of increasing temperature, erratic and reduced rainfall, the Indian agricultural sector is rapidly declining today. Therefore, the researcher has mentioned that it is necessary for Indian farmers to adopt adaptation measures on a large scale. The paper also emphasizes the need for transformational change in the form of substantial changes in land use, resource and labor allocation, business practices and cropping patterns. However, the literature does not sufficiently confirm that farmers' adaptation measures stem from their perceptions of climate change. Adoption of adaptation measures is frequently influenced by factors such as lack of adequate information and timely credit, household income, farm size, gender, and resource endowment, among others. To avoid negative outcomes and achieve long-term sustainability, the study suggests the need for massive investment in the Indian agriculture sector, and in particular, capacity building of farmers. In addition, farmers' perception of changing climate conditions and their impacts and adoption of an integrated approach to adaptation is felt to be essential for designing effective strategies to achieve farmers' welfare. In fact, many measures taken by the government have been reviewed in this regard.”

Keyword: Climate Change, Agriculture, development, Impact:

1.1 Introduction:

Climate change or climate variability has always been a concern for humans or Indian farmers. In India, frequent droughts or sometimes floods in Maharashtra and especially in Marathwada threaten the livelihood of millions of farmers and others who depend on agriculture for most of their needs. Ozone depletion and UV-B filtered radiation, volcanic eruptions, the “human hand” in the form of deforestation and loss of wetlands by fire are the cause of climate extremes. The loss of forest cover, which normally intercepts rainfall and allows it to be absorbed by the soil, leads to erosion of the topsoil leading to precipitation and floods and droughts. Paradoxically, the lack of trees increases droughts by drying the soil faster in dry years. Among the greenhouse gases, CO₂ is the dominant gas that causes global warming because it traps long-wave radiation and emits it back to the Earth's surface. Global warming is nothing but the heating of the surface atmosphere due to the emission of greenhouse gases, thereby increasing the temperature of the atmosphere over a long period of time. Such changes in surface air temperature and its adverse effects on rainfall in the long run definitely have a negative impact on Indian agriculture.

Several reports have indicated that severe events such as natural calamities such as droughts and floods, cold and heat waves, forest fires, landslides and earthquakes frequently adversely affect the global economy and the Indian economy. Tsunamis and volcanic eruptions, although not associated with climate disasters, can change the chemical composition of the atmosphere. This is predicted to lead to weather-related disasters. Increase in aerosols due to emission of greenhouse gases like carbon dioxide, chlorofluorocarbons, hydro chlorofluorocarbons, hydro fluorocarbons, per fluorocarbons etc., due to burning of fossil fuels.¹

1.2 Objective of Research:

1. Taking stock of Indian agriculture sector.
2. Examining the impact of climate change on the Indian agricultural sector.
3. Taking measures to prevent the effects of climate change.

1.3 Assumptions of research:

1. Indian agriculture is under threat due to regular changes in climate.

1.4 Research Methodology:

The facts are collected through a second source based on a descriptive research methodology to frame the present research papers.

1.5 Climate Change and role of government:

Many studies have shown that climate change is having many negative effects on Indian agriculture and the lives of farmers. In line with this, various efforts are being made at the government level such as wide field and simulation studies in agriculture through network centers located in different parts of the country. Climate change impacts were assessed using peak simulation models incorporating projected climates of 2050 and 2080. After the ASHA type assessment, it was observed by the government that

The government has devised various schemes to deal with the effects of climate change and make agriculture more resilient. The National Mission for Sustainable Agriculture is one of the missions under the National Action Plan on Climate Change. The mission aims to develop and implement policies to make Indian agriculture more resilient to a changing climate.

1.6 Climate change is having many impacts on agriculture, among them.....

- Agricultural enterprises are becoming increasingly difficult to provide global food security. Rising temperatures and a changing climate result in reduced crop yields due to water shortages caused by droughts, heat waves and floods. The world's livestock are also affected by a number of risks, from extreme heat stress to fodder shortages and the spread of parasitic and vector-borne diseases. Expect to be affected by problems. More arable land may become available as frozen ground thaws. Other impacts include erosion and changes in soil fertility and the length of the growing season. Negative impacts on food safety from bacteria such as salmonella producing fungi, as the climate warms, also increase costs and food loss. Increasing atmospheric CO₂ levels due to human activities offsets some of the harmful effects on agriculture due to the CO₂ fertilization effect.²
- These effects of climate change could increase the risk of crop failure in many regions at the same time, which would have significant implications for global food supplies. Many pests and plant diseases are also expected to either become more prevalent or spread to new regions.³
- However, it has little effect on C4 crops, such as maize, and at the expense of low levels of essential micronutrients.⁴
- Along the coast, some farmland is expected to be lost to sea-level rise, while melting glaciers may make less water available for irrigation.⁵
 - Without adoption of adaptation measures, rainfed rice production in India is projected to decline by 20% in 2050 and 47% in 2080.
 - Irrigated rice production is projected to decline by 3.5% in 2050 and 5% in 2080.
 - Climate change is projected to reduce wheat yields by 19.3% in 2050 and 40% in 2080, with significant spatial and temporal variations by the end of the century.
 - Climate change is projected to reduce kharif maize production by 18 and 23% in 2050 and 2080, respectively.
 - Climate change reduces crop yields and reduces the nutritional quality of produce.
 - Severe events such as drought affect food and nutrient use and affect farmers

Climate change and the associated hardships are a major concern for India, as 85 percent of farmers have low financial resilience.⁶ Even if the greenhouse gas emissions are lessened considerably as a mitigation measure, the impacts of climate change will be unabated in the coming decades, necessitating the urgent need for adaptation.⁷ In this context, farmers are at the 'front lines of climate change' and the ultimate practitioners of adaptation actions to mitigate the adversities on the production system.⁸ The perception of climatic changes has long been recognized as a pre-condition for adopting adaptation actions. Farmers who perceive climate change and its detrimental effects are more likely to embrace policy initiatives to address it.⁹

1.7 measures to prevent the effects of climate change:

To address the challenges of sustaining domestic food production in the face of a changing climate, the Indian Council of Agricultural Research, Ministry of Agriculture and Farmers Welfare, Government of India launched a flagship network research project 'National Innovations in Climate Resilient Agriculture' in 2011. The objective of the project is to develop and promote climate-friendly technologies in agriculture, which address vulnerable areas in India, and the project outputs help districts and regions prone to extreme weather conditions such as drought, floods, frost, and heat. Also short term and long term research programs are undertaken from a national perspective which includes crops, horticulture, livestock, fisheries and poultry. Of these the main thrust areas are included as follows.¹⁰

- Development of crop varieties and management practices for adaptation and mitigation.
- Assessing the impacts of climate change on livestock, fisheries and poultry and identifying adaptation strategies. As of 2014, 1888 climate resilient varieties have been developed besides 68 location specific climate resilient technologies have been developed and demonstrated for widespread adoption in farming communities.
- Identifying the most vulnerable districts/regions.

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THE STUDY OF DIGITAL OPERATIONS OF RETAIL BANKING WITH REFERENCE TO MUMBAI

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Abstract

Indian banking has undergone a drastic change due to retail banking. Governments and private companies have taken strong initiatives to improve the banking system in India. The technology has made it possible to deliver services throughout the branch bank network, allowing. Objectives of study is to study of Retail banking, to find the impact of retail banking on Indian economy and to study the benefits and challenges experienced by customers in Digital banking of selected banks. Hypotheses of the Study are HO: There is no significant difference in the perception of customers on the benefits offered by digital operations of retail banking.

The present study relies on both primary and secondary sources. A secondary data set includes previously published literature, books, articles, journals, bulletins, magazines and specialized banking periodicals as well as various websites that contribute to the development of the theoretical and conceptual framework for the study. A questionnaire is used to collect the primary data. The purpose of this study is to collect information about the service quality dimensions in terms of the perceptions of current customers of both private and public banks, based on their responses. A self-administrated questionnaire is used to collect 100 responses from the city of Mumbai.

Key words – Retail Banking, Digital Banking

Introduction

Indian banking has undergone a drastic change due to retail banking. Governments and private companies have taken strong initiatives to improve the banking system in India. Worldwide, retail banking has become the new focus of the banking industry. There are several characteristics that distinguish today's retail banking sector: In retail banking, the goal is to conduct banking business in a large volume of transactions involving low values. Individuals can access a wide range of financial services offered by retail banks, including deposit and assets-linked products. There is great potential for growth and profitability in the retail banking market segment. As a result, banks are able to diversify their asset portfolios. Loans are given to a large number of consumers and transactions have a very low value, which reduces the risk of non-performing assets because all of the consumers do not default on making loan repayments at the same time. There is a maxim in retail banking that states, "Don't put all your eggs in one basket."

Today's retail banking sector is characterized by three basic characteristics: A wide range of products (deposits, credit cards, insurance, investments, and securities) A variety of distribution channels (call centers, branches, the Internet, and kiosks) Multiple customer segments (consumer, small business, and corporate) For a complete customer experience, most banks use multi-channel distribution. Whether a channel is direct or remote, each has its advantages and disadvantages, and it also depends on the segment of customers that is using the channel. Conservative customers prefer direct channels, while the younger generation prefers remote channels

A significant role is played by retail banking in the overall dynamics of growth. In the RBI Annual Report 2014-15, nearly 80 percent of the incremental credit offtake in 2014-15 occurred in the second half of the year, reflecting the improved economic environment (RBI Annual Report 2014-15). A growing economy such as India offers tremendous opportunities for retail banking. An important contributing factor in this regard is the rise of the Indian middle class. Indian households with middle to high incomes are expected to continue to grow. Younger people's increased purchasing power would open up a wide range of opportunities. Younger generations are more likely to take on debt than previous generations, thereby improving their purchasing power and having a more liberal attitude toward personal debt, and contributing to the growth of the Indian retail sector. Globally, commercial banks have witnessed a growth in retail lending in recent years. Several micro-level factors influence the growth of retail lending, including the rapid advancements in the IT sector, the evolving macroeconomic environment, and market reforms.

According to a market research report on retail banking, this criterion was developed. A key component of economic growth is retail banking. In addition to playing a critical role in their own economies, retail banks have an impact on the global economy as well. Their primary function is to provide credit, which serves as the engine that drives economic growth. A number of factors contribute to the higher growth of retail lending in emerging economies, including rapid growth in personal wealth, favorable demographic characteristics, rapid development of information technology, a conducive macroeconomic environment, financial market reforms, and small micro-level supply side factors. The technology has made it possible to deliver services throughout the branch bank network, allowing instant updates to checking accounts and rapid money transfers.

Review of literature

The new private sector banks in India are using better technology and are offering better service to their customers, according to Gaganjot Singh (1998) in his study "New innovations in banking industry - a study of new private sector banks.". Based on the service levels, ambience, and technology provided by these new private banks, they have emerged as a model for the banking industry. The public sector banks have established a large customer base and have become complacent. Additionally, they are less innovative in their use of technology-assisted customer service. In light of the large number of customers they have, they consider themselves to be able to compete with new generation banks.

N. S. Varghese (2000) asserts that the new generation of private sector banks are capable of implementing e-banking and are highly preferred by investors in the stock market. Furthermore, he cites prominent new generation private sector banks like HDFC and ICICI that offer cheaper transaction costs through internet banking.

P Verma's study (2000) is in agreement with Varghese's findings. In an analysis of the impact of information technology on new generation banks, Verma is of the opinion that new generation banks are far ahead of traditional public sector banks. In his opinion, information technology poses a threat to public sector banks. There is a significant difference between the business per employee of the major public sector banks in India and the business per employee of the new generation banks, as he observes. Therefore, public sector banks must improve their productivity and efficiency in order to remain competitive with the new generation of fully computerized banks. However, Eapen Varghese (2001)¹¹ finds no significant difference between the services provided by public sector banks and those provided by private sector banks.

The view of Mini Joseph (2001) is that new generation banks have created a spirit of competition in the banking industry by fully utilizing the facilities and amenities provided by technology and computerization, and by placing a high value on customer satisfaction. Additionally, they offer quality service now in a competitive manner in order to prevent erosion in the market share of the old private and public sector banks.

Achutamba, V., &Hymavathi, C. H. (2022), The purpose of this article was to demonstrate how digital payment may be used by businesses in various industries to reach out to potential customers and to explore the concepts of online banking, payment, and payment methods. In comparison with cash payments, digital payments offer a number of advantages, including ease, security, and clarity. In the coming years, a completely new method of transmitting capital will emerge in the Indian economy.

Indian Brand Equity Foundation (IBEF) 2019, It is estimated that the growing growth of the digital payment sector is influenced by several factors, including ease of payment, the increasing use of smart phones, the expansion of non-banking payment institutions, and the intensifying regulation of the digital payment platform.

As described in Jindal and Sharma (2020), by analyzing market conditions, defining customer targets, comparing e-banks, and determining demographic characteristics of users and non-users, authors examined the scope of e-banks and mobile banking in China. According to them, China is largely unaware of these facilities as a result of security barriers, foreign dangers, inadequate computer capabilities, and the history of cash-carrying banks in China. Both businesses and customers have benefited from Internet banking due to its numerous advantages. In addition to the decline in bank expenses, internet banking remains one of the most cost-effective and reliable distribution channels. There are numerous benefits for end users, including, but not limited to, the program's adaptability (time savings and global accessibility).

The study by Jamal and Naser (2002) examines the factors influencing customer satisfaction in the retail banking sector of Abu Dhabi. A structured questionnaire was used to collect the necessary data. According to the customer survey, the satisfaction of customers is largely determined by the expectations of the customer and the quality of the services provided by the bank. Based on their research into factors influencing customer satisfaction in the Pakistan retail banking sector¹⁵, they found that service quality is an important determinant of customer satisfaction.

According to Dr. Jeromi (2002), who examined "The trends and issues of bank credit in Kerala," the absolute rate of credit growth appears to be reasonable. There is a lower level of credit in relation to deposits, per capita credit, credit per account, and disbursement by all India Financial Institutions. The author observes that the mobilization of deposits should receive greater attention than the expansion of credit.

Objectives of study

1. To study of Retail banking.
2. To find the impact of retail banking on Indian economy.
3. To study the benefits and challenges experienced by customers in Digital banking of selected banks.

Hypotheses of the Study

HO: There is no significant difference in the perception of customers on the benefits

offered by digital operations of retail banking.

HO: There is no significant difference in the perception of customers on the challenges faced in digital operations of retail banking.

Research Methodology

In order to collect facts and figures related to the topic under study, the present study relies on both primary and secondary sources. A secondary data set includes previously published literature, books, articles, journals, bulletins, magazines and specialized banking periodicals as well as various websites that contribute to the development of the theoretical and conceptual framework for the study.

A questionnaire is used to collect the primary data. The purpose of this study is to collect information about the service quality dimensions in terms of the perceptions of current customers of both private and public banks, based on their responses. A self-administrated questionnaire is used to collect 100 responses from the city of Mumbai (50 responses from private and public sector banks). Customers are selected based on their demographic profile, including age, qualification, occupation, and gender.

Data analysis

Table 1: Table showing digital banking transactions

Digital banking services	Utility
1. Obtain bank statements	View and download your bank statements for any specified period.
2. Transfer of Funds	With alternatives such as NEFT, RTGS, and IMPS available, the need to issue cheques and DDs has been eradicated.
3. Mobile banking	Mobile banking is digital banking through an application optimized for smartphones and tablets.
4. Cash withdrawals	ATMs facilitate cash withdrawals at any point in time. Moreover, ATMs are widely present in every locality.
5. Bill payments	Auto-debit feature for bill payments lets a user setup monthly debits in favor of regular utility payment.
6. Finance	Invest, raise loans, open fixed deposit accounts – all through digital banking. De-mat accounts can be linked to your bank accounts to provide a seamless flow of funds so you can invest promptly.
7. Manage cheques	Intervene in the cheque clearing process using digital banking to stop the cheque if the need arises.
8. Monitor transaction records	Banks send transaction alerts to the linked mobile number or email addresses. Transactions are updated almost as soon as executed. Digital banking also lets you monitor account balances or outstanding at the click of a button.

Source: <https://tavaga.com/blog/digital-banking-meaning-benefits-products-types-disadvantages-future/>

Table 2: Difference in perception through T Test

Group Statistics						
	Category of Bank	N	Mean	Std. Deviation	Std. Error	
Benefits of digital operations	Private banks retail	50	7.93	1.610	.161	
	Public banks retail	50	10.46	1.473	.147	
Challenges of digital operations	Private banks retail	50	11.58	2.203	.220	
	Public banks retail	50	16.23	3.175	.317	

Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	
Benefits of digital operation	Equal variances assumed	16.900	.001	11.595	
	Equal variances not assumed			11.595	
Challenges of digital operations	Equal variances assumed	17.043	.000	12.034	
	Equal variances not assumed			12.034	

Independent Samples Test					
		t-test for Equality of Means			
		df	Sig. (2-tailed)	Mean Difference	
Benefits of digital operations	Equal variances assumed	198	.000	2.530	
	Equal variances not assumed	196.465	.000	2.530	
Challenges of digital operations	Equal variances assumed	198	.000	4.650	
	Equal variances not assumed	176.390	.000	4.650	

In this paper, we present the results of an independent samples t-test regarding the advantages and challenges of digital operations in retail banks, both public and private. The equal variance scenario and the non-assumption scenario yield extremely low p-values (0.000) for the "Benefits of digital operations," indicating a significant difference in perceptions of the benefits of digital operations between public and private retail banks.

The section on "Challenges of digital operations" can be interpreted similarly.

As a result of the t-tests, it has been determined that the advantages and difficulties of digital operations differ significantly between private and public retail banks. Despite not taking into account the assumption of equal variances (Welch's t-test), the results remain highly significant.

Conclusion

There is a detailed analysis of India's retail banking scene in the report, which emphasizes how it has revolutionized the banking industry. A combination of public and private initiatives has led to a significant increase in the retail banking industry, which focuses on low-value, high-volume transactions. A number of factors contribute to the rise of retail banking, including its ability to handle large-scale transactions, its ability to offer a wide range of products, and its ability to help banks diversify their holdings of assets.

According to the paper, retail banking is crucial to fostering overall economic growth, citing data from the Reserve Bank of India's Annual Report. In a booming economy, retail banking will have great prospects due to the development of the Indian middle class. Retail lending has been on the rise in the world. Private and public retail banks evaluate the advantages and difficulties of digital operations very differently, as evidenced by the independent samples t-test. Even without taking into account the assumption of equal variances, the results remain highly significant.

Therefore, the results highlight the need for customized strategies and approaches in this dynamic industry. Private and public sector banks appear to have very different digital operations in retail banking. The study provides valuable information for scholars, banking organizations, and politicians seeking to understand and negotiate the changing retail banking landscape in India.

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ANALYSIS OF WATER QUALITY USING PHYSICO-CHEMICAL PARAMETERS BHUTWADA DAM IN JAMKHED, DISTRICT AHMEDNAGAR (M.S.)

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Abstract

The present paper deals with the study of physico-chemical parameters of Bhutwada dam near Jamkhed district Ahmednagar (M.S.). Monthly variations in physical and chemical parameters such as Water Temperature, pH, Turbidity, Total dissolved solids, Dissolved oxygen, Free carbon dioxide, Total hardness, Total Alaklinity, Chlorides, Phosphates, and Nitrates were investigated for a period of one year from January 2020 to December 2020. All parameters were beyond the permissible limits. The results indicate that the dam is non-polluted and can be used for domestic, irrigation and fisheries.

Keywords : Physico-chemical parameters.

Introduction

Water is one of the renewable resources essential for sustaining all forms of life, food production, economic development and for general well being. It is impossible to substitute for most of its uses, difficult to de pollute, expensive to transport, and it is truly a unique gift to mankind from nature. Water is also one of the most manageable natural resources as it is capable of diversion, transport, storage, and recycling. All these properties impart to water its great utility for human beings.

Water is mainly required for the important as municipal use, industrial and commercial use, public use, for fire, for irrigation, for generation of hydropower and for navigation etc.

Water is of significance to all biotic things: in some organisms, up to 90% of their body weight comes from water. Up to 60% of the human body is water, the brain is composed of 70% water, blood is 82% water, and the lungs are nearly 90% water.

Water is polluted everywhere. The India ranks 12th among water poor nations. According to a survey conducted about 70% of all the available water in India is polluted. Similarly about 73 million workdays are lost due to water related diseases. Therefore it is necessary that the quality of drinking water should be checked at regular time interval, because due to use of contaminated drinking water, human population suffers from varied of water borne diseases. It is difficult to understand the biological phenomenon fully because the chemistry of water reveals much about the metabolism of the ecosystem and explain the general hydro-biological relationship (Basavaraja Simpi et al. 2011). The increased use of metal-based fertilizer in agricultural revolution of the government could result in continued rise in concentration of metal pollutions in fresh water reservoir due to the water run-off. Also faucal pollution of drinking Physico-chemical parameters for testing of water.

The Present study involves the analysis of water described by its physical, water quality in terms of physico-chemical parameters of Bhutwada dam near Jamkhed district Anmednagar (M.S.). It is located in 18.47°N latitude and 75.205° E longitudes and this dam is having an area of 48.25 acres and the area is having 46.03 acres of command.

Material and Methods

The study area was Bhutwada dam near Jamkhed district Ahmednagar (M.S.) it was located in latitude 18.47°N, and longitude 75.205°E. Study was conducted from January 2020 to December 2020. Water sample from dam was collected every month. (Figure-1).

The water samples were immediately brought into Laboratory for the estimation of various Physico-chemical parameters. The physical parameters such as water temperature, pH, were recorded by using Thermometer and Digital pH meter. The turbidity of water to light was measured by using Secchi disc. The chemical parameters of water such as dissolved oxygen, Total dissolved solids, Dissolved oxygen, Free carbon dioxide, Total hardness, Total Alaklinity, Chlorides, Phosphates, and Nitrates etc. were determined by standard methods (Trivedy and Goel, 1986), Kodarkar M.S.(1992) and(APHA 2005).

Results and Discussion

The Bhutwada is a small Village/hamlet in Jamkhed taluka district Ahmednagar of Maharashtra State, India. It comes under Bhutwada Panchayath. It belongs to Northern Maharashtra region and Nashik Division. It is located 92 KM towards East from District headquarters Ahmednagar.

The main purpose of the dam is irrigation for the surrounding area, with water from the resulting spillway and reservoir. The results indicate that the quality of water varies considerably from locations to locations. The water temperature of the Bhutwada dam ranged between 22⁰c to 32⁰c. Temperature of water may not be as important in pure water because of wide range of temperature tolerance in aquatic life, but in polluted water.

Table 1: Physical parameters of Bhutwada dam, Jamkhed district Ahmednagar.

Month	Water Temperature ⁰ c	Turbidity NTU	TDS mg/l	pH
January 2020	24	12.15	200	7.5
Feburary 2020	27	10.25	230	7.2
March 2020	28	15.20	250	7.1
April 2020	31	9.50	180	7.7
May 2020	32	9.10	150	7.6
June 2020	29	7.25	230	7.9
July 2020	28	10.50	240	8.5
August 2020	29	8.15	145	8.0
September 2020	26	5.10	160	7.5
October 2020	25	4.9	140	7.3
November 2020	23	7.15	210	7.5
December 2020	22	8.50	165	7.6

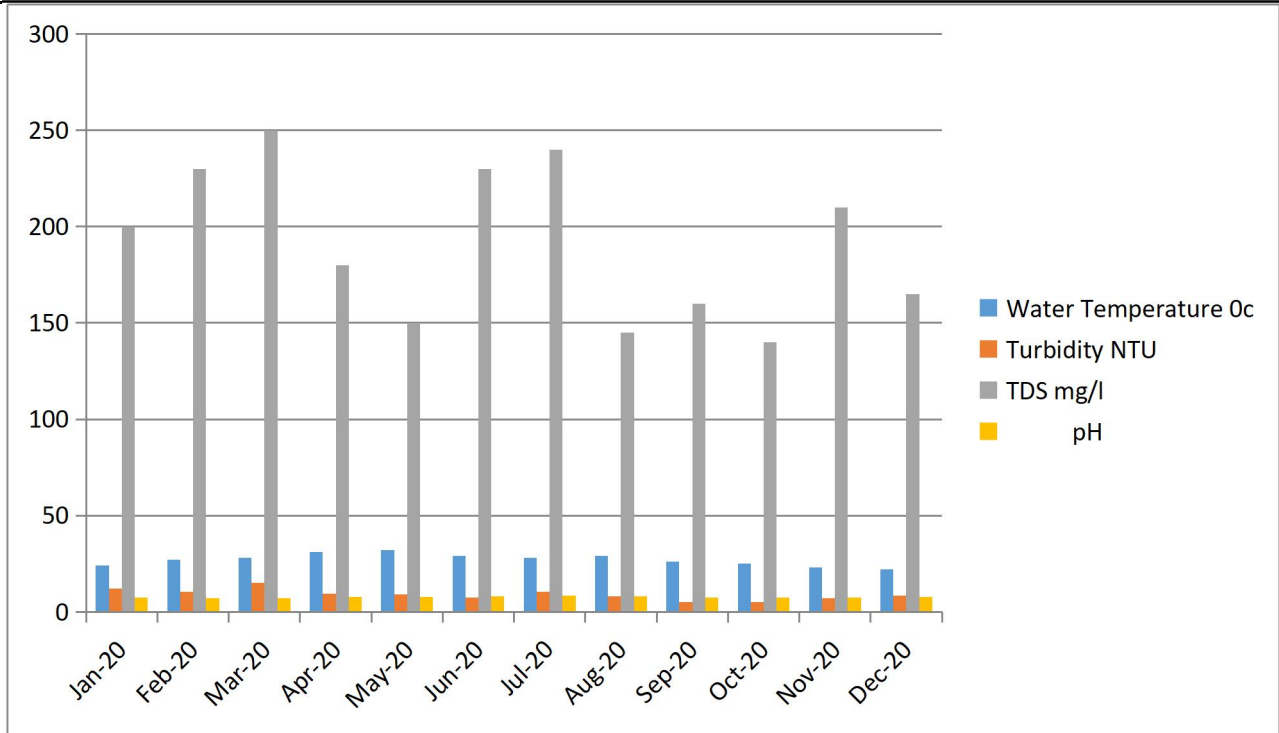
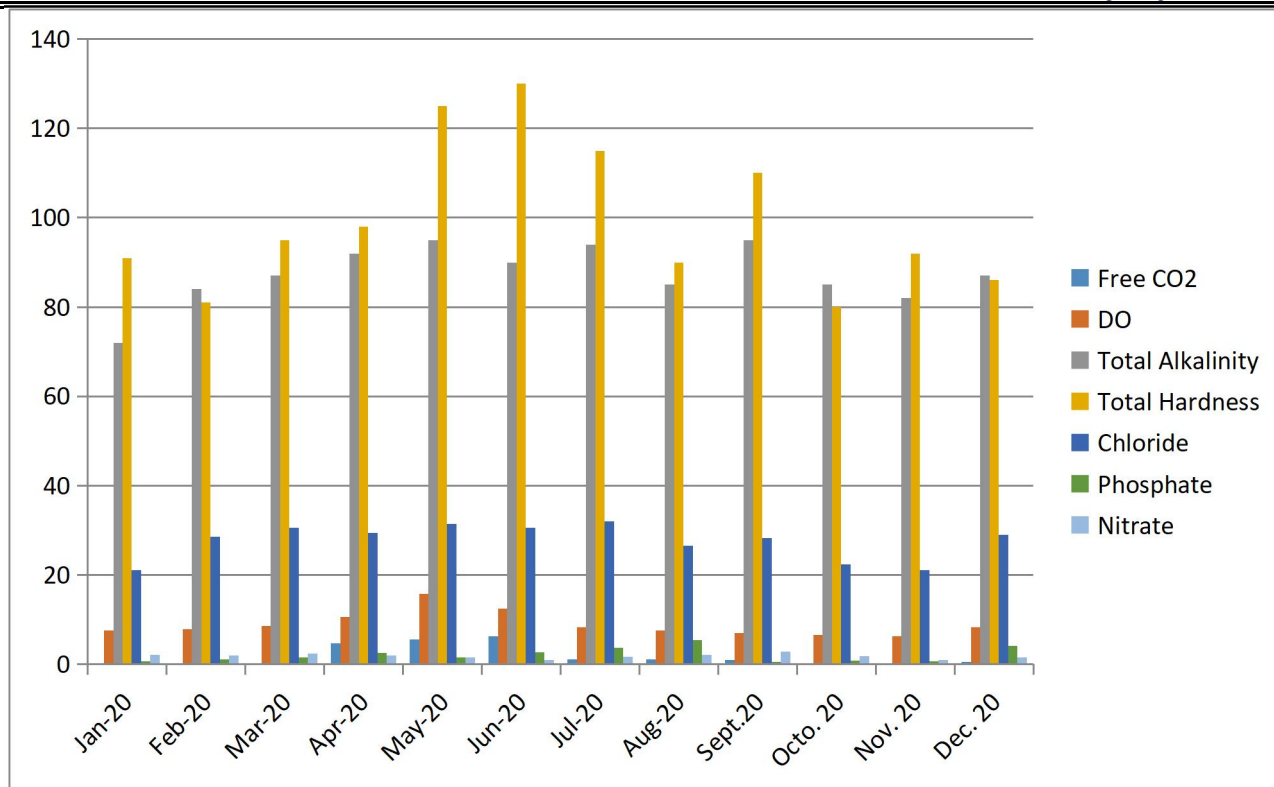


Table 1: Physical parameters of Bhutwada dam, Jamkhed district Ahmednagar

Month	Free CO ₂	DO	Total Alkalinity	Total Hardness	Chloride	Phosphate	Nitrate
January 2020	0.07	7.6	72.0	91.0	21.00	0.6	2.1
February 2020	0.20	7.9	84.0	81.0	28.56	1.12	1.9
March 2020	0.10	8.5	87.0	95.0	30.5	1.56	2.4
April 2020	4.6	10.5	92.0	98.0	29.4	2.45	2.0
May 2020	5.5	15.8	95.0	125.0	31.4	1.45	1.5
June 2020	6.2	12.5	90.0	130.0	30.5	2.60	1.0
July 2020	1.02	8.3	94.0	115.0	32.0	3.65	1.6
Aug. 2020	1.05	7.5	85.0	90.0	26.5	5.45	2.1
Sept.2020	0.95	7.0	95.0	110.0	28.2	0.56	2.85
Oct.2020	0.20	6.5	85.0	80.0	22.4	0.75	1.85
Nov. 2020	0.09	6.2	82.0	92.0	21.0	0.60	1.0
Dec. 2020	0.50	8.2	87.0	86.0	29.0	4.15	1.5



In an established system the water temperature controls the rate of all chemical reactions, and affects fish growth, reproduction and immunity. Drastic temperature changes can be fatal to fish.

The water temperature plays an important factor which influences the chemical, bio-chemical characteristics of water body. The maximum temperature 32^oc was recorded in month May and a minimum of 22^oc was recorded in month of December. The water temperature in summer was high due to low water level, high temperature and clear atmosphere Salve and Hiware (2008).

Turbidity is the cloudiness of water caused by a variety of particles and is another key parameter in drinking water analysis. It is also related to the content of diseases causing organisms in water, which may come from soil runoff. The turbidity of water from 4.9 to 15.20NTU. The maximum value of 15.20 NTU was recorded in month March; it may be due to human activities decrease in the water level and presence of suspended particulate matter and minimum value of 4.9NTU in the month of October.

The value of total dissolved solids fluctuates from 140 mg/l to 250 mg/l. The maximum value (250 mg/l) was recorded in the month of March and minimum value (140 mg/l) in the month of October. Total dissolved solids describes the amount of inorganic salts of calcium, magnesium, sodium etc. and small proportion of organic matter present in the water, where a high value of the same have been reported to be related to acute myocardial infarction as well as ischemic heart diseases in few studies (Sneka Lata, *et al.*, 2015).

The pH is most important in determining the corrosive nature of water. Lower the pH value higher is the corrosive nature of water. The pH was positively correlated with electrical conductance and total alkalinity (Gupta 2009). The pH values of the samples ranged from 7.1 to 8.5 where most of the water samples tested in the study was found to be in the permissible range of pH value recommended by several health and pollution control organization e.g. WHO. i.e. 6.5 to 8.5. This range indicates that the water is alkaline in nature. Similar finding was observed by Joshi *et.al.* (2009).

Free carbon dioxide in the Bhutawada dam water was invariably present throughout the year. It fluctuated from minimum 0.20mg/l in month February and maximum 6.2mg/l in month of June in rainy season. The free carbon dioxide was found to be maximum in monsoon season and minimum in winter season. Carbon dioxide is the end

product of organic carbon degradation in almost all aquatic environments and its variation is often a measure of net ecosystem metabolism (Hopkinson 1985). Therefore, in aquatic biogeochemical studies, it is desirable to Physico-chemical parameters for testing of water.

Dissolved oxygen ranged between maximum 15.8mg/l in month of May and minimum 6.2mg/l in month of November. DO is a measure of the degree of pollution by organic matter and the destruction of organic substances, as well as the self-purification capacity of the water body. DO is one of the most important parameter. Its correlation with water body gives direct and indirect information e.g. Bacterial activity, photosynthesis, availability of nutrients, stratification etc. (Premlata Vikal, 2009).

Low alkalinity causes corrosion of pipes and increases the chance for releasing of many heavy metals. The permissible value of alkalinity as recommended by the Indian Standards is 200 mg/L for CaCO₃. The amount of alkalinity concentration of the water sample collected in the study area ranged from 150 to 250 mg/L. Alkalinity and pH are the factors in determining the amenability of waste water to biological treatment Manjare et.al. (2010).

Total hardness of water is an important consideration in determining the suitability of water for domestic uses. Hardness is caused by multivalent metabolic cations and with certain anion present in the water to form scale. Total hardness was higher in the monsoon season 130mg/l and lower in the winter season 80mg/l. High value of hardness during summer can be attributed to decrease in water volume and increase of rate of evaporation of water Hujare M.S. (2008).

Chloride value ranged from 21.0 to 31.5mg/l. The maximum value 31.5mg/l was recorded in month of May and minimum value 21.0mg/l in the month of January. The high concentration of chlorides is considered to be the indicators of pollution due to organic wastes of animal origin. Chlorides are troublesome in irrigation water and also harmful to aquatic life (Rajkumar 2004). The higher concentrations of chloride are hazards to human consumption and create health problems.

The value of phosphate fluctuates from 0.6 to 5.45mg/l. The maximum value 5.45mg/l was recorded in month of August and minimum value in month of September 0.56mg/l. The higher concentration of chlorides in water is an index of pollution. Chloride that dissolves easily in water is toxic to most aquatic organisms because it reacts quickly with other substances in water (Padmanabha and Belagali (2007).

Nitrate content in the water ranged from 1.0 to 2.85mg/l. The highest nitrate value 2.85mg/l was recorded during the month of September and minimum value was recorded during the month of June. Nitrate, a compound of nitric acid, is the most highly oxidized form of nitrogen found in aquatic environment. It is an essential nutrient for many photosynthetic autotrophs and in some instances, functions as a growth-limiting nutrient. It is used by algae and other aquatic plants to form plant protein which, in turn, can be used by animals to form animal protein. Nitrate is a major ingredient of farm fertilizers and is necessary for plant uptake and is essential for plant growth. Nitrates are the indirect source of food for fish. This may increase the fish population. However, if algae grow too wildly, oxygen levels will be reduced and fish will die Simpi et.al.(2011).

Conclusion

From present investigations we concluded that the quality of most of the water samples under study was suitable for drinking purpose except in rainy season. However, it is also important to investigate other potential water contaminations such as chemicals and microbial and radiological materials for a longer period of time, including human body fluids, in order to assess the overall water quality of Maharashtra state.

A study of Physico-chemical parameters of the Bhutwada is a small Village/hamlet in Jamkhed Taluka district Ahmednagar of Maharashtra State, India. It carried out by taking convinced important parameters like temperature, pH, dissolved oxygen, total alkalinity, total hardness, chlorides, phosphate, etc., for a period of January 2020 to December 2020. In present investigation pH, total alkalinity, total hardness, chlorine etc., were beyond the permissible limit. So, the Bhutwada dam water considered as polluted water. The physico-chemical characteristics of Jamkhed city water suggested that there was harmful to pisciculture, irrigation and drinking water.

The conducted research revealed that waste water used for the irrigation and agricultural purposes of these nearby areas can be considered as remarkably polluted, and thus, it is not suitable for agricultural and aquatic bodies. It is

concluded that the pollution is found due to lacking of regular cleaning of storage tanks or washing the plate along with residue/left over foods by customer in investigated restaurants. Plates with left foods are washed with water, which is released to earth, release the toxic pollutants and produce the pollution.

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QUALITY OF LENTIC WATER OF BHATEGAON POND IN PARBHANI DISTRICT, MAHARASHTRA

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Abstract

The major consumptive use of water is for agriculture purpose and particularly for irrigation in the world. But in some areas irrigation is a problem because of scanty water. In some places water must be piped hundreds of kilometers for irrigation requires great deal of energy. The presently lake is used for domestic, irrigation purpose and drinking purpose. The present study deal on lake, which is situated at village Bhategaon district Parbhani. The present study undertaken to study of physic chemical parameters of A Bhategaon pond water to study like dissolved oxygen, hydrogen ion concentration, chlorides, total solids, sodium, calcium, potassium and hardness.

Key words : Fresh water pond, physic chemical Characteristics.

Introduction

Water is said liquid of life and it is the essence of all living process. Water is universal solvent as it dissolve more substance than any other liquid without undergoing any chemical change. Thus water the unique component of nature has played an important role in the life from molecules to man, hence since the time unmemorable the great human civilization has originated, evolved and flourished around the water resources. Water covers about 70% of the earth surface but only 2.7% of the total water is fresh water of which 1% is ice free water in the river lake, atmosphere and as biological water.

Hence now days raw water from the water bodies is being analyzed for its utilizes like drinking, aquaculture and irrigation purpose. Considerable work has been done on physic chemical and biological assessment and their functional dynamics in aquatic environment all over the world. Water is essential for life and for its betterments continuation on earth.

The water body selected for the present investigation is a perennial natural water body at Bhategaon District Parbhani. It is perennial natural pond which receive rain water from surrounding hills. In the top sheet the position of the pond is at 19-250° latitude and 77-250°. The catchment area pond is 15.54 sq. kilometer, submerged area 46.94 hector, annual utilization 2.07 sq. kilometer top width of wall 360m. The length of earthen dam is 452 m and maximum flood lift 1.50 m irrigation was the main objective behind the pond.

Sinha *et al* (1990) carried out the assessment of drinking water quality of Santhal Pargana Bihar. Effect of mass bathing on water quality of Pushkar sarovar was studied by Lal (1996), Salaskar (1997) studied the water quality characteristics of Anehala lake , Kalyan(M.S.) Agarkar *et al* (1998) studied the water quality of analyzing physic-chemicals character of water from Buldhana District.

Present study was undertaken to ascertain lentic water quality status of a Bhategaon pond in Parbhani District. The impoundment is mainly used for domestic and irrigation purpose.

Material and Methods

During present study of Bhategaon pond water samples were collected in the morning in the first week of each month from December to May from five sampling station Spot – S1, Spot- S2, Spot – S3, Spot-S4 and Spot-S5 considering addition of water , topography and utility of water. Water samples were collected in prestilised plastic bottles. The sample were carried immediately to the laboratory for analysis of physico chemical parameters like water temperature, PH,, were recorded at sampling sites only. Dissolved oxygen, chlorides, total solids, sodium, potassium,, hardness, calcium were analyzed in the laboratory according to the methods of APHA(1998), Kodarkar (1998), Trivedi *et al.*, (1987). For simplicity and convenience here values interpret are means of monthly values of different physic chemical factors.

Result and Discussion

Criteria	Permissible level	WHO	ISI	Range	Mean
Temperature	Narrative	--	--	26.1 to 33.5°	28.9
pH	6.0 to 8.5	7.0 – 8.5	6.5 – 8.5	7.1 – 8.5	7.95
T.S.(mg/lit)	500- 1500	1000	500	510 - 635	597
D.O. (mg/lit)	≥4.0	≥4.0	≥4.0	3.8 – 8.9	6.25
Hardness.(mg/lit)	100 - 500	500	300	130- 360	245
calcium.(mg/lit)	75-200	200	30	5.0-13.2	9.1
Chlorides.(mg/lit)	25-250	200	250	120-226	223
sodium.(mg/lit)	--	--	--	3.4- 14.2	8.8
Potassium.(mg/lit)	--	--	--	0.3 – 2.1	2.2

Table: The means of monthly values of different physic chemical parameter

The present study shows that the permissible limits of colour, odour, taste and temperature are mostly narrative and the water from the present water body is acceptable for the drinking purposes, irrigation and fish culture purpose. The permissible limit of pH for potable water ranges within 6.0 to 8.5. in the present study pH ranged between 7.1 to 8.5 within. Thus pH values are permissible limits. Total solid values are also within permissible limit i. e. 510-635 mg/lit. dissolved oxygen during the present study varied between 3.8 to 8.9 mg/lit. indicating sufficient aerated state. Similar result were also reported by Agarkar (1998). In the present study of total hardness which is very important parameter determining usefulness of water in different sectors is also very much below the permissible limits 50 to 40. This denotes that water is soft and good for drinking purpose. Present result are agreement with earlier study by Sinha et al., (1990). Parameter like calcium, chlorides, sodium and potassium are also lower than the permissible limits. Phosphate and nitrates which are important nutrients are present in very low range detected by at the first time only preventing algal growth and keeping water body healthy. Similar results were also reported by Dayal Gopal (1992) and Salaskar (1997). To summaries result the water stock is mainly used for drinking purpose, domestic purpose, which fulfill all basic need of human being. The quality of water was good because all the studies physic chemical parameters were within permissible range.

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RECENT METHODS FOR REDUCING CLIMATE CHANGE: AN OVERVIEW

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Abstract

In this review we discussed some main approaches to reducing climate change, i.e. Decarbonization, nuclear power, renewable energy, Afforestation, and reforestation. The development of strategies for climate change adaptation is the main topic of this review. The review is guided by a few research issues, such as what can be learned from the experiences and information already available on climate change adaptation and how those lessons may be used to the development of practical adaptation plans and strategies. The relationship between adaptation and development, as well as the necessity of addressing both the formal and informal processes of growth, are crucial components of this differentiation. Effective and adaptable adaptation processes must be created both short- and long-term. Achieving this goal might have a significant impact on millions of current and future residents' qualities of life.

Keywords

Climate Change, Decarbonization, Nuclear Power, Renewable Energy, Afforestation.

I. Introduction

Three main approaches to reducing climate change are discussed in the literature. The first type of mitigation strategies used by conventional efforts is decarbonization, which lowers CO₂ emissions through the use of fuel substitution, nuclear power, renewable energy, efficiency improvements, and carbon capture, storage, and use. There is a manageable amount of danger associated with most of these well-established technology (Ricke et al., 2017), (Fawzy et al., 2020), (Böhringer et al., 2022). A second path consists of a fresh collection of freshly suggested technologies and techniques. These are known as negative emissions technologies, or carbon dioxide removal methods, and they have the potential to be used to absorb and store CO₂ from the atmosphere. The primary methods of reducing emissions that are extensively covered in the literature are bioenergy carbon capture and storage, biochar, enhanced weathering, direct air carbon capture and storage, fertilisation of the ocean, improvement of ocean alkalinity, soil carbon sequestration, afforestation and reforestation, construction and restoration of wetlands, and alternative methods of reducing emissions that are utilised and stored, like mineral carbonation and the use of biomass in building (Lin, 2019), (McLaren, 2012), (Lawrence et al., 2018). Lastly, a third approach centres on the idea of controlling solar and terrestrial radiation to change the earth's radiation balance. The primary goal of these methods, which are also known as radiative forcing geoengineering technologies, is to stabilise or lower temperature. This is accomplished without changing the atmospheric quantities of greenhouse gases, in contrast to negative emissions technology. The primary methods of radiative forcing geoengineering that are covered in the literature include surface-based brightening, space-based mirrors, cirrus cloud thinning, marine sky brightening, stratospheric aerosol injection, and other radiation management strategies. There is a great deal of uncertainty and danger associated with the practical large-scale deployment of all these strategies, which are currently theoretical or in the very early phases of experimentation. Radiative forcing geoengineering methods are not yet covered by policy frameworks (Lockley et al., 2019), (Lawrence et al., 2018). Traditional methods of mitigating Since energy-related emissions are the primary cause of the rising levels of greenhouse gas concentration in the atmosphere, as was previously noted, traditional mitigation solutions and efforts should concentrate on both the supply and demand sides of the energy industry. The literature mostly discusses mitigation initiatives related to technology and procedures used in four key sectors: industry, transportation, buildings, and power on the supply side. Decarbonization in the electricity industry may be accomplished by utilising nuclear power, renewable energy, carbon capture and storage, and supply-side fuel switching to low-carbon fuels like renewable energy and natural gas. Moreover, sector-specific technologies and energy-efficient processes that lower

energy consumption are examples of demand-side mitigation efforts. Other efforts include the conversion of end-use fuels from fossil fuels to renewable fuels and the incorporation of renewable power technologies into the energy matrix of these sectors(Mathy et al., 2018).

II. Renewable energy

A recent worldwide status report on renewables estimates that in 2017, the percentage of renewable energy in the world's total final energy consumption was 18.1%(Raturi, 2019). In the literature, a variety of contemporary renewable energy technologies are covered. Photovoltaic solar power, concentrated solar power, solar thermal power for heating and cooling, onshore and offshore wind power, hydropower, marine power, geothermal power, biomass power, and biofuels are some of the most well-known technologies(Mathy et al., 2018),(Hussain et al., 2017). Variable renewable energy sources, including wind and solar power, are important innovations with enormous decarbonization potential. A primary technological obstacle is the intermittent nature and fluctuation of electricity generation. This has been solved by combining these technologies with other renewable baseload and grid technologies, along with storage. Quality, flow, stability, and balance are the four main difficulty areas that Sinsel et al. address in relation to variable renewable energy sources. Additionally, they provide several solutions for both dispersed and centralised systems, the majority of which centre on grid technology and adaptability(Sinsel et al., 2020). Renewable energy may be used in the construction, transportation, and industrial sectors in addition to the power business. Examples of decarbonization initiatives using renewable energy sources include the utilisation of photovoltaic and thermal solar energy as well as the conversion of industrial end-use fuels to solid, liquid, and gaseous biofuels for combined thermal and power generation. Solar and biomass-based solutions can also help buildings with their electricity, heating, and cooling needs. The transportation sector's decarbonization is contingent upon the end-use fuel switch. Biodiesel, first- and second-generation bioethanol, hydrogen, methane, and bio-dimethyl ether are a few types of biofuels (bio-DME). Renewable energy may be used in the construction, transportation, and industrial sectors in addition to the power business. Examples of decarbonization initiatives using renewable energy sources include the utilisation of photovoltaic and thermal solar energy as well as the conversion of industrial end-use fuels to solid, liquid, and gaseous biofuels for combined thermal and power generation. Solar and biomass-based solutions can also help buildings meet their energy, heating, and cooling needs. The transportation sector's decarbonization is contingent upon the end-use fuel switch. Biodiesel, first- and second-generation bioethanol, hydrogen, methane, and bio-dimethyl ether are a few types of biofuels (bio-DME)(Srivastava et al., 2020).

III. Nuclear Energy

The International Atomic Energy Agency (IAEA) has released its most recent report, which states that as of 2018, there were 450 nuclear power reactors operating worldwide with an installed capacity of 396.4 GW. By 2030, it is anticipated that installed capacity will have increased by 30%. (from a base case of 392 GW in 2017). Based on the 2017 data, a 10% decline in real estate may occur by 2030, according to a low case projection scenario. In the long run, it is predicted that, in the best-case scenario, worldwide capacity might reach 748 GW by 2050(Energy, 2020). The development of improved fusion-based nuclear technology may favourably contribute to mitigation efforts in the second half of the century, even though traditional fission-based nuclear facilities are advised to be phased out in the future. The new nuclear technology known as fusion power is more efficient than traditional fission-based nuclear technology and does not entail the danger of hazardous waste disposal that comes with it. Moreover, fusion power is classified as an emission-free technology(Gi et al., 2020).

IV. Carbon capture, storage, and utilization

Capturing, storing, and using carbon an intriguing technique that has been explored in the literature as a possible decarbonization strategy for the industrial and electricity sectors is carbon capture and storage. The method involves extracting and storing CO₂ emissions from operations that use fossil fuels like coal, oil, or gas. After then, the collected CO₂ is moved and kept for a very long time in geological reserves. Reducing emissions while still using fossil fuels is the primary goal. The literature discusses three capture technologies: oxyfuel combustion, post-combustion, and pre-combustion. Every technology has a unique method for removing and storing CO₂. However, post-combustion capture systems offer a wide range of possible applications and are best suited for retrofit projects. After CO₂ has been effectively gathered, it is liquefied and sent to appropriate storage locations via pipelines or

ships. The research suggests that depleted oil and gas fields, coal beds, and subterranean saline aquifers not utilised for drinking water are among the storage choices (Vinca et al., 2018).

V. Negative emissions technologies

The implementation of negative emissions technologies in conjunction with traditional decarbonization technologies was a feature of the majority of the climate pathways examined by the Intergovernmental Panel on Climate Change (IPCC) in order to evaluate the viability of reaching the targets stipulated in the Paris Agreement. Thus far, the IPCC has only considered two negative emissions technologies in its assessments: afforestation and reforestation and bioenergy carbon capture and storage (Masson-Delmotte, 2018). Academics, scientists, and policymakers recognise and acknowledge the critical role that negative emissions play in achieving climate targets; however, there is ongoing discussion about the social, economic, and technical viability of this approach as well as the risks involved in its widespread implementation (Lenzi, 2018).

VI. Afforestation and reforestation

Growing trees absorb CO₂ from the atmosphere, which is then stored in soil, organic matter that has decomposed, and living biomass. For this reason, forestry is an essential biogenic negative emissions technology in the battle against global warming. Afforestation, or planting new forests, and reforestation, or planting existing forest areas that have been degraded or removed of trees, are the two ways that forestation is applied. After forests are established, certain tree species may take 20 to 100 years to reach maturity, at which point sequestration rates start to drastically drop. At that point, forest products are prepared for usage and collection. It is argued that forest management practises and operations have an impact on the environment and should be carefully considered (Bui & Mac Dowell, 2022). For a very long period, trees may store carbon, but their permanence is susceptible to human and environmental disruptions. Storage integrity is under danger from a variety of natural calamities, including disease, fire, droughts, and human-caused deforestation. Generally speaking, the life of biogenic storage is significantly shorter than that of storage in geological formations, as is the case with carbon capture and storage for bioenergy (Fuss et al., 2018). Zomer et al examine if land is available for activities related to mitigating climate change in accordance with the UNFCCC's KP's clean development mechanism-afforestation/reforestation (CDM-AR) guidelines. Through the purchase of Certified Emissions Reduction Units (CERs) from afforestation or reforestation initiatives in poor countries, the CDM-AR permits carbon sequestration offsets to satisfy emission reduction requirements for the developed nations. The CDM's main objective is to help developing nations achieve sustainable development, which includes reducing poverty and promoting environmental benefits and economically viable carbon reductions. Carbon must be sequestered into semi-permanent "sinks" for CDM "sink" projects, which are mostly made of growing trees through afforestation and replanting (Zomer et al., 2008).

VII. Ocean fertilization

The practise of adding macronutrients, such phosphorus, and nitrates, as well as micronutrients, like iron, to the ocean's top surface in order to boost biological activity and increase CO₂ absorption is known as ocean fertilisation. Ocean surface-dwelling microscopic creatures known as phytoplankton play a significant role in the idea of marine carbon sequestration. "The biological pump" refers to the natural movement of the stored CO₂ to the deep ocean in the form of organic marine biomass. It is essential to remember that marine carbon respiration somewhat balances this downward influx. Like terrestrial plants, phytoplankton grows by using nutrients, light, and carbon dioxide. In the natural system, the demise and decay of marine life results in the availability of nutrients in the ocean. Therefore, the amount of recycled nutrients in the water determines the limit of marine output. The concept of ocean fertilisation involves adding more nutrients to boost biological output, which raises the rate at which CO₂ is absorbed relative to the rate of natural respiration, resulting in an atmospheric balance that is negative in carbon (Williamson et al., 2012), (Fawzy et al., 2020).

VIII. Enhanced terrestrial weathering

Weathering is the process by which silicate rocks break down in the natural system. In addition to consuming ambient CO₂, this chemical process emits metal ions along with carbonate and/or bicarbonate ions. The dissolved ions are carried by groundwater streams, rivers, and finally the ocean, where they either precipitate as carbonate minerals in the terrestrial system or are stored as alkalinity. One strategy to speed up this weathering process and

improve CO₂ absorption on a much shorter timeline is called enhanced weathering. This is accomplished by grinding silicate rocks to raise their reactive surface area and speed up the pace at which minerals dissolve. After that, the ground material is spread across croplands, yielding several additional benefits (Bach et al., 2019). When it comes to technological preparedness, improved weathering is currently practically implementable. Granular elements, like lime, are used as part of modern land management techniques. There is no need to make additional infrastructure or equipment investments in order to use the existing equipment. The technology involved in crushing, grinding, and quarrying are advanced, and scaling should not be a problem. On the other hand, with widespread use, a considerable amount of energy would be needed for extraction, manufacture, and transportation (Raturi, 2019).

IX. Conclusion

The creation of workable mitigation and adaptation strategies must happen right away given the current state of climate emergency. Three primary approaches to combating climate change were examined in a thorough literature review: radiative forcing geoengineering, negative emissions technologies, and conventional mitigation technologies. It is crucial to make clear that there is no one perfect way to combat climate change and that all of the technologies and methods included in this analysis should be used if they are both technically and financially feasible. Moving forward, financing technological research and development is also a critical component.

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ROLE OF ANTIOXIDANT'S FROM MEDICINAL PLANTS FOR HUMAN HEALTH CARE'S FROM VARIOUS DISEASES

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Abstract

Medicinal plants, among other things, are being evaluated as an easily accessible and strong source of antioxidant since they contain a variety of different chemical components that can act individually or synergistically to cure disease and promote health. In fact, a single plant can contain a wide range of phytochemicals, including bitter compounds that stimulate digestion, phenolic compounds with antioxidant and other pharmacological properties, antibacterial and antifungal tannins, diuretic substances, alkaloids, and soon. Many beneficial medications, including Atropine, Ephedrine, Digoxin, Morphine, Quinine, Reserpine, and Tubocurarine, were produced from plants and are still widely used today.

Keywords: Antioxidant's, medicinal plants, human health, diseases.

Introduction

An antioxidant is defined as "any substance that delays or inhibits oxidative damage to a target molecule". Oxidative damage or stress can occur in people when there is an imbalance between reactive oxygen species (ROS) and antioxidant defense and repair mechanisms. Any molecule in a living organism's body can be affected by oxidative damage, including but not limited to lipids, proteins, nucleic acids, and carbohydrates. Reactive oxygen and nitrogen species (ROS/RNS) cause diseases such ascancer, cardiovascular illness, neurological problems, and immunological dysfunction (Li *et al.*, 2007).

Antioxidants protect these molecules via a variety of mechanisms and pathways, including 1) Scavenging oxygen-derived species, 2) Reducing the formation of oxygen-derived species, 3) Binding metals to converter active species, 4) Repairing target damage, and 5) Destroying and replacing badly damaged targets.

Phenolics are ideal antioxidants because they include at least one hydroxyl group, which has the potential to quench a free radical by producing phenoxy, resonance stabilized radicals. Polyphenols' reduction-oxidation characteristics have been proven to contribute to antioxidant activity.

Free radicals, specifically reactive oxygen species (ROS) and reactive nitrogen species (RNS), are known to cause damage to lipids, proteins, enzymes, and nucleic acids, resulting in cell or tissue injury and contributing to the ageing process. These free radicals and oxidative stress are responsible for a wide spectrum of degenerative diseases, including inflammation, cancer, atherosclerosis, diabetes, liver injury, Alzheimer's, Parkinson's, and coronary heart disorders.

Several studies have found that oxidative stress can cause cell and tissue damage. The phrase oxidative stress refers to how oxidants modify the antioxidant state of cells and tissues. During oxidative stress, antioxidants are depleted. ROS and RNS comprise a wide range of reactive entities, including superoxide O₂ hydroxyl (OH), peroxy (ROO), peroxy nitrite (ONOO), and nitric oxide (NO) radicals, as well as non-free radical species such as hydrogen peroxide (H₂O₂), nitrous acid (HNO₂), and hydrochloric acid (HOCl). Natural antioxidants have recently piqued the interest of users and academics, owing to negative toxicological reports on some synthetic antioxidants and increased consumer awareness. (Ramalakshmi *et al.*, 2007).

Aerobic organisms have developed antioxidant defense systems to combat the damage caused by ROS and RNS entities. Both enzymatic and non-enzymatic defensive mechanisms are feasible. Superoxide dismutase, catalase, glutathione reductase, peroxidase, and nitric oxide synthase are among the enzymes involved in the enzymatic processes On-enzymatic processes include antioxidants and trapping agents such ascorbic acid, tocopherol, carotene, glutathione, flavonoids, uric acid, cysteine, vitamin K, serum albumin, bilirubin, and trace elements like zinc and selenium.

Traditional medicine research, particularly medicinal plants that aid in the management of microbial illnesses, is gaining traction these days. Based on ethnobotanical data, a large amount of study on the antibacterial activity of medicinal plants has been conducted, with promising efficacy against multi-drug resistant microorganisms after existing antibiotics failed to eliminate them.

In general, exogenous (radiation, cigarette smoke, atmospheric pollutants, toxic chemicals, overnutrition, changing food habits, etc.) intake of fruit and vegetables, overweight, obesity, and physical inactivity generate reactive oxygen species (ROS), reactive nitrogen species (RNS), and free radicals in the body. Congestive heart failure, systolic hypertension, angina pectoris, atherosclerosis, cerebral insufficiency, venous insufficiency, arrhythmia, and other terms are used to describe cardiovascular illnesses. Numerous medicinal herbs, including *Digitalis lanata*, *D. purpurea*, *Apocynum cannabinum*, *Calotropis procera*, *Carissa spectabilis*, *Nerium oleander*, *Urginea rubra*, and others, contain powerful cardioactive glycosides and have inotropic effects on the heart. (Tyler VE., 1994).

For many decades, the medicine digitoxin, digoxin derived from *Digitalis lanata* and *D. purpurea*, has been used to treat congestive heart failure. (Mashour *et al.*, 1998). Furthermore, increasing intake of antioxidant, extracellular, and long-lived proteins, such as elastin, laminin, and collagen, has been linked to a lower risk of cardiovascular disease. Exogenous antioxidants derived from natural substances, such as curcumin, baicalen, and resveratrol, inhibit the formation of atherosclerosis by displaying radical scavenging properties.

In vitro studies have shown that a number of flavonoids, including quercetin, morin, gossypetin, chrysin, myricetin, rutin, catechin and its derivatives, and several oligomeric proanthocyanidins, prevent LDL oxidation. (Prochazkova *et al.*, 2011). Some flavonoids derived from *Morus alba* leaves, such as quercetin 3-(6-malonylglucoside), have been shown to reduce atherosclerosis lesion growth in LDL receptor impaired mice by increasing LDL resistance to oxidative modification. (Enkhaa *et al.*, 2005). Protective compounds that can inhibit the production of reactive oxygen species (ROS), scavenge free radicals, or chelate metals may be able to delay the onset of all of these diseases or possibly prevent them altogether.

A diverse spectrum of naturally occurring antioxidants is found in medicinal plants, each with its own composition, physical and chemical properties, and site of action. Among these, phenolics and flavonoids have been powerful antioxidants that have consistently protected by scavenging a wide range of reactive oxygen species, including hydroxyl radicals, peroxy radicals, hypochlorous acids, superoxide anion, and peroxynitrite in various in vitro cellular models. (Halliwell B., 2007). Similar to this, polyphenols' antioxidant activity in cardiovascular disorders, hepatoprotective, anti-carcinogenic, antibacterial, antiviral, and anti-inflammatory activities have been thoroughly studied. (Nijveldt *et al.*, 2001; Serrano *et al.*, 2009).

Anthocyanins are the antioxidants that have been shown to suppress chemically caused cancer and turn off genes related to angiogenesis, inflammation, and proliferation. Enzymatic and non-enzymatic groups of endogenous antioxidant systems have been evolved in the body to deal with the creation of free radicals. Catalase, glutathione peroxidase, and superoxide dismutase are a few examples of enzyme-based antioxidants; while-carotene, vitamin C, and vitamin E are examples of non-enzymatic antioxidants. The body can also be protected from oxidative damage by phytochemical antioxidants, such as polyphenols, lycopene, and lutein.

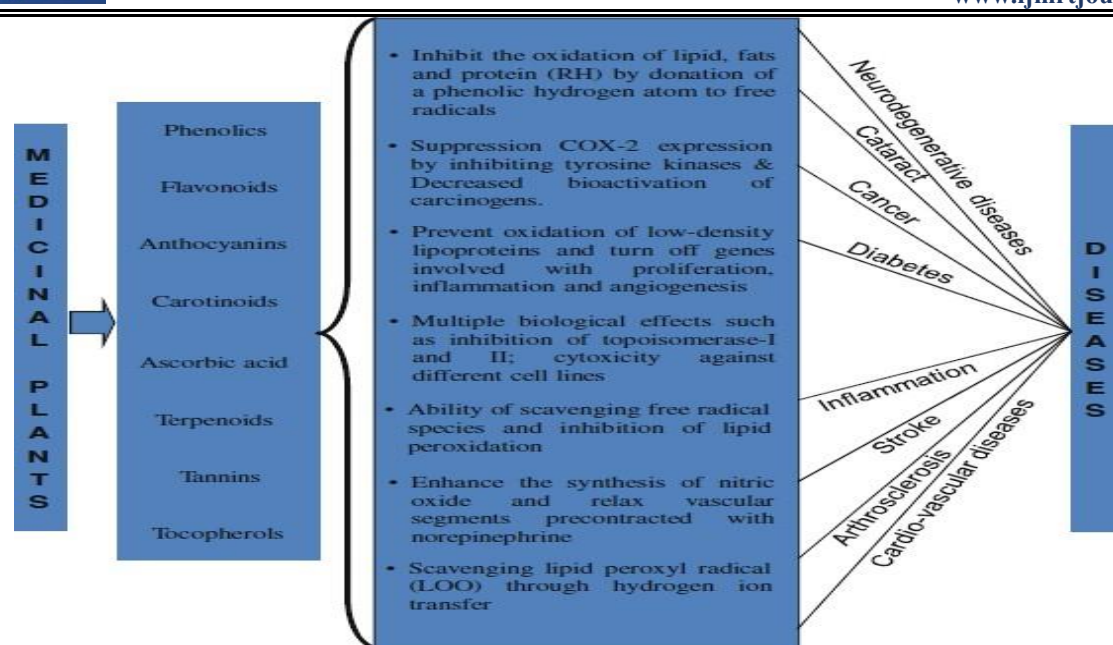


Figure.1: Antioxidant phytochemicals and their mechanism of action to prevent different diseases.

Plants continue to be potential sources for novel medications and compounds derived from plant parts. There are numerous plants that are employed for their defensive properties. Today, phototherapy and herbal therapy are established practices. For thousands of years and in many parts of the world, medicinal plants have been utilized as traditional therapies for a variety of human ailments.

Plant secondary metabolites and their applications have arisen as a vast research subject linked various fields such as genetics, pharmacology, functional, and soon. It is simpler to extract, characterize, and validate the findings of the usage of secondary metabolites as drug-like molecules when expertise from many domains such as botany, chemistry, and pharmacology is combined. According to the findings of earlier studies, there is an urgent need to continue developing research models to assist the development of botanicals to combat drug resistant microorganisms, as well as regulatory reforms of clinical development programmes.

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INFORMATION AND COMMUNICATION TECHNOLOGIES IN HIGHER EDUCATION AND COVID-19 PANDEMIC

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Abstract

Presently higher education in India is experiencing a major transformation in terms of access, equity and quality. This transition is highly influenced by the adaption of information and communication technologies (ICTs). Furthermore, it has expanded new opportunities for learning and accessing to educational resources beyond those traditionally available. Since last years due to COVID-19 pandemic the use of ICT has fundamentally changed the practices and procedures of nearly all forms of teaching methods. The introduction of ICT into teaching method changes the way education is conducted. ICT also paves way for a new pedagogical approach, where students are expected to play more active than before. There have been a number of factors impeding the wholesale uptake of ICT in education across all higher education sectors. Though there are some factors such as a lack of funding to support the purchase of the technology, a lack of training among established teaching practitioners, a lack of motivation and need among teachers to adopt ICT as teaching tools. Questionnaires are given to student, teacher and stack holders and from their opinion analysis has done. Though the use of digital media and ICT in education to become more important we should continue to grow and development. This paper highlights impact of use of these technologies into teaching and learning and explores analysis and finding.

Key Words: Adaption of ICT, higher education, Teaching and learning, covid-19 pandemic

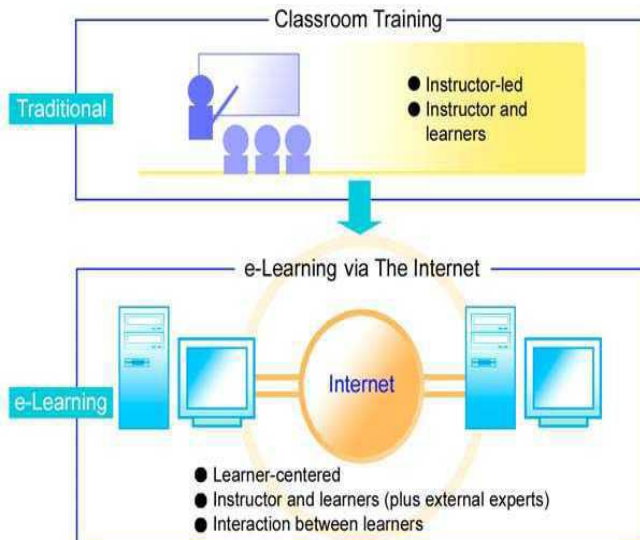
1 Introduction

Teachers are at the core of any living society. Information and communications Technology (ICT) has the potential to improve all aspects of our social, economic and cultural life. The introduction of ICT into teaching and learning clearly changes the way education is conducted. ICT is popularly using in educational field for making teaching learning process successful and interesting for students and teacher both. In education, ICT can be viewed as the application of digital equipment to all aspects of teaching and learning. Education is a powerful instrument of social and economic progress, without which neither an individual nor a society can attain professional growth. But in recent Corana pandemic times, factors have emerged which have strengthened and encouraged moves to adopt ICTs into higher education institution. Analysis of how adaptation of ICT in higher education affects teaching and learning processes is done in this paper.

2. Background Of The Study

COVID-19 pandemic has impacted a large number of countries and is turning out to be even worse than the critical economic, strategic, and political clashes. By June 15, 2020, the pandemic spread to more than 200 countries [1]. It affects educational institutes badly and becomes mandatory to use ICT tools in teaching and learning. Since the Internet revolution, we can access videos, study materials and many learning material is available on computer. Due to ICT tools available, learning process not affected in corona pandemic time in large extent. From literature survey it is seen that use of ICT in higher education is used by teacher in planning, and to a large extent in the supervision and evaluation of academic and administrative affairs. The objective of the study is to measure various impact of ICT on education and the consequences in implementing the ICT based education. It was seen that ICT have an impact on increase of the academic level of faculty members and students [2].

2.1 The comparison between ICT enabled teaching and traditional teaching method



The traditional teaching method is known to be instructor or teacher-centered methods while ICT teaching and learning teaching method is student-oriented approach. In the former the transmission of knowledge and information is realized with the usual form of lectures or discussions requiring physical presence of both student and the teacher.

The contents of the lectures are manually driven because when the class ends the lectures cannot be achieved by students. The teacher carries too much of responsibility for teaching in the classroom to make sure everything they are teaching is understood by the students or not. Teacher has to make sure that students are paying attention or not while in ICT teaching is learner centered. Picture shows both methods.

3. Methodology

The study was empirical in nature where survey method was used to collect the data. The data was collected from the students who are taught through ICT as well as Traditional Method. The aim of this research is to understand and find out the challenges that face the implementation of ICTs in higher education. The information presented is based on both primary and secondary data. Primary data has been collected using self structured questionnaires. Altogether Five questionnaires were distributed to and collected from students, teachers, and other professionals [3]. Factor analysis was done to identify underlying dimensions of respondent's perception towards traditional Teaching Method and ICT Teaching Method. Secondary information has been collected from various documents such as books, newsletters, reports, magazines, journals, daily newspaper, as well as from existing literature to understand the uses of ICTs for offering various levels of higher education in colleges.

3.1. Research Questions:

1. Is introduction of ICT in Higher Education is necessary?
2. What are benefits of use ICT in teaching and learning?
3. What is impact of ICT on students learning?
4. What are advantages ICT enabled teaching over classroom teaching
5. What are the barriers in using ICT by Teachers in colleges?

Information is collected from discussion with parent, teachers and students with respect to above question. From this discussion, analysis is done and my findings are as follow.

4. Analysis And Findings:

1. ICT now creating education environments and underpins the very success of 21st century education. ICT also adds value to the process of learning and to the organization and management of learning institutions.

Technology has the capacity to promote and encourage the transformation of education from teacher centered to student centered. Learning is now moves towards problem-based learning. Due to use of the Web as an information source, Internet users are able to choose the experts from whom they will learn. Studies have concluded that this was an ongoing digitization of higher education through use of technology. The use of ICT facility, the accessibility of available courses and programs at anytime, anywhere due to use technology in teaching and learning processes. The impact of ICT on students' learning is positive during Corona virus pandemic. During this time ICT education helps in great extent and protects them from covid-19 infection. ICT is supporting changes to the way students are learning as they move from content-centered curricula to competency-based learning [4].

2. Most significant benefit of ICT is time and place access. Now a day student can access their study material, homework both at their own pace and at their own place. Teacher develops new technology and implemented that for students learning. The students become active researcher and technology becomes the appropriate tool for them. So for this reason ICT is very much necessary for Teaching in Education. This facility enhances self confidence due self paced learning and dough clearance and also increases satisfaction of self learning. ICTs are also transformational tools which when used appropriately, can promote the shift to a learner –centered environment [5].
3. Use of ICT in higher education are extremely influencing for every discipline of education. It is affecting every aspect of education from teaching-learning to assessment and evaluation. It positively affects all the stakeholders of the education field. The communication capabilities of ICT provide opportunities for many student to enroll in courses offered by external institutions, rather than those situated locally. The regular use of internet is becoming a habit of some student [6].
4. The use of ICT in higher education provide freedoms of choice to accessed learning material at any place, at any time. This is not happening in case of classroom teaching, there limitation on learning resources. Students are now attracted towards new technology and it encourages and motivates them to learn ICT learning. ICT in education improves engagement and knowledge retention as student are more engaged in their work. New technologies that provide a good fit with existing practices in classroom teaching. The new facilities such as interactive whiteboards, Jam board, video conferencing, digital video provides good platforms. ICT allow for a higher quality lessons through collaboration with teachers in planning and preparing resources. ICT proves that students who used educational technology felt more successful in education. They have increased self-confidence and self-esteem. So, with government policies to provide internet access for every student and every college, proved that digital technologies will be as important in the twenty-first century as was the book in the nineteenth. There are now countless ways for students completing higher education using ICT [7].
5. Maintaining the quality of education is one of the very important challenges in India. Implementation of ICT requires changing teaching pedagogies in the classrooms from teacher-centric to student-centric. The teacher needs to find a suitable tool, experiment with the tool and then use it in the classroom. But there are some barriers in adaptation of ICT in higher education. Barriers are of two types (i) Institutional barriers (ii) Personal barriers. The institutional barriers are, absence of trained teachers in computer to teach practical aspects of computer skills, lack of computers, lack of quality software, technical problems, poor funding. And personal barriers are lack of teacher confidence, resistance to change, poor administrative support, and teachers' attitudes towards computers. Therefore, we see that teachers are motivated to educate themselves for integration of technologies in teaching, but they lack the support from institutional leaders and colleagues. Without the active participation of the teachers, it is not possible. Changing the mindset of the teachers is essential to bring about this change. The institutional barriers are due to poor funding, the available funds are used to solve more urgent and important needs of the institutions.

Another problem is power supply [8]. If electricity supply is not stable and constant, it is difficult to keep ICT equipment and facilities such as computers and their accessories functioning properly. This problem also faces by rural student in higher education in benefit of using ICT. Also the cost of equipment in a country is very high. It has been seen that the adoption ICT tools by the teachers is enhancing effective teaching [9].

5. Conclusions

It has been seen that due to adaption of ICT in higher education brought considerable changes educational practice .Traditional forms of teaching and learning are increasingly being converted to online and virtual environments.

It is found that ICT have played a catalyst role in promoting the education. Teachers get adequate time to plan the content into their pedagogical practices to ensure high quality and appropriate learning.

It is found that student's performance, achievements and learning has grown profoundly by adopting ICT in teaching and learning. ICT education is now became need of time due to pandemic situation. In covid-19 pandemic different educational administrations have had to carry out a transformation in educational system from face-to-face teaching to online teaching using the use of ICT tools which is not interrupted and avoid the collapse of educational systems.

ICT adaption gives of windows of knowledge to student as well to teacher. It also seen that there are barriers such as lack of teacher confidence, poor administrative support and teachers' attitudes towards computers. I strongly recommend that educational institutions must adopt technology for its collective growth, but its implementation must follow scholarly approach.

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GLOBAL WARMING: A CAUSE OF ENVIRONMENTAL IMBALANCE

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Introduction

Global warming is the long- term rise in temperatures on Earth. It occurs when hothouse feasts, analogous as carbon dioxide and methane, trap heat from the sun in the atmosphere, leading to a hothouse effect. Global warming can affect in multitudinous serious differences to the terrain, eventually impacting mortal health. It can also beget a rise in ocean position, leading to the loss of coastal land, a change in rush patterns, increased risks of dearth's and cataracts, and risks to biodiversity. There are several causes of global warming, which have a negative effect on terrain and as like humans, shops and brutes. These causes may be natural or might be the outgrowth of mortal exertion. Climate change is formerly having an impact on health there has been an increase in the number of heat- related deaths in some regions and a drop in cold- related deaths in others. To study causes of Global warming, Consequences of Global warming and negative effects on world I choose this topic for research paper.

Objectives of research

1. To overview on concept of Global warming.
2. To explain causes of Global warming.
3. To study its negative effects on environment.

Research Methodology:

For the purpose of this study used social science research methodology to study the research topic Used scientifically analysis. In this method used secondary data tools. In this secondary data tool used reference books. Research articles, newspapers, journals, published and unpublished materials and also taken help of internet facilities.

Concept of Global warming

Global warming occurs when carbon dioxide (CO₂) and other air pollutants collect in the atmosphere and absorb sun and solar radiation that have bounced off the earth's face. generally this radiation would escape into space, but these pollutants, which can last for times to centuries in the atmosphere, trap the heat and beget the earth to get hotter. These heat- entrapping pollutants specifically carbon dioxide, methane, nitrous oxide, water vapor, and synthetic fluorinated feasts are known as hothouse feasts, and their impact is called the hothouse effect.



Figure 1 Global Warming: A Cause Environmental Imbalance

Causes of Global Warming

Mortal exertion is the primary drivers of global warming. The burning of reactionary powers for energy product, transportation, and artificial processes releases significant amounts of carbon dioxide into the atmosphere. Deforestation reduces the Earth's capacity to absorb carbon dioxide, exacerbating the hothouse effect. Cutting down timbers to produce ranches or ranges, or for other reasons, causes emigrations, since trees, when they are cut, release the carbon they have been storing. Each time roughly 12 million hectares of timber are destroyed. Since timbers absorb carbon dioxide, destroying them also limits nature's capability to keep emigrations out of the atmosphere. Deforestation, together with husbandry and other land use changes, is responsible for roughly a quarter of global hothouse gas emigrations. Methane emigrations from beast and tips, as well as nitrous oxide from agricultural practices, also contribute to global warming. The employment of vehicles, indeed for a awfully short distance ends up in varied vaporise emigrations. Vehicles burn reactionary powers that emit an outsized volume of dioxide and necessary venoms into the atmosphere leading to a temperature increase. With the devilish use of air conditioners and refrigerators, humans are adding CFCs into the setting that affects the atmospherically caste. The caste protects the world face from the dangerous ultraviolet shafts emitted by the sun. The CFCs has semiconductor diode to caste reduction creating approach for the ultraviolet shafts, thereby adding the temperature of the world. With the appearance of sedulity, the temperature of the world has been adding snappily. The dangerous emigrations from the factories boost the adding temperature of the world.

Effects of Global Warming on environment

Following are the major effects of global warming:

Loss of agricultural productivity

Global warming can affect in dearth that can worsen living conditions, particularly in Africa. The World Wild Fund has reported that climate change can drastically alter downfall pattern, and trouble water and food supplies for millions. The IPCC report estimates that roughly 75 million to 250 million people in Africa will be without respectable water and will face food crunches by 2020, as crop productivity will decline by about 50 per cent. Rising temperatures could also affect in food crunches for 130 million people in Asia.

Asthma and other respiratory diseases

People suffering from heart problems are more vulnerable to increased temperatures, especially those living in formerly warm areas, as their cardiovascular system must work harder to keep their body cool. Hot temperatures increase the ozone attention, which can damage people's lung kerchief and beget complications for asthma cases and those with lung conditions.

Rise in Temperature

Global warming has led to an implausible increase in earth's temperature. Since 1880, the earth's temperature has increased by degrees. This has reacted in an increase in the melting of glaciers, which have led to an increase in the ocean position. This could have ruinous goods on coastal regions.

Risks to the Ecosystem

Global warming has affected the coral reefs that can lead to the loss of plant and beast lives. Increase in global temperatures has made the fragility of coral reefs indeed worse.

Spread of conditions

Global warming leads to a change in the patterns of heat and humidity. This has led to the movement of mosquitoes that carry and spread conditions.

High Mortality Rates

Due to an increase in cataracts, lathers and other natural disasters, the average death threat generally increases. Also, analogous events can bring about the spread of conditions that can hamper mortal life.

Loss of Natural Habitat

A global shift in the climate leads to the loss of homes of several shops and brutes. In this case, the brutes need to migrate from their natural niche and multitudinous of them indeed come defunct. This is yet another major impact of global warming on biodiversity.

Solutions to save environment

Transition to Renewable Energy Sources:

Shifting down from fossil energies and investing in renewable energy technologies is pivotal in combating global warming. Governments and businesses must prioritize the development and relinquishment of clean energy druthers similar as solar, wind, and hydroelectric power. Impulses and subventions can encourage the rapid-fire transition to sustainable energy systems.

Energy Efficiency and Conservation:

Reducing energy consumption through bettered effectiveness and conservation measures can play a significant part in bridling global warming. Promoting energy-effective appliances, enforcing structure canons that encourage energy conservation, and raising mindfulness about responsible energy operation are effective strategies to minimize hothouse gas emigrations.

Reforestation and Forest Conservation:

Guarding being timbers and bearing large- scale reforestation sweats are vital to combat global warming. Trees absorb CO₂ and release oxygen, acting as natural carbon cesspools. Governments should apply programs that discourage deforestation and promote sustainable land operation practices. also, afforestation programs can help restore degraded ecosystems and enhance carbon insulation.



Figure 2 Save forests for save from Environmental Imbalance

Conclusions

Therefore, Climate change is causing a range of adding impacts on the terrain. Comeuppances are expanding, while heat swells and backfires are getting more common. Amplified warming in the Arctic has contributed to melting permafrost, glacial retreat and ocean ice loss. Advanced temperatures are also causing further violent storms, famines, and other rainfall axes. Rapid environmental change in mountains, coral reefs, and the Arctic is forcing numerous species to dislocate or come defunct. Indeed if sweats to minimise unborn warming are successful, some goods will continue for centuries. These include ocean heating, ocean acidification and ocean position rise.

Especially The environmental goods of climate change are broad and far- reaching, affecting abysses, ice, and rainfall. Changes may do gradationally or fleetly. Substantiation for these goods comes from studying climate change in the history, from modelling, and from ultramodern compliances. Since the 1950s, famines and heat swells have appeared contemporaneously with adding frequence. Extremely wet or dry events within the thunderstorm period have increased in India and East Asia. The downfall rate and intensity of hurricanes and typhoons is likely adding, and the geographic range likely expanding poleward in response to climate warming. frequence of tropical cyclones has not increased as a result of climate change.

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ROLE OF SCIENCE EDUCATION IN DEVELOPMENT OF LEARNING SKILLS WITH REFERENCE TO NEP 2020

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Abstract

The world is growing with a faster pace in the 21st century due to rapid development of science and technology. It has brought a paradigm shift to the lifestyle and social processes as a whole. Changing scenario has brought more challenges to live in. Preparing students to live and face the world in the 21st century is challenging and daunting. Acquisition of different skills and knowledge as well as interdisciplinary approach towards the world are needed to the students to keep in pace with world. The present study draws and reviews on the National Education Policy (NEP 2020) to explore the role of Science Education in development of 21st Century Learning Skills which have been recommended with the intent to prepare the learners to face the challenging world. Transforming the 21st century education is an attempt to change the world and face the upcoming challenges posed by the world. This dynamic recommendations made by both the policies, if integrated and implemented properly with the same intent and spirit, it can do wonders. And education can be the powerful weapon which can be used to change the world and face the world as well.

Keywords: 21st century skills, NEP 2020

Introduction

The world is growing with a faster pace in the 21st century due to rapid development of science and technology. It has brought a paradigm shift to the social processes as well. It has changed the life styles of the people. But the changing world has become more challenging to live in. Many interconnected phenomena like population explosion, pollution, rise in temperature, forest fires, other environmental uncertainties, globalization, downfall of economy, terrorism, technological innovations, extending life outside earth and now pandemic COVID-19 etc. are already presented in the early part of the 21st century. And we never know, what is coming ahead of it. So, Preparing students to live and face the world in the 21st century is challenging and daunting. Acquisition of different skills and knowledge as well as interdisciplinary approach towards the world are needed to the students to keep in pace with world. Edwards and Usher (2000) suggest, "Change and uncertainty require lifelong learning." And the students need to adapt according to the growing world and challenging situations. What critical skills does a student need to develop and work upon to face the unexpected challenge posed by the world tomorrow? This question need to be answer and it is a matter of concern for the educationist, government and other stakeholders in recent time which has given rise to planning strategies, formulating new policies, providing training to practice these skills as well as researches which in turns leads to a significant body of knowledge. There is a clear consensus that new approaches to learning must accommodate the characteristics of today's students, become more inclusive and address twenty-first century interdisciplinary themes (Carneiro, 2007). Preparing the students towards acquiring the 21st century learning skills should not be delayed and no student should be restricted and debarred for gaining or acquiring these skills. There is now a significant body of literature focusing mainly on three topics – motivations for a new model of learning, the specific competencies and skills needed to function effectively in the twenty-first century, and the pedagogy required to stimulate those capabilities (Cynthia, 2015). The present study draws and reviews on the policies with specific reference with National Curriculum Framework 2005 (NCF 2005) and National Education Policy (NEP 2020) to explore the role of Science Education in development of 21st Century Learning Skills.

Overall vision of twenty-first century learning

Personalization, collaboration, communication, informal learning, productivity and content creation are central to the competencies and skills learners are expected to develop and the way in which these skills are taught. These elements are key to the overall vision of twenty-first century learning (McLoughlin and Lee, 2008; Redecker and Punie, 2013). In addition, personal skills (initiative, resilience, responsibility, risk-taking and creativity), social skills (teamwork, networking, empathy and compassion) and learning skills (managing, organizing, metacognitive

skills and ‘failing forward’ or altering perceptions of and response to failure) are vital to peak performance in the twenty-first century workplace (Learnovation, 2009). While many of these competencies and skills may seem modern they ‘are not new, just newly important’ (Salas-Pilco, 2013). The skills which have been listed as the 21st century skills have existed before, but it may not be required in that much amount previous time as the situations, challenges and issues were different. Now with the changing world and new challenges, one required to learn and acquire these skills for successful livelihood.

The International Commission on Education for the Twenty-first century produced one report Learning: The Treasure Within in 1996 under the chairmanship of Jacques Delors of France and later known as Delors Report. It was submitted to UNESCO. The report proposed one of the first frameworks to identify competencies and skills needed for the twenty-first century. The four visions of learning outlined in this landmark report – knowledge, understanding, competencies for life and competencies for action – remain appropriate reference points and organizing principles for identifying competencies for twenty-first century learning (Cynthia, 2015). The Delors Report also formulated four principles identified as the Four Pillars of Education: Learning to Know, Learning to Do, Learning to Be and Learning to Live Together. The Delors framework remains relevant today and can be redefined and expanded for the twenty-first century.

In accordance to this, several frameworks and policies have been formulated in last two decades in India. The researcher intended to explore the recommendations of National Education Policy (NEP 2020) to study the role of Science Education in development of 21st Century Learning Skills.

Science Education

NCF 2005 has various recommendations in relation to subject and the values they should foster. The following section from the NCF 2005 has discussed the aim of science education towards the learner and society as a whole, the framework also recommended various changes to science curriculum according to the different stages of learner. According to NCF 2005, one important human response to the wonder and awe of nature from the earliest times has been to observe the physical and biological environment carefully, look for any meaningful patterns and relations, make and use new tools to interact with nature, and build conceptual models to understand the world. This human endeavor has led to modern science. Broadly speaking, the scientific method involves several interconnected steps: observation, looking for regularities and patterns, making hypotheses, devising qualitative or mathematical models, deducing their consequences, verification or falsification of theories through observations and controlled experiments, and thus arriving at the principles, theories and laws governing the natural world. Science is a dynamic, expanding body of knowledge, covering ever-new domains of experience in a progressive forward-looking society; science can play a truly liberating role, helping people escape from the vicious cycle of poverty, ignorance and superstition. Good science education is true to the child, true to life and true to science.

The general science education follows directly from the six criteria of validity: cognitive, content, process, historical, environmental and ethical. To summarize, science education should enable the learner to:-

- 1) Know the facts and principles of science and its applications, consistent with the stage of cognitive development.
- 2) Acquire the skills and understand the methods and processes that lead to generation and validation of scientific knowledge.
- 3) Develop a historical and developmental perspective of science and to enable her to view science as a social enterprise.
- 4) Relate to the environment (natural environment, artifacts and people), local as well as global, and appreciate the issues at the interface of science, technology and society.
- 5) Acquire the requisite theoretical knowledge and practical technological skills to enter the world of work.
- 6) Nurture the natural curiosity, aesthetic sense and creativity in science and technology.
- 7) Imbibe the values of honesty, integrity, cooperation, concern for life and preservation of environment.
- 8) And ▼cultivate ‘scientific temper’-objectivity, critical thinking and freedom from fear and prejudice.

National Education Policy 2020 on Science Education

Ministry of Human Resource Development (MHRD) has produced the National Education Policy 2020 document. With the following objective the transformation of curriculum and pedagogy is recommended. “Curriculum and pedagogy are transformed by 2022 in order to minimize rote learning and instead encourage holistic development and 21st century skills such as critical thinking, creativity, scientific temper, communication, collaboration, multilingualism, problem solving, ethics, social responsibility, and digital literacy.” To achieve the objectives, the committee has given several recommendations. The following sections from the NEP 2020 mainly based on the recommendations on Science education.

Recommendations of NEP 2020 related to science education

1. Restructuring school curriculum and pedagogy in a new 5+3+3+4 design. The curricular and pedagogical structure and the curricular framework for school education will therefore be guided by a 5+3+3+4 design:
 - ✓5 years of the Foundational Stage: 3 years of pre-primary school and Grades 1, 2.
 - ✓3 years of the Preparatory (or Latter Primary) Stage: Grades 3, 4, 5.
 - ✓3 years of the Middle (or Upper Primary) Stage: Grades 6, 7, 8.
 - ✓4 years of the High (or Secondary) Stage: Grades 9, 10, 11, 12.
- a) The Foundational Stage will comprise five years of flexible, multilevel, play-based, activity-based, and discovery-based learning, continuously incorporating the latest research in ECCE as well as the various time tested Indian traditions for cognitive and emotional stimulation of children.
- b) The Preparatory Stage will comprise three years of education, building on the play-, discovery-, and activity-based pedagogical and curricular style of the Foundational Stage, but also gradually beginning to incorporate textbooks as well as aspects of more formal classroom learning. There would mostly be generalist teachers during this stage, with the possible exception of some specialist language and art teachers (who may be shared across the school or school complex). The aim of this stage will be to lay the general groundwork across subjects, including reading, writing, speaking, physical education, art, languages, science, and mathematics, so that students are prepared to delve deeper into learning areas through specialized subjects and subject teachers in the stages that follow.
- c) The Middle Stage will comprise three years of education, building on the more formal pedagogical and curricular style of the Elementary Stage, but will see the introduction of subject teachers for learning/discussion of the more abstract concepts in each subject that students will be ready for at this stage across the sciences, mathematics, arts, social sciences, and humanities. Experiential learning within each subject, and explorations of relations among different subjects, will be encouraged and emphasized despite the introduction of more specialized subjects and subject teachers.
- d) The Secondary Stage will comprise four years of multidisciplinary study, and will build on the subject-oriented pedagogical and curricular style of the Middle stage, but with greater depth, greater critical thinking, greater attention to life aspirations, and greater flexibility and student choice. Each year of the Secondary Stage will be divided into 2 semesters, for a total of 8 semesters. Each student would take 5 to 6 subjects each semester. There will be some essential common subjects for all, while simultaneously there will be a great flexibility in selecting elective courses (including in the arts, vocational subjects, and physical education) so individual interests and talents. A system of modular Board Examinations - restructured to test only core concepts, principles, critical thinking, and other higherorder skills in each subject - will help to pin down the common courses, while great flexibility will be offered for remaining courses. The notions of “higher secondary” or “junior college” will be eliminated; Grades 11 and 12 will be considered an integral part of the secondary stage.

2. Reorientation of the content and process of school education

The entire school education curriculum will be reoriented to develop holistic learners and develop in learners higher order skills of critical thinking, creativity, logical deduction, collaboration/ teamwork, social responsibility, multilingualism, quantitative reasoning, and digital literacy. Learning will thus move away from rote memorisation;

if and when rote learning is used, it will always be pre- accompanied by context and motivation, and post- accompanied by analysis, discussion, and application.

3. Reduce curriculum load in each subject to its essential core content, in order to make space for more holistic, experiential, discussion-based, and analysis-based learning

The mandated contents in the curriculum will be reduced, in each subject area, to its core, focusing on key concepts and essential ideas. This will thereby yield more space for discussion and nuanced understanding, analysis, and application of key concepts. Teaching and learning will strive to be conducted in a more interactive manner; questions will be encouraged, and classroom sessions will regularly contain more fun, creative, collaborative, and exploratory activities for students for deeper and more experiential learning.

4. Increased flexibility in choice of subjects

Students will be given an increased flexibility and choice of subjects to study, particularly in secondary school - including subjects in physical education, the arts, and vocational crafts - so that they may be free to design their own paths of study and life plans.

5. No hard separation of content in terms of curricular, extra-curricular, or co- curricular areas

All school subjects will be considered curricular rather than extra-curricular or co- curricular, including sports, yoga, dance, music, drawing, painting, sculpting, pottery making, wood working, gardening, and electric work. NCERT will prepare syllabi and textbooks as per the National Curriculum Framework, to incorporate these subjects into the national curriculum, which the State Councils of Educational Research and Training (SCERTs) in States may edit, supplement, and rewrite as per States' needs. Subjects such as physical education, the arts, and vocational crafts will be seriously incorporated throughout the school curriculum, with a consideration for what is interesting and safe at each age.

6. No hard separation of arts and sciences

All students will have the opportunity to engage deeply in the arts and humanities as well as in the study of the sciences and social sciences. Such a separation will be discouraged in higher education as well.

7. No hard separation of “vocational” and “academic” streams

The curricula for elementary and secondary education will ensure that there will be no hard separation of “vocational” and “academic” streams as all students will have the opportunity of developing both kinds of capacities. With the rapidly changing economic scenarios, fundamental capacities have become even more important than specific skills.

8. Learning science bilingually

Students whose medium of instruction is the local/home language will begin to learn science bilingually in Grade 8 or earlier, so that by the end of Grade 10 they can speak about science both in their home language and English. This will enable students to think about scientific concepts in more than one way, and enable future scientists to talk about their work and about science to their families and to local news channels, write about their work for regional newspapers, and speak to children about their work in their home States and towns to help inspire the next generation.

9. Inculcate scientific temper and encourage evidence based thinking throughout the curriculum

Evidence-based reasoning and the scientific method will be incorporated throughout the school curriculum - in science as well as in traditionally “non-science” subjects - in order to encourage rational, analytical, logical, and qualitative thinking in all aspects of the curriculum.

10. Integration of digital literacy

The new curriculum will also integrate digital literacy for all learners at the basic level, with hands-on assessments and worksheets keeping in mind the available digital infrastructure on the ground.

11. A new paradigm of assessment for learning and development

The focus will be on formative assessment, i.e., assessment for learning. Every student has innate talents, which must be discovered, nurtured, fostered, and developed. The culture of assessment must shift from one that primarily tests rote memorization to one that is more formative, promotes learning, and tests higher-order skills. Making individual interests and talents an important consideration in instructional approaches; designing a variety of learning experiences and academic support strategies, such as themes or topic-centered learning activities; project-based learning; etc. that are intended to respond to the distinct interests, talents and dispositions of individual students.

12. Establish topic-centered and project-based clubs at the College, College complex, block, and National levels

A system of Topic-centered and Project-based Clubs and Circles in Mathematics, Science, Music, Chess, Poetry, Language, Literature, Debate, Sports, etc. will be set up and funded in accordance with student needs in various localities, in order to foster singular interests and talents of students across the country.

13. Olympiads and competitions

Olympiads and competitions in various subjects will be strengthened across the country, with clear coordination and progression from school to local to State to national levels.

14. Internet-based apps, assessments, and online communities for students with singular interests and talents

Once internet-connected smart phones or tablets are in the hands of all students, online apps with quizzes, competitions, assessments, enrichment materials, and online communities for shared interests will be developed, and will work to enhance the initiatives. Recommendations and implementations are two inseparable aspects of educational processes. They go hand in hand with each other. According to NEP 2020, any policy is regarded as good when it is implemented with the same spirit and intent. As we are in a fast growing world experiencing to witness many activities daily, the NCF 2005 needs to be revisited in the light of NEP 2020. The evaluation system also be revisited, implemented as intended and evaluated as per the CCE guidelines suggested by the NCERT (2016). It has been recommended about the flexibility in the curriculum and reducing the curriculum load. So, while redesigning the curriculum this aspect also needs to be looked in depth.

CONCLUSION

This paper explores the several recommendations by NEP 2020 related to science education which clearly states the role of science curriculum in developing different 21st century learning skills to face the real world. The world is posing several challenges for individuals, the policies or recommendations were done by keeping in mind the future challenges the world may pose and the, it has been recommended with the intent to prepare the learners to face the challenges. Transforming the 21st century education is an attempt to change the world and face the upcoming challenges posed by the world. This dynamic recommendations made by both the policies, if integrated and implemented properly with the same intent and spirit, it can do wonders and help learners to learn and acquire these skills which in turns help them adapt to different situations. "Survival of the fittest" is a phrase that originated from the Darwinian evolutionary theory is most related when it comes to survive in this changing world. It was rightly said by him, "It is not the strongest of the species that survives, or the most intelligent, but the one most responsive to change. So one need to accept the change and adapt according to the situation. This value only can be inculcated through the most powerful weapon that is Education.

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SUSTAINABLE E-WASTE MANAGEMENT: AN EMERGING HEALTH ISSUE

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Abstract

The electronic waste (E-waste) which is hazardous one is rapidly growing environmental problems of the world. E-waste is the electronic products that are unwanted, damaged or near to their end. Now a day products such as mobile, computer is increasing at faster rate which results in e-waste as the most rapidly growing waste problem in the in India. E-waste is hazardous waste and can be harmful to the environment and human health; hence it should be recycled safely for sustainable development. E-waste contains heavy metals like, lead, cadmium, chromium and flame-retardant plastics, glass etc., which is toxic and hazardous to the human health, if not managed properly. The workers in e-waste disposal sector are should be protected against the risk of it. The contact with them again and again can damage the brain, nervous system, lungs and produces skin problem, Gastric diseases due to slow-poisoning. To reduce this effect informal sector recyclers are working which collect e-waste from houses and shops , but they are in small amount. Their methods of recycling it are hazardous for their health and environment. The formal recyclers are few and are not capable of recycling using the best available technologies leading to better environment management practices. Hence it is important to look at the sustainable e-waste management. This paper attempts to develop a method and possible system for all the people so as to collect e waste, its recycling and safe disposal so as to minimize your e-waste for sustainable development. India needs an urgent need to plan a preventive strategy in relation to health hazards of e-waste.

Keywords: E-waste management, sustainable development, hazardous waste, human health.

1 Introduction

Electronic waste (e-waste) is discarded mobile phone, laptop, computer monitors, motherboards, television sets, washing machine, refrigerators etc. In India, the quantity of e-waste has now become a big problem [1]. Unsafe disposal of e-waste is harmful to environmental and public health. Much electronic and electrical equipment sold in a market will eventually become obsolete and will needs an appropriate recycling process in order to recover the included resources for reuse in new products. The potential value of recycling the e-waste is to recover precious metals and other elements. The mobile phone includes base metals like copper (Cu) and tin (Sn), cobalt (Co), indium (In) and antimony (Sb) and valuable metals including silver(Ag), gold (Au). This e-waste should be recycled in safe and sustainable manner. It was fond that due to poor recycle techniques, there threat to sustainable development. The formal recyclers are very few in numbers and informal recyclers are large in numbers and are capable of recycling but should have good technology and sustainable technology and management for better environmental condition [2]. Hence due to rising e-waste quantities the recycling process should be changed. Due to deadly chemicals and toxic substances in the electronic gadgets, disposal of e-waste is becoming health nightmare. This paper gives some ways to minimize e-waste and give some recommendations.

2. Research methodology:

This research work is done by through observed phenomenon e-waste handling in society. The information collected from different research papers on e-waste management and current methods of e-waste disposal. Research work is also based on research paper on hazardous chemicals, heavy metals in e-waste and its effects on human health and possible solutions for this problem.

3. E-Waste condition in India:

In the 20th Century, the information and communication revolution has brought enormous increase in e-waste. India is huge electronic hardware producing and importing nation. The production of mobile handsets and Liquid Crystal Display (LCD) and Light Emitting Diode (LED) products like TVs in the country is in large scale. Annual

growth rate of E-Waste generation is 10% in India [3]. Our country is one of the largest waste importing countries in the world which generates about 350000 tonnes of electronic waste every year and imports another 50000 tonnes from developed countries. As many manufacturing units for cellular mobile handsets and their parts and components have been set up in the country during the last three–four years, e-waste is increasing day by day.

3. Informal E -Waste Recyclers:

Informal recycling sector is a new and expanding low cost recycling process. The informal sector e-waste recyclers are essentially involved in collection, segregation, dismantling. Informal sector e-waste recyclers are poor people which are marginalized social groups who resort to scavenging and waste picking for income and survival. Informal e-waste recycler releases toxic fumes into the air or e waste is dumped in contaminating water sources which results in contaminate food. But the problem of informal sector e-waste practices is they require greater technical skills, otherwise it is harmful to their health and environment (see picture below). Formal e-waste recyclers are few in numbers and located in big cities [4]. There is more expectation from formal sector recyclers; hence they should be able to manage e-waste in an environmentally sound manner by using best available technologies for better environmental management. Hence importance should be given to informal sector to obtain the economic and social benefits for formal waste management. Informal sector collection is one of the main causes of supply problems in the formal sector. Informal sectors should have collection networks such as door-to-door collection that linked with informal sector collectors [5].



5. Reuse & Refurbishment:

Today Electronics has become an essential part of life. Due to this huge electronic wastes are produced and a majority of these electronic wastes end up in few years which become hazardous to environment. If you do not take care of electronic waste, there will be serious consequences for you and the environment [6, 7]. There are number of ways you can safely dispose of electronic waste, but the safest option is recycling. We should start certified recycling companies so as to recycling becomes safer meets advanced needs and is the most eco-friendly.

The market value of recycled electronic waste must be higher than its value at the dumping ground [8,9].

6. Research on E-Waste Management:

The e-waste research is important issue in the view of environmental and health impact. More investment is needed in research processes that will help to invade the recycling Technology. It is necessary to classify the E-waste on the basis of physical and chemical constituent in it. Due to technological change, the chemical constituent in e-waste might be changed. Therefore the physical composition of e-waste must be changed with technology and chemical constituents must be constant. Implementation of appropriate recycling technology that will help to recycle the smart phones and the new electronic devices that are present in the current competitive market are required to be recycled appropriately [10].

7. Health Impacts:

Environmental conditions have a strong connection to human health. As e-waste contains many hazardous metallic contaminants such as lead, cadmium, and beryllium and many toxic heavy metals which are used in electronic devices for various purposes produces health hazards due to environmental contamination. Lead enters biological systems via food, water, air, and soil. The high concentration of those elements strongly correlated to e-waste

processing .Human and animal are vulnerable to lead poisoning because they absorb more lead from their environment and their nervous system and blood get affected. The open burning of e-waste by the informal e-waste recyclers contribute to a high level of air contamination which results in metal exposure to the residents. Therefore the processes and techniques used during the recycling activities were very primitive. Various studies have reported the soaring levels of toxic heavy metals and organic contaminants in samples of dust, soil, river sediment, surface water, and groundwater of in India. In those areas, the residents had a high incidence of skin damage, headaches, nausea, chronic gastritis, and gastric and duodenal ulcers [11]. Due to unawareness, workers working in e-waste disposal have risk to their health and hence recycled safely.

8. Public awareness helps Sustainability:

Sustainability in E-waste management can be obtained by creating awareness among the public about the hazards of e-waste and necessity of recycling it and alternate methods of disposing the e-waste.

1. By arranging E-waste Awareness Campaign in school and colleges through NSS program, placing posters on walls of shops selling electronic appliances.
2. By organizing awareness activities and workshop for shopkeepers and stakeholders.
3. Course content for the SWAYAM digital platform for college students and/or School level curriculum on hazards of E-Waste.
4. Creating information for government, public, NGO, industry etc.; flashing small quotes from chief ministers, celebrities etc.
5. Preparation of suitable content from the existing content modification for Social media, platform.
6. Create recycling possibilities in our region: We can information of information network in our region about used cell phones or laptops at particular shop in our region which provides exchange our cell phones and laptops and dispose of personal computers and cell phones at recycling plants.
7. Teach your children about e-waste [12, 13].

Recommendations:

- 1) Government should put regulation on Industries to put health and safety measures during manufacturing.
- 2) We should have regulations to control both legal and illegal exports and imports of e-wastes and it must be clear in the government policy.
- 3) Recycling/recovery of valuable materials: E-waste contains many precious and poisonous metals that should recover and recycled in equipment.
- 4) Country should provide adequate infrastructure for recycling plants and should seriously consider banning all kinds of imports.
- 5) Parliament should enact new policies and legislation that will govern e-waste management in the county and make budget provision for monitoring and control of e-waste.
- 6) We urgently needs for a detailed assessment of the current and future scenario of existing disposal practices and reuse of e-waste, its environmental impacts and occupational health hazards for the environmentally sound management of e-wastes.

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RENEWABLE ENERGY IN SUSTAINABLE DEVELOPMENT

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Abstract

Solar energy is the most abundant of all energy resources and can even be harnessed in cloudy weather. Wind energy harnesses the kinetic energy of moving air by using large wind turbines located on land (onshore) or in sea- or freshwater (offshore). Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us. Fossil fuels - coal, oil and gas - on the other hand, are non-renewable resources that take hundreds of millions of years to form. Fossil fuels, when burned to produce energy, cause harmful greenhouse gas emissions, such as carbon dioxide.

Keywords: Solar energy, wind energy, fossil fuels, greenhouse gas,

Introduction

Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us.

Fossil fuels - coal, oil and gas - on the other hand, are non-renewable resources that take hundreds of millions of years to form. Fossil fuels, when burned to produce energy, cause harmful greenhouse gas emissions, such as carbon dioxide.

Generating renewable energy creates far lower emissions than burning fossil fuels. Transitioning from fossil fuels, which currently account for the lion's share of emissions, to renewable energy is key to addressing the climate crisis.

Renewables are now cheaper in most countries, and generate three times more jobs than fossil fuels.

Here are a few common sources of renewable energy:

I) Solar Energy

Solar energy is the most abundant of all energy resources and can even be harnessed in cloudy weather. The rate at which solar energy is intercepted by the Earth is about 10,000 times greater than the rate at which humankind consumes energy.

Solar technologies can deliver heat, cooling, natural lighting, electricity, and fuels for a host of applications. Solar technologies convert sunlight into electrical energy either through photovoltaic panels or through mirrors that concentrate solar radiation.

Although not all countries are equally endowed with solar energy, a significant contribution to the energy mix from direct solar energy is possible for every country.

The cost of manufacturing solar panels has plummeted dramatically in the last decade, making them not only affordable but often the cheapest form of electricity. Solar panels have a lifespan of roughly 30 years, and come in variety of shades depending on the type of material used in manufacturing.

II) Wind Energy

Wind energy has been used for millennia, but onshore and offshore wind energy technologies have evolved over the last few years to maximize the electricity produced - with taller turbines and larger rotor diameters.

Though average wind speeds vary considerably by location, the world's technical potential for wind energy exceeds global electricity production, and ample potential exists in most regions of the world to enable significant wind energy deployment.

Many parts of the world have strong wind speeds, but the best locations for generating wind power are sometimes remote ones. Offshore wind power offers tremendous potential.

III) Geothermal Energy

Geothermal energy utilizes the accessible thermal energy from the Earth's interior. Heat is extracted from geothermal reservoirs using wells or other means.

Reservoirs that are naturally sufficiently hot and permeable are called hydrothermal reservoirs, whereas reservoirs that are sufficiently hot but that are improved with hydraulic stimulation are called enhanced geothermal systems.

Once at the surface, fluids of various temperatures can be used to generate electricity. The technology for electricity generation from hydrothermal reservoirs is mature and reliable, and has been operating for more than 100 years.

IV) Hydropower

Hydropower harnesses the energy of water moving from higher to lower elevations. It can be generated from reservoirs and rivers. Reservoir hydropower plants rely on stored water in a reservoir, while run-of-river hydropower plants harness energy from the available flow of the river.

Hydropower reservoirs often have multiple uses - providing drinking water, water for irrigation, flood and drought control, navigation services, as well as energy supply.

Hydropower currently is the largest source of renewable energy in the electricity sector. It relies on generally stable rainfall patterns, and can be negatively impacted by climate-induced droughts or changes to ecosystems which impact rainfall patterns.

The infrastructure needed to create hydropower can also impact on ecosystems in adverse ways. For this reason, many consider small-scale hydro a more environmentally-friendly option, and especially suitable for communities in remote locations.

V) Ocean Energy

Ocean energy derives from technologies that use the kinetic and thermal energy of seawater - waves or currents for instance - to produce electricity or heat.

Ocean energy systems are still at an early stage of development, with a number of prototype wave and tidal current devices being explored. The theoretical potential for ocean energy easily exceeds present human energy requirements.

VI) Bioenergy

Bioenergy is produced from a variety of organic materials, called biomass, such as wood, charcoal, dung and other manures for heat and power production, and agricultural crops for liquid biofuels. Most biomass is used in rural areas for cooking, lighting and space heating, generally by poorer populations in developing countries.

Modern biomass systems include dedicated crops or trees, residues from agriculture and forestry, and various organic waste streams.

Energy created by burning biomass creates greenhouse gas emissions, but at lower levels than burning fossil fuels like coal, oil or gas. However, bioenergy should only be used in limited applications, given potential negative environmental impacts related to large-scale increases in forest and bioenergy plantations, and resulting deforestation and land-use change.

Why Renewable energy ?

Energy is at the heart of the climate challenge – and key to the solution.

A large chunk of the greenhouse gases that blanket the Earth and trap the sun's heat are generated through energy production, by burning fossil fuels to generate electricity and heat.

Fossil fuels, such as coal, oil and gas, are by far the largest contributor to global climate change, accounting for over 75 percent of global greenhouse gas emissions and nearly 90 percent of all carbon dioxide emissions.

The science is clear: to avoid the worst impacts of climate change, emissions need to be reduced by almost half by 2030 and reach net-zero by 2050.

To achieve this, we need to end our reliance on fossil fuels and invest in alternative sources of energy that are clean, accessible, affordable, sustainable, and reliable.

Renewable energy sources – which are available in abundance all around us, provided by the sun, wind, water, waste, and heat from the Earth – are replenished by nature and emit little to no greenhouse gases or pollutants into the air.

Fossil fuels still account for more than 80 percent of global energy production, but cleaner sources of energy are gaining ground. About 29 percent of electricity currently comes from renewable sources.

Here are **five reasons why accelerating the transition to clean energy is the pathway to a healthy, livable planet** today and for generations to come.

1. Renewable energy sources are all around us

About 80 percent of the global population lives in countries that are net-importers of fossil fuels -- that's about 6 billion people who are dependent on fossil fuels from other countries, which makes them vulnerable to geopolitical shocks and crises.

In contrast, renewable energy sources are available in all countries, and their potential is yet to be fully harnessed. The International Renewable Energy Agency (IRENA) estimates that 90 percent of the world's electricity can and should come from renewable energy by 2050.

Renewables offer a way out of import dependency, allowing countries to diversify their economies and protect them from the unpredictable price swings of fossil fuels, while driving inclusive economic growth, new jobs, and poverty alleviation.

2. Renewable energy is cheaper

Renewable energy actually is the cheapest power option in most parts of the world today. Prices for renewable energy technologies are dropping rapidly. The cost of electricity from solar power fell by 85 percent between 2010 and 2020. Costs of onshore and offshore wind energy fell by 56 percent and 48 percent respectively.

Falling prices make renewable energy more attractive all around – including to low- and middle-income countries, where most of the additional demand for new electricity will come from. With falling costs, there is a real opportunity for much of the new power supply over the coming years to be provided by low-carbon sources.

Cheap electricity from renewable sources could provide 65 percent of the world's total electricity supply by 2030. It could decarbonize 90 percent of the power sector by 2050, massively cutting carbon emissions and helping to mitigate climate change.

Although solar and wind power costs are expected to remain higher in 2022 and 2023 than pre-pandemic levels due to general elevated commodity and freight prices, their competitiveness actually improves due to much sharper increases in gas and coal prices, says the International Energy Agency (IEA).

3. Renewable energy is healthier

According to the World Health Organization (WHO), about 99 percent of people in the world breathe air that exceeds air quality limits and threatens their health, and more than 13 million deaths around the world each year are due to avoidable environmental causes, including air pollution.

The unhealthy levels of fine particulate matter and nitrogen dioxide originate mainly from the burning of fossil fuels. In 2018, air pollution from fossil fuels caused \$2.9 trillion in health and economic costs, about \$8 billion a day.

Switching to clean sources of energy, such as wind and solar, thus helps address not only climate change but also air pollution and health.

4. Renewable energy creates jobs

Every dollar of investment in renewables creates three times more jobs than in the fossil fuel industry. The IEA estimates that the transition towards net-zero emissions will lead to an overall increase in energy sector jobs: while about 5 million jobs in fossil fuel production could be lost by 2030, an estimated 14 million new jobs would be created in clean energy, resulting in a net gain of 9 million jobs.

In addition, energy-related industries would require a further 16 million workers, for instance to take on new roles in manufacturing of electric vehicles and hyper-efficient appliances or in innovative technologies such as hydrogen. This means that a total of more than 30 million jobs could be created in clean energy, efficiency, and low-emissions technologies by 2030.

Ensuring a just transition, placing the needs and rights of people at the heart of the energy transition, will be paramount to make sure no one is left behind.

5. Renewable energy makes economic sense

About \$7 trillion was spent on subsidizing the fossil fuel industry in 2022, including through explicit subsidies, tax breaks, and health and environmental damages that were not priced into the cost of fossil fuels.

In comparison, about \$4 trillion a year needs to be invested in renewable energy until 2030 – including investments in technology and infrastructure – to allow us to reach net-zero emissions by 2050.

The upfront cost can be daunting for many countries with limited resources, and many will need financial and technical support to make the transition. But investments in renewable energy will pay off. The reduction of pollution and climate impacts alone could save the world up to \$4.2 trillion per year by 2030.

Moreover, efficient, reliable renewable technologies can create a system less prone to market shocks and improve resilience and energy security by diversifying power supply options.

Learn more about how many communities and countries are realizing the economic, societal, and environmental benefits of renewable energy.

Conclusion

Renewable energy plays a pivotal role in achieving sustainable development by addressing environmental, social, and economic challenges. As the global population grows, so does the demand for energy. Traditional fossil fuels have been the primary source, contributing to climate change, pollution, and resource depletion. In contrast, renewable energy sources offer a cleaner and more sustainable alternative. From an environmental perspective, renewable energy significantly reduces greenhouse gas emissions, mitigating climate change. Solar, wind, hydropower, and geothermal sources generate electricity with minimal or zero carbon emissions, helping to transition away from the fossil fuel-dependent energy systems that contribute to global warming. By embracing renewable, nations contribute to the global effort to limit temperature rise and combat the adverse effects of climate change. Socially, renewable energy promotes energy access and security. Many developing regions still lack reliable electricity, limiting economic opportunities and hindering social progress. By harnessing renewable sources, especially in remote areas, communities can gain access to affordable and sustainable energy. This not only enhances their quality of life but also fosters social and economic development.

Economically, investing in renewable energy can stimulate job creation and foster innovation. The renewable energy sector offers diverse employment opportunities, ranging from manufacturing and installation to research and development. Additionally, as technology advances, costs associated with renewable energy production continue to decrease, making these sources more economically viable and competitive. Moreover, renewable energy reduces

dependence on finite resources, enhancing energy resilience and security. Unlike fossil fuels, which are subject to geopolitical tensions and price volatility, renewable sources are abundant and widely distributed. This decentralization of energy production helps create more resilient and stable energy systems, reducing vulnerability to geopolitical shocks and supply disruptions.

Furthermore, the adoption of renewable energy aligns with the principles of sustainable development by promoting responsible resource management. Unlike fossil fuels, which are finite and environmentally degrading, renewable sources are replenish able and have a lower environmental impact. This aligns with the concept of meeting current needs without compromising the ability of future generations to meet their own needs. In conclusion, the importance of renewable energy in sustainable development cannot be overstated. It addresses environmental concerns, fosters social progress, stimulates economic growth, enhances energy security, and contributes to responsible resource management. As nations continue to transition towards renewable energy, they not only safeguard the planet for future generations but also create a more sustainable and equitable world.

Source

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NEP-2020: NEED OF THE TIME

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Education is fundamental for achieving full human potential, developing an equitable and just society, and promoting national development. Providing universal access to quality education is the key to India's continued ascent, and leadership on the global stage in terms of economic growth, social justice and equality, scientific advancement, national integration, and cultural preservation. Universal high-quality education is the best way forward for developing and maximizing our country's rich talents and resources for the good of the individual, the society, the country, and the world. India will have the highest population of young people in the world over the next decade, and our ability to provide high-quality educational opportunities to them will determine the future of our country. The global education development agenda reflected in the Goal 4 (SDG4) of the 2030 Agenda for Sustainable Development, adopted by India in 2015 - seeks to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030. Such a lofty goal will require the entire education system to be reconfigured to support and foster learning, so that all of the critical targets and goals (SDGs) of the 2030 Agenda for Sustainable Development can be achieved.

Previous Policies

The implementation of previous policies on education has focused largely on issues of access and equity. The unfinished agenda of the National Policy on Education 1986, modified in 1992 (NPE 1986/92), is appropriately dealt with in this Policy. A major development since the last Policy of 1986/92 has been the Right of Children to Free and Compulsory Education Act 2009 which laid down legal underpinnings for achieving universal elementary education.

Objectives of study

1. To start the Multi-disciplinary Education
2. To create Skill Based Education
3. Implementation of choice based credit system
4. To start the courses in local / dual languages

Multi-disciplinary approach

Institution is always thriving to develop and cater the versatile capacities of students. It is by means of increasing their intellectual, aesthetic, social, physical, emotional and moral values in an integrated manner. The college has already stepped towards adapting multidisciplinary subject approach as per the NEP 2020. A discussion among the faculty members were initiated on the key principles of NEP such as diversity for all curriculum and pedagogy with technological innovations in teaching and learning, encouraging logical decision making and innovation, critical thinking and creativity. In view of the NEP, affiliating university is preparing new interdisciplinary centres integrating different disciplines. Academic programmes are being redesigned to include Multidisciplinary/Interdisciplinary courses as electives. Gradually with BA and B.Com, B.Sc, BCA, B.Voc UG and M.A., M.Sc. PG programs were started so as to avail multidisciplinary higher education to deserving students. All UG and PG programs have university curriculum. As the institute is affiliated to Dr. Babasaheb Ambedkar Marathwada University Chhatrapati Sambhajinagar, we strictly follow its curriculum and academic calendar. For BA and B.Sc. have elective mechanism while for B.com, BCA MA and M.Sc. we have CBCS mechanism. At university level humanities, social science, commerce, science, arts and fine arts are individual faculties. At college level we provide bridge courses to the students who are learning a new course at entry level of UG and PG programs. For elective programs students have freedom to opt the subjects of their choice. Students can undertake BA or BCom after studying XII science; in that case they are admitted to bridge course. Students of TYBA have a paper for Project work. Every year national and international conferences are organized in which students and teachers read their research papers. Students and teachers of all disciplines take interest in Interdisciplinary research. Finding of the research are communicated to Board of Studies.

Curriculum with skill courses

Along with the traditional education offered by university, the institute offers skill courses to enable students to seek employment after graduation. As on today we have five diploma courses approved and sanctioned by UGC under NSQF. Five diploma courses are Automobile, Accounting taxation, ICT, Web designing and Organic farming. These diploma courses go parallel to degree program at UG level. A vocational degree course B.Voc. in Beauty and wellness is run separately. Almost all students get employment in one or the other firm. Very few get government jobs but majority of the students go either in private sector or start their own entrepreneurs. The institutional policy makes it mandatory for all UG students to undertake at least one skill course so as to maintain employability and interdisciplinary approach. Most of the girl students seek admission to B.Voc. in Beauty and wellness whereas students doing Automobile course work in garage to start their own service center. Students doing Accounting & Taxation get jobs in banks, credit society, entrepreneurs and companies, some of them get the work done on target basis. Students doing ICT and web designing get jobs in software companies or start own vocational training institutes. Students doing organic farming guide farmers in locality and help their friends and relatives. Diploma courses and certificate courses go parallel with university programs. To aware students about professional ethics, human values and mannerism, value added courses are conducted department wise. All departments have liberty to design the curriculum and time table of the concerned value added course. The institute updates vocational courses and forwards the proposals to NSQF accordingly every year.

NSQF is a nationally integrated education and competency-based framework that enables persons to acquire desired competency levels. The National Skills Qualifications Framework (NSQF) organizes qualification courses according to a series of levels of knowledge, skills and aptitude. These levels, graded from one to ten, are defined in terms of learning outcomes which the learner must possess regardless of whether they were acquired through formal, non-formal or informal learning. It is, therefore, a nationally integrated education and competency-based skill and quality assurance framework that will provide for multiple pathways, horizontal as well as vertical, including vocational education, vocational training, general education and technical education, thus linking one level of learning to another higher level. This will enable a person to acquire desired competency levels, transit to the job market and at an opportune time, return for acquiring additional skills to further upgrade their competencies

Sr. No.	Agency	Name of Diploma Course	Year of Introduction	Duration
1	UGC (NSQF)	Accounting & Taxation	2019	One Year
2	---do--	Automobile	2019	One Year
3	---do--	Organic Farming	2020	One Year
4	---do--	Web Designing & Development	2020	One Year
5	---do--	Information Communication Technology	2020	One Year

Courses offered in local/ dual languages

The institute has a strategy to integrate Indian Knowledge System, Indian languages and culture. Student council is formed every year composing class representatives. Teachers are appointed on student council as in charge professors for every academic year. They chalk out the annual academic programs to coincide with university calendar. Student council celebrates all cultural programs, events, days and festivals. Marathi, Hindi and English departments celebrate the days accordingly, Marathi day on 27th February, Hindi day on 14th September and English day on 23rd April every year. Every year we organize State level intercollegiate elocution competitions in Marathi for students. Current affairs are discussed here every year to focus on socio-cultural issues. Marathi, Hindi

and English languages are taught in the same language. The curriculum contains grammar of the language and literature of the era. Commerce, Computer application and science subject are taught in English medium whereas social sciences are taught in Marathi. For sake of understanding bilingual method is used. Language laboratory helps to learn Standard English pronunciations and into nation patterns. Audio usual aids with language laboratory are also used for Marathi and Hindi. Tribal languages are found in same historical monuments and documents. Indian arts, traditions and culture are taught in history subject outcome base. Teachers are provided with apt IT infrastructure and ICT enabled classrooms for effective curriculum delivery which also focus on outcome-based education.

As per demand of the students the lectures are delivered in bilingual mode. Preservation and promoting of languages are one of the targets of the College in future.

Implementation of choice based credit system: 95 %

The college runs B.A, B.Com, B.Sc, BCA, M.A and M.Sc. as the main programs and five diploma courses along with three certificate courses. The courses like B.Com, M.A., M.Sc. and B.Voc. degree courses are based on CBCS system while rest courses are based on elective system.

Digilocker System

DigiLocker is a flagship initiative of Ministry of Electronics & IT (MeitY) under Digital India programme. DigiLocker aims at 'Digital Empowerment' of citizen by providing access to authentic digital documents to citizen's digital document wallet. The issued documents in DigiLocker system are deemed to be at par with original physical documents as per Rule 9A of the Information Technology (Preservation and Retention of Information by Intermediaries providing Digital Locker facilities) Rules, 2016 notified on February 8, 2017 vide G.S.R. 711(E). DigiLocker aims at promoting Paperless Governance by issuing authentic digital documents issued by various issuers to citizens' locker account.

Ministry of Human Resource Development (MHRD) is the parent ministry of NAD. MHRD has appointed UGC as nodal agency for implementation of NAD scheme through DigiLocker. DigiLocker is a flagship project of Ministry of Electronics and Information Technology (MeitY), Government of India and is executed by National e-Governance Division (NeGD).

How to Access DigiLocker

- Go to <https://digilocker.gov.in> and click on Sign up.
- You may download mobile app from mobile store (Android/ IOS).

How to Login:

- Student will register on DigiLocker by providing his/her Aadhaar number or Mobile number.
- Your mobile number will be authenticated by sending an OTP (one-time password) followed by selecting a username & password. This will create your DigiLocker account.

How to Access your Digital Documents:

- After successful login to the Digilocker, Go to the Education section and click on View All.
- Select University
- Click on Degree/ Diploma Certificate.
- Enter your all details e.g. PRN, Seat No. Candidate Name and Passing year.
- After filing all your correct details Click on Get Document.
- After successful process, your degree certificate will be successfully saved in your issued documents.
- Click on PDF button to download your degree certificate.

Academic Bank of Credits (ABC) has been implemented since current year with the instructions and guidelines from affiliating university. College has formed a committee to sensitize and help students to generate and collect

the ABC ids. Faculties participate in syllabus formation, workshops of the university and substantially contribute through inputs received from various stakeholders.

Focus on Outcome Based Education (OBE):

The institute looks for the outcome of education through alumni association. Alumni of the college are working in various fields. In alumni meet they forward their feedback which is taken into consideration by the institute. Course curriculum is designed by the university. Updates in curriculum for outcome based education are forwarded to university through BoS member. Placement of students through campus selection also underlines the outcome based education. Alumni meet and parent meet organized annually discuss about outcome based education. Curriculum is not designed by institute but the demand of alumni and parents is fulfilled through diploma courses and certificate courses. Career cautious students makes demands of a particular content which is made general in certificate course. Automobile workshop, science laboratories, computer lab and language laboratory insist on outcome based teaching field visit and project work help student develop an outlook.

Online Distance Learning (ODL):

The institute already has two smart classroom and 15 ICT based classroom to offer online teaching. Maximum curricula are taught online as per UGC guidelines. Teachers are engaged in using various online platforms like Google meet, zoom and, students make use of Facebook links, you-tube links to listen to their teachers. Institutes encourages faculty to organize webinars on various topics. Institute takes every chance for collaborative activities in online and offline mode. MoU with other agencies also support distance communication. All correspondence to NAAC, UGC, NIRF, AISHE, RUSA and Parent University is through mail. The institute looks courses to distant students as well.

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ZOOPLANKTON (*MOINA MACRACOPA*) DYNAMICS AND THEIR ECOLOGICAL SIGNIFICANCE: UNRAVELING THE THREADS OF AQUATIC ECOSYSTEM FUNCTIONING

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Abstract

Zooplankton, encompassing a diverse array of microscopic organisms, bridges the divide between primary producers and higher trophic levels. Their interactions with phytoplankton, bacteria, and other aquatic organisms form a delicate balance that shapes the resilience and productivity of these ecosystems. Understanding the nuanced intricacies of zooplankton dynamics becomes imperative as we seek to decipher the ecological significance embedded within their biochemical composition. In present study total lipid was found maximum (8.94%), the average protein value was found 68.52% and total glycogen was found 19.64% in *Moina macracopa*. The lipid content of zooplankton is highly variable, ranging from less than 5% to more than 60% of dry weight. In summary, the biochemical composition of zooplankton is highly variable and plays a crucial role in aquatic ecosystem functioning. Understanding the factors that influence zooplankton biochemical composition is essential for predicting and managing the effects of environmental change on aquatic ecosystems. It is concluded that the experimental species of zooplankton are boon for fishery.

Keywords: Freshwater, zooplankton, carbohydrates, protein and lipids, *Moina macracopa*

Introduction:

Aquatic ecosystems, comprising lakes, rivers, oceans, and estuaries, are intricate tapestries of life where the threads of biodiversity and ecological processes interweave to sustain life. At the heart of these ecosystems, zooplanktons emerge as pivotal actors, playing a central role in mediating energy transfer, nutrient cycling, and trophic interactions. The dynamics of zooplankton populations and their biochemical composition offer a lens through which we can unravel the complex threads that govern the functioning of aquatic ecosystems (Hessen & Van Donk, 1993). This research embarks on a journey to explore the multifaceted dimensions of zooplankton dynamics, aiming to unveil the mechanisms that underpin their ecological significance. By delving into the biochemical intricacies of these microscopic organisms, we aim to decipher the clues that hold the key to the functioning of aquatic ecosystems. From lipids and proteins as indicators of energy flow to pigments revealing photosynthetic relationships, this investigation seeks to provide comprehensive insights into the biological tapestry that shapes the aquatic realm. As we embark on this scientific odyssey, the ultimate goal is to contribute to a holistic understanding of zooplankton dynamics and their profound impact on aquatic ecosystems. Through this exploration, we aspire to inform conservation efforts, enhance ecosystem management strategies, and foster a deeper appreciation for the interconnectedness of life within these watery realms. Join us in unraveling the threads that weave the intricate story of zooplankton and their ecological significance in aquatic ecosystems Vyverman (2012).

2. Material and Methods

Biochemical analysis

The samples of *Cyprinotus nudus* were collected from laboratory monoculture circular glass tank with the help of plankton net (60 μ m mesh size) as well as dropper in 25 ml beaker. The collected samples were washed with distilled water. The partially wet sample was kept on filter paper for surface drying. After the weight of sample is measured it was transferred into glass petridish and kept into oven at 70°C for drying. The dried sample was used for estimation of protein, lipid and carbohydrate. Water content was determined by determining difference between initial wet weight and final dry weight.

Estimation of lipid (Lehtonen 1996):

The analysis was performed following the method described by Lehtonen (1996). Approximately 15 mg of dried material was weighed and homogenized in 0.5 ml of chloroform: methanol (2: 1) solution, and then centrifuged for 30 minutes. The precipitate was washed with 0.5 ml chloroform: methanol (2: 1) and centrifuged again for 30 seconds. Twenty per cent volumes (0.02 ml) of 0.9 % NaCl solution were added to the chloroform: methanol (2: 1) solution for both washes, and centrifuged. The chloroform phase containing the dissolved lipids was placed into tarred cups, and the solvent evaporated. The cups were then weighed, and the weight of the lipids calculated from triplicate sub samples.

Estimation of total proteins (Lowry *et al.* 1951):

Oven dried material was homogenized in the proportion of 0.5 mg to 3 ml of pure water (Micropur) into 10 ml test tubes. The water - soluble protein content was analysed (n = 5 - 6 sub samples) using the method described by Lowry *et al.* (1951), as modified by Fernandes *et al.* (1994). 0.1ml of the aliquot was transferred into a test tube and 4 ml of alkaline copper sulphate reagent was added, followed by 0.4 ml of diluted commercial Folin's reagent. The optical density of the blue colour developed was read at 540 µm after 30 minutes of addition of the Folin's reagent using UV - VIS spectrophotometer (Model Digispec 200 GL). Bovine serum albumin was used as a standard. The protein content was expressed as mg/100 mg wet weight of the tissue. Live feed Culture, nutritional potential and biochemical composition.

Estimation of glycogen (DeZwaan and Zandee 1972):

Samples were separated for analysis, following essentially the same procedure as for proteins. The homogenates were analyzed (n = 4 - 5 sub samples) with the method of DeZwaan and Zandee (1972). The homogenate mixture was kept in boiling water bath for 3 to 5 minute to dissolve the tissue and then cooled. Before centrifugation 2 ml of 96% ethyl alcohol was added and the mixture was kept overnight in refrigerator. Next day this mixture was centrifuged at 3000 rpm for 15 minutes. The glycogen cake settled down on the bottom was collected and 2 ml of distilled water was added to the cake and mixed well. This mixture was kept at 70°C for 5 minutes in a hot water bath. 0.1 ml of the aliquot was mixed with 0.9 ml of distilled water and 5 ml of anthrone reagent was added. This mixture was kept in hot water bath for 10 minutes. The optical density was read at 610 µm against blank using UV - VIS spectrophotometer. Glycogen content is expressed in terms of mg glucose / 100 mg wet weight of tissue (Glycogen conversion is factor 0.927).

Statistical analysis:

The results of biochemical analysis were expressed as mean of three replicates and data were analyzed statistically by using student 't' test (Mungikar, 2003).

Results

In present study total lipid was found maximum (8.94%), the average protein value was found 68.52% and total glycogen was found 19.64% in *Moina macracopa*.

Table: Biochemical composition of zooplankton

Zooplankton	Protein	Lipid	Glycogen
<i>Daphnia galeata</i>	20.60	44.62	4.2

Discussion

Research on the biochemical composition of zooplankton has revealed important insights into the functioning of aquatic ecosystems. One of the key findings is the variability of zooplankton biochemical composition across species and environmental conditions. This variability is due to differences in feeding habits, metabolic rates, and

nutrient availability. Proteins are a major component of zooplankton biomass and are essential for growth, development, and reproduction.

The protein content of zooplankton can vary widely, from less than 10% to over 50% of dry weight, depending on the species and life stage. Studies have shown that the quality and quantity of food available to zooplankton can have a significant impact on their protein content. For example, zooplankton that feed on high quality algae tends to have higher protein content than those that feed on lower quality algae. Lipids are another important component of zooplankton biomass, providing a critical source of energy and essential fatty acids. The lipid content of zooplankton can also vary widely, ranging from less than 5% to more than 60% of dry weight. This variability is influenced by factors such as feeding habits, metabolic rates, and temperature. For example, warm water zooplankton tends to have higher lipid content than cold - water species, likely due to the higher metabolic demands of warm water environments. Carbohydrates are the least abundant of the major biochemical components in zooplankton, but they still play an important role in energy metabolism and structural support.

The carbohydrate content of zooplankton can vary from less than 5% to around 20% of dry weight, with herbivorous species generally having higher carbohydrate content than carnivorous ones. Earlier Watanabe *et al.* (1983) reported 23.1 % lipid in *Branchionus plicatilis*. *Moina macracopa* contained 8.94 % total lipid. Earlier Krishnakumari *et al.* (1993) recorded 45.65 % lipid in another ostracod *Xestoleberis nitida*. Higher values of lipid in different zooplankton species have been reported earlier by many workers (Maruthanayagam and Subramanian, 1999; Goswami *et al.*, 2000; Prabhu *et. al.*, 2005; Rajkumar *et al.*, 2008). Higher protein contents in copepods *Acartia spinicuda* and *Acartia similis* from costal water of Parangipetai have been reported by Rajkumar *et al.*, (2008) and Rajkumar and Santhanad (2009). The protein may function as metabolic reserve in zooplankton. Guisande *et al.*, (2000) made Comparison between the amino acid composition of females, eggs and food to determine the relative importance of food quantity and food quality on copepod reproduction. Recent research has also investigated the impact of environmental change on the biochemical composition of zooplankton. For example, studies have shown that increases in water temperature can lead to changes in zooplankton lipid content, with warm water species having higher lipid content than cold water species. Changes in nutrient availability can also impact zooplankton biochemical composition, with some studies suggesting that nutrient enrichment can lead to higher protein content in zooplankton.

In conclusion, the biochemical composition of zooplankton is a critical factor in understanding the functioning of aquatic ecosystems. The major biochemical components of zooplankton, including proteins, lipids, and carbohydrates, have different functions and can vary widely depending on species, life stage, and environmental conditions. Research on zooplankton biochemical composition has revealed important insights into the factors that influence their growth, reproduction, and survival, as well as their interactions with other organisms. Variability in zooplankton biochemical composition is due to differences in feeding habits, metabolic rates, and nutrient availability. Environmental factors such as changes in water temperature and nutrient availability can also have significant impacts on zooplankton biochemical composition. The implications of this research are important for predicting and managing the impacts of environmental change on aquatic ecosystems. Understanding the factors that influence zooplankton biochemical composition is essential for predicting and managing the effects of environmental change on aquatic ecosystems. This knowledge can inform the development of effective management strategies for maintaining the health and resilience of aquatic ecosystems.

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COMPARATIVE HPTLC ANALYSIS OF LEAF, STEM AND ROOT OF *ABUTULON INDICUM L.*

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Abstract-

Leaf, stem and root materials of *Abutulon indicum* were used for HPTLC analysis. HPTLC plates were developed on n-hexane: ethyl acetate (5:1v/v) solvent system. The densitometry profiles were evaluated to elucidate differences in phytochemical profile within the plant parts. The Rf values and number of peaks obtained in densitogram indicated chemical variation within the plant parts. Although, all plant parts had more equal number of peaks, their Rf values, % height and % area varied. Thus HPTLC analysis in absence of external standards, proved to be an informative tool for evaluating differences in phytochemical contents between their parts.

Keywords- *Abutulon indicum*, Phytochemical, Densitogram, HPTLC.

Introduction-

Genus *Abutulon indicum* (family- Malvaceae), it is small shrub, native to tropic and subtropical regions and sometime cultivated as an ornamental. It is used as a medicinally and economically important species. *Abutulon indicum L.* is a well-known medicinal plant, its roots and leaves are used for curing fever (Matlwaska, 2002) It also reported as highly traded in India (Ved and Goraya, 2007). It is used in traditional medicinal system in India to treat various disorders (Tandon, 2011; Upadhyia *et.al.*, 2009). Various parts of the plants are used as a demulcent, expectorant, aphrodisiac, laxative, diuretic, sedative, astringent, expectorant, tonic anti- convulsant (Golwala *et.al.*, 2010), anti - inflammatory (Golwala *et.al.*, 2010), anthelmintic and anagesic and to treat leprosy, ulcers, headache, gonorrhoea and bladder infection. (Rajakaruna, *et.al.* 2002)

Various new and sophisticated analytical methods Viz. HPTLC, HPLC, GCMS are being utilized for identifying compounds (Kokate *et.al.* 2009; Patil *et.al.* 2012; Upadhyia *et. al.*, 2014b). Among these, HPTLC is the most popular, economical and reliable technique, used in differentiation and quality control analysis in pharmaceutical research (Hariprasad and Ramkrishnan, 2011). HPTLC technique offer better resolution of chemical constituent present in the plant extract, with reasonable accuracy in shorter time (Sethi, 1996; Pawar *et.al.*, 2011). Generally, an identified compound serves as external standard for quality and quantity assurance of samples. In the absence of such reference compounds, the HPTLC fingerprints are compared with respect to number, sequence, position and color of the separated bands (Mammen *et.al.* 2011; Kamboj and Saluja, 2013). Furthermore, they are also employed in elucidating and comparing differences among species, their parts and/ or herbal preparations (Kamboj and Saluja, 2013). Such study also provides an option of estimating differential patterns in samples.

Thus, keeping in view of this aspect, present work was aimed towards finding out the phytochemical differentiation of among leaf, stem and root extracts of *Abutulon indicum* by using HPTLC method.

Materials and Methods

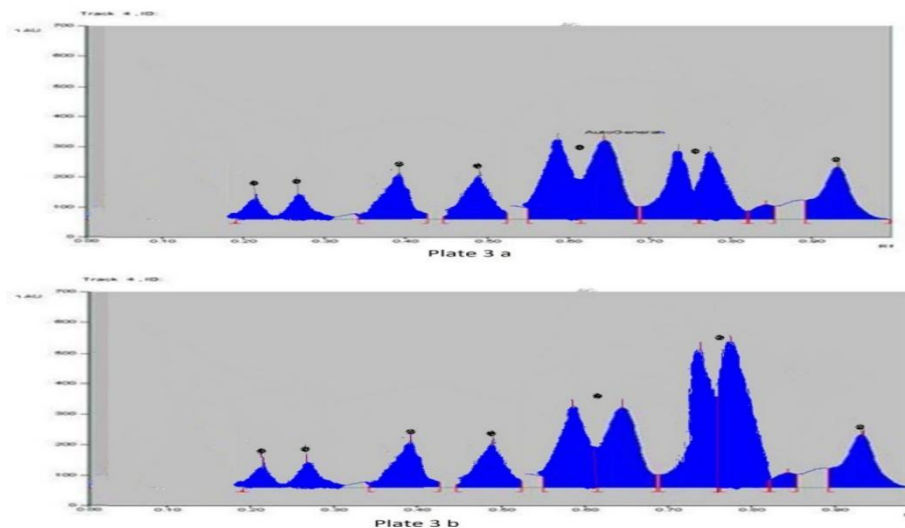
Plant materials and chemicals

Leaf, stem and root materials of *Abutulon indicum* obtained from a single population from Newasa, Ahmednagar district Maharashtra, India and specimens were authenticated. All solvents used during the study were of HPLC grade (Fischer Scientific, Mumbai, India).

Extraction

The plant material (leaf, stem and root) of *Abutulon indicum*, obtained from wild, were dried at room temperature and finely powdered. Method of Upadhyia *et. al.* (2014a) for total triterpenoids was used for extraction. A 5g of powder was extracted with 25 ml (50 % v/v) aqueous methanol by heating (2-3 min). To this, distilled water (75 ml) and concentrated H₂SO₄ (10ml) was added with shaking. The mixture was refluxed for 5-6 hours over water

bath at $95 \pm 2^{\circ}\text{C}$. The contents were cooled, filtered and transferred to separating funnel. To the above mixture



chloroform (25ml) was added and the layer was allowed to separate and the process was repeated twice. The chloroform layer obtained was washed using distilled water to get rid of acid. The acid free chloroform layer was dried to obtain residue. The residue was dissolved in methanol and the same was used for HPTLC analysis.

HPTLC analysis

Instrument and chromatographic conditions

A CAMAG high performance thin layer chromatography (HPTLC) system was used for detection and separation. Analysis was performed on a pre-coated TLC silica gel G60 F₂₅₄ plates (MERCK, Germany). Sample bands (6mm) were applied using CAMAG Automated TLC Sampler (ATS-4) equipped with 25 μl syringe operated with settings: band length 6mm, application rate 150 $\mu\text{l}/\text{s}$, distance from the bottom of the plate (Y) 10mm, distance between bands were auto set(6mm). The plates were developed to a distance of 80 mm with hexane: ethyl acetate (5:1v/v) as mobile phase in a CAMAG twin through glass chamber previously saturated with the mobile phase at room temperature for 20 min.

After the run, plates were dried in air current using drier and derivatised using anisaldehyde- sulphuric acid reagent followed by heating for 5min at $110 \pm 2^{\circ}$. Visualization of bands on plate in white light was recorded using CAMAG TLC visualizer TLC plates were scanned at 540nm and the data for the peas were generated.



Figure 1. a) Plant-*Abutilon indicum* - b) Leaf, stem and root c) extracts of plant parts

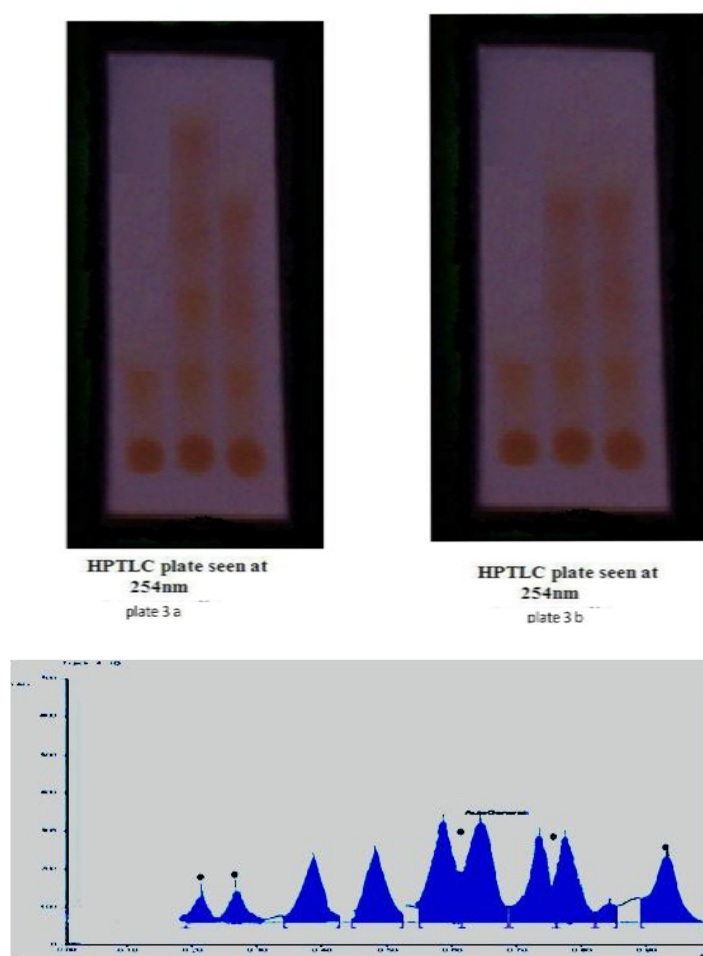


Figure. 2.HPTLC densitogram profile and plate images of *Abutilon indicum* A-Leaf Extract, B-Stem Extract and C- Root Extract

Table-1. Densitogram attributes of HPTLC run of Leaf, stem and root extracts of *Abutulon indicum*

Plant part	Leaf				Stem				Root			
	No.of peaks	Rf- start	Rf- end	Rf- Max	Height of peak	Rf- start	Rf- end	Rf- Max	Height of peak	Rf- start	Rf- end	Rf- Max
1	0.18	0.24	0.22	145	0.18	0.24	0.22	145	0.18	0.24	0.22	145
2	0.24	0.32	0.26	150	0.24	0.32	0.26	150	0.24	0.32	0.26	150
3	0.35	0.43	0.39	215	0.35	0.43	0.39	215	0.35	0.43	0.39	250
4	0.44	0.52	0.48	200	0.44	0.52	0.48	200	0.44	0.52	0.48	275
5	0.55	0.62	0.58	320	0.55	0.62	0.58	320	0.55	0.62	0.58	320
6	0.62	0.69	0.64	305	0.62	0.69	0.64	305	0.62	0.69	0.64	305
7	0.69	0.76	0.72	510	0.69	0.76	0.72	280	0.69	0.76	0.72	280
8	0.76	0.82	0.77	535	0.76	0.82	0.77	270	0.76	0.82	0.77	270
9	0.82	0.85	0.84	130	0.82	0.85	0.84	130	0.82	0.85	0.84	130
10	0.89	0.98	0.93	235	0.89	0.98	0.93	235	0.89	0.98	0.93	235

Rf-Retention factor,

Results and Discussion

HPTLC analysis

During the present study a comparative analysis was carried out on genus *Abutulon indicum* using HPTLC technique. Better band separation was obtained using hexane: ethylacetate (5:1v/v) as solvent

V system during the procedure. HPTLC plates were scanned at 540nm in white lamp using automatic detector mode in CAMAG TLC scanner. The scan start position (Y-axis) at 5.0 mm and scan end position (Y-axis at 85mm with a slit dimension of 6.00x 0.45mm) at a scan speed of 20mm/sec.for each track was employed. The data resolution was set at 100 µm/ step. The densitogram and image for each track of *Abutulon indicum* (leaf, stem and root) are presented in fig.1 a-h. The result (viz. peak number, Rf value, height, area and % area) for the HPTLC run are presented in table.1. It may be noted that the negative Rf values in the Table 1 indicate application position.

Comparison within the plant

Variations in densitogram of leaf stem and root extract of *Abutulon indicum* were observed. *Abutulon indicum* leaf extract showed 2 peaks different from that of stem extracts while, in root extract 4 peaks were different from leaf and stem extracts(Table.1) But it is observed that leaf, stem and root extracts showed similar number of (10) peaks. In root extracts in comparison to leaf and stem extracts only 4 peaks were different. In general, root extract was diverse in chemical nature over leaf and stem extract.

Comparison of leaf and stem extracts

Both showed equal number of peaks but difference in the banding pattern and variation in the chemical constituents of both the plant parts. Peak number 7 and 8 showed dissimilar height of indicating chemically variation in constituents. Height and area of both the 7 and 8 peaks were higher in leaf than the stem. Peak 8 in leaf had highest area and height (535) at Rf 0.77 compared to the stem.

Comparison of stem and root extracts

Out of total 10 peaks only four peaks were observed having different height (Peaks number 3, 4, 7 and 8) and coinciding in both the extracts under study. However, these peaks in root indicating higher amount of those similar chemical constituents (Table1, fig2.). Other peaks with similar Rf values among the extracts of both species indicated similarities in chemical nature and contents.

Results of the present investigation indicate variations among parts. HPTLC analysis provided adequate information in differentiating these medicinal plants based on Rf values and number of peaks. Similar observations on HPTLC analysis have been worked and assessed by Hariprasad and Ramarishnan (2011) in *Rumex vesicarius*, Sethi (1996) in Pharmaceutical formations and Mammen *et al.*, (2011) in seasonal, geographical variation in *Avera lanata* and Talreja *et al.* (2017) in *Achyranthus aspera*. Gaind and Chopra (1976) worked on phytochemicals of *Abutilon indicum* dried and powdered aerial parts, was extracted with petroleum ether. The unsaponifiable matter was found to contain n-alkane mixture (C22-C34, an alkanol fraction and B-sitosterol, vanillic, p-coumaric, p-hydroxybenzoic, caffeic and fumaric acids, p-B-D- glucosyloxybenzoic acid and glucovanilloyl glucose were isolated and identified by co-chromatography.

Although, studies on specific triterpenoids viz., Betulinic acid and oleanolic acid are reported in both the plant parts using HPLC method (Pai *et al.*, 2014 ; Upadhyia *et al.*, 2014a). However, these fingerprint patterns can be used to determine the chemical variations in and within the species.

Conclusion

A comparative account of account of leaf, stem and root extracts of *Abutilon indicum* depicted large variation. The HPTLC analysis reveals clear differentiation in leaves, stem and root of the plant species. Further, detailed qualitative and quantitative investigations are required for identification of these chemical entities.

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FURTHER ADDITIONS TO ALGAL FLORA OF KADA REGION

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ABSTRACT

In the current investigation, a total of 13 species belonging to the Chlorophyceae, Cyanophyceae, Bacillariophyceae, and Euglenophyceae were identified. Authors noted species of Chlorophyceae, three species Cyanophyceae, two species of Bacillariophyceae and one species of Euglenophyceae were observed. A detail report of observations is given in this paper.

KEY WORDS: Algae, Chlorophyceae, Bacillariophyceae, Euglenophyceae

INTRODUCTION:

The Kada region is located in Ashti tehsil of Beed district in Maharashtra and is characterized by numerous small water bodies such as ponds, puddles, and small lakes. The water in these places is stagnant in some areas and flowing in others. Some of water bodies are deep, while others are shallow rear sides. In these locations, the water bodies are shallower and contain various types of algae and other aquatic flora. A survey was conducted from October to March 2019-2020 to examine the variety of algal forms in these water bodies.

MATERIALS AND METHODS:

For the collection of algal samples, random sampling techniques have been used as described by Narkhede (2006). Sample collections were made during the period of October to March of year 2018-2019. The collected algal samples were preserved in laboratory. Identification of taxa was carried out by using Narkhede, (2006), Pal *et.al* (1962), Jadhavar and Papdiwal (2012 a and b) Prasad and Misra (1992), Sarode and Kamat (1984), Rai and Misra (2008), Prasad and Srivastava (1992), Desikachary (1959), Prescott (1951), Philipose M.T. (1967) and other relevant literature 2006.

RESULTS AND DISCUSSION

Eight genera and ten species of chlorophyceae, cyanophyceae, bacillariophyceae, and euglenophyceae were observed during the current study and are described below.

1) *Staurostrum gracile* Ralfs forma Iyengar et. Vimala Bai

Prasad and Misra, 1992, p 197, pl 25, f 14, 18

Cell small, about 2.7 times longer than broad with slight constriction in the form of an acute notch; semicell slightly broadening towards the faintly convex apex, upper angles produced into more or less horizontally disposed long processes tipped with 3-minute spines and showing many concentric series of denticulations; top view triangular; chloroplast axile with one pyrenoid in each semi cell. Long.cell 17.5 μ ; lat.cell 12.5 μ , isthmus 5 μ .

2) *Chara flaccida* Braun

Pal, Kundu, Sundaralingam and Venkataraman, 1962, p 95, f 220-222

Monoecious, up to 32 cm height, heavily encrusted; stem slender 392-525 μ in diameter; internodes 1-3 times the length of the branchlets; stem corticated, diplostichous; cells of the primary series more prominent than the secondary; spine cell single, acute projecting horizontally, stipulodes forming a single whorl, well developed, elongated, acute, branchlets 8-12, consisting of 4-6 segments, slender; bract-cells 4-5 at the lowest nodes, 3 at the apex, straight, thick; bracteoles similar to the anterior bract-cells; antheridia and oogonia usually at the lowest three nodes, antheridia 420 μ in diameter; oogonia up to 780 μ long, 525 μ wide.

3) Euastrum bidentatum Nag.

Rai and Misra, 2008, p 49, pl 2, f 4

Cells 45 μ long, 30 μ broad, deeply constricted; semicells three lobed, polar lobe with deep median incision, semicells with 5 protuberances, one large just above the isthmus, one on each lateral lobe and one on each side of apical notch in the polar lobe. Cell wall smooth. Long. cell 48 μm , lat. cell 18 μm , lat. isthmus 10 μm .

4) Spirogyra collinsii (Lewis)

Prescott, 1951, p 312, pl 77, f 4-6

Filaments is of slender cells, 20 μ , in diameter, and about 5 times as long as broad, with plane end walls; chloroplast solitary. Conjugation scalariform and lateral, the tube formation is by the male gametangium only; sporangia inflated slightly on both sides to contain the spore; the male gametangium formed by a partitioning of one end of a vegetative cell.

5) Oocystis pyriformis Prescott

Prescott, 1951, p 246, pl 54, f 8

Cells broadly pyriform-ovoid, with a prominent apiculation at one pole, the other end broadly rounded; united in families of two or four; chloroplast massive and parietal with one pyrenoid; cells 15 μ in diameter, 17.5 μ long; colony 35 μ in diameter, 47.5 μ long.

6) Scenedesmus acutiformis Schroeder

Philipose, 1967, p 260, f 169 (a)

Colony 4 celled. Cells cylindrical fusiform and arranged in a single linear series. Cell wall smooth. Median cells with a lateral longitudinal ridge extending from pole to pole on each side. Terminal cells with two or four ridges. Poles of cells acute and without teeth or spines, but sometimes with a minute papilla. Cells 7.5 μ broad, 15 μ long.

7) Tetradron caudatum (Corda) Hansgirg

Philipose, 1967, p 150, f 64 (b)

Cells small, flat, five sided with four of the side's concaves and the fifth in the form of notch of varying depth. Angles rounded and produced into a small straight spine. Cells 15 μ in diameter, spine 2.5 μ long.

8) Scytonema arcangelii Born. et Flah.

Prasad and Srivastava, 1992, p 124, pl 14, f 1-3

Filaments long, brownish green, compactly interwoven forming expanded floccose flushy thallus; 17.5 μ in diameter, sheaths thick, membranaceous, colourless, smooth, sometimes gelatinised at the points from where branches arise; cells somewhat quadrate or much shorter than broad, 5 μm long; cell contents olive blue green, homogenous without granules and gas vacuoles; end cells rounded; heterocysts intercalary, cylindrical with flattened ends, bipolar 10 μm broad, 15 μm long; cell wall smooth and thick.

9) Stigonema informe Kuetz ex Born. et Flah

Desikachary, 1959, p 613, pl 137, f 2

Thallus expanded, crustaceous or sometimes occurring as single filaments, brownish or blackish; filaments 70 μ broad, prostrate below and erect above, irregularly branched, branches straight or flexuous, with secondary branches mostly arising from the upper surface, which form hormogones; trichome with 4-6 rows of cells or seldom with many rows; cells 15 μ broad.

10) Aphanocapsa biformis A.Br.

Desikachary, 1959, p 134, pl 21, f 3

Thallus olive green, gelatinous, often expanding; cells 5 μ diam, spherical, mostly with a special envelope; loosely arranged, 2-4 together in a common mucilaginous envelope, nannocytes about 2 μ diam.

11) Amphora costata W. Smith

Sarode and Kamat, 1984, p 160, pl 19, f 431

Frustules linear elliptical in girdle view; valves 25 μ long 5 μ broad, strongly arcuate on the dorsal margin and slightly concave more or less straight on the ventral margin; ends strongly constricted, capitate; raphe thin, more or less straight, slightly directed to the ventral side towards the ends; striae about 15 in 10 μ , coarsely punctate.

12) Cymbella bengalensis Grun.

Sarode and Kamat, 1984, p 167, pl 19, f 444

Valves 85 μ long 25 μ broad, asymmetrical, dorsal side strongly convex and ventral side slightly convex with slightly constricted broadly rounded ends; raphe thick with prominent central pores and directed terminal fissures; axial area moderate; central area slightly formed with an isolated stigma on the ventral side; striae 8-10 in 10 μ , radial and coarsely punctate.

13) Phacus curvicauda Swirenko

Prescott, 1951, p 399, Pl. 88, f 21

Cells broadly ovoid to suborbicular in outline, slightly spiral in the posterior part which is extended into caudus; anterior end broadly rounded; periplast longitudinally finely striated; paramylon bodies 2 large discs; chloroplast numerous ovoid bodies; cells 25 μ in diameter, 30 μ long.

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EFFICACY OF SOME MEDICINAL PLANTS ON MYCELIAL GROWTH AND SPORULATION OF ALTERNARIA ALTERNATA

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ABSTRACT:

The experiment was conducted in Plant Pathology Laboratory of JES College Jalna by collecting the infected leaf of chilli found in four different districts viz Aurangabad, Parbhani, Jalna and Nanded. Pathogen was isolated, identified and cultured in the Potato Dextrose Agar (PDA) medium. The Pathogen was identified as *Alternaria alternata*. Leaf of six plants viz. *Azadirachta indica*, *Annona squamosa*, *Nerium indicum*, *Jatropha curcas*, and *Carica papaya* was collected and its fresh leaf extract was prepared on weight-by-weight basis so as to test the efficacy of these extracts against the pathogen by Poison food techniques. The leaf extracts were evaluated against *A. alternata* at 5 and 10 % of concentration *in vitro*. The mycelial growth of the fungus at different concentrations was measured after 48 and 72 hours of inoculation. The results revealed that all the extracts significantly inhibited the mycelial growth at these concentrations wherever the dry mycelial weight were 0.045 mg were for *Azadirachta indica*, 0.050 mg for *Annona squamosa*, 0.55 mg were *Nerium indicum*, *Jatropha curcas*, 0.047 mg were, 0.095 mg for *Carica papaya*. The PDI were 57.63 (*Annona squamosa*), 61.86 (*Azadirachta indica*), 19.49 (*Carica papaya*), 32.2 (*Jatropha curcas*), and 53.39 were for *Nerium indicum*. An intense study on these leaf extract may help to use them as an effective biopesticides in commercial scale.

Key Words: Fungi, Efficacy, Medicinal plants, *Capsicum*

INTRODUCTION:

Capsicum annum and *C. frutescens* are most cultivated species belong to the genus *Capsicum annum* L. *Capsicum* is a genus from the night shade family (Solanaceae) Known for over 9500 years, chilli is the native of Southern America and was first cultivated in Peru at around 7500 BC (MacNeish, 1964).

The chilli crop is attacked by various fungal diseases at different stages of development. These are mainly anthracnose (*Colletotrichum capsici*), damping off (*Pythium aphanidermatum*), powdery mildew (*Levillula taurica*) Cercospora leaf spot (*Cercospora capsici*) and root rot (*Rhizoctonia solani*). Among the major diseases, die-back caused by *Colletotrichum capsici* is one of the most destructive diseases of chilli in India. Due to this disease more than 50 per cent crop losses have been reported from different parts of India (Ramchandran et al., 2007). It causes severe damage on red chilli fruits (Hadden and Black 1988; Bosland and Votava, 2003).

Now a day's, throughout the world research is going on to develop the environmentally safe, non-toxic and economically viable plant-based products for remedy of various plant diseases. The majority of the synthetic antimicrobial products used in agricultural purpose are toxic to different biological system as well as environment and they induce the development of resistant strains and affecting plant health. Soil borne plant pathogens are sometimes difficult to control with chemical fungicides or bactericides and the application of biocides may be one of the best alternatives in controlling pathogens.

Throughout the world, scientists are concentrating their views for screening of plant sources for their antimicrobial activity as higher plants represent a potential source of novel antibiotic or antimycotic properties and simultaneously as they are environmentally safe, biodegradable and renewable (Cunatetal, 1990; Kurucheve et al 1997; Singh and Maheshwari, 2001; Sengupta et al. 2002, 2004; Kishore and singh, 2005; Koduru et al., 2006; Sharma et al., 2006). The plants like *Acalypha wilkensisiana*, *Azadirachta indica*, *Datura metel*, *Eucalyptus camadulensis*, *E. citridora*, *Allium sativum*, *A.cepa*, *Lecus aspera*, *Ranunculus scleratus*, *Holarrhena antidysentericca*, *Embllica officinales*, *Ocimum sanctum*, and *Calotropis pocera* have already been screened out for their antimicrobial properties (Alade and Irobi, 1993; Yossry et al., 1999; Ganesan et al., 2004; Sharma et al, 2005).

Chemical control agents are either environmentally unsafe or too expensive. There are many reports that organic amendments of the soil enhance the activity of biocontrol agents in the suppression of plant pathogens (Cook, 1977; Sitaramaiah, 1990).

Many diverse approaches are being tried worldwide to minimize the losses caused by these fungal, bacterial and viral diseases which are mainly based on avoidance of sources of infection, avoidance or control of vectors; modification of cultural practices; use of resistant varieties obtained through conventional and accelerated breeding, cross protection; systemic acquired resistance; and use of transgenic plants containing alien genes that impart resistance.

To find out suitable feasible & economical way the systematic study was carried out with special emphasis on different fungal diseases of Chilli and their eco-friendly management. In the first part of present investigation efforts have been made to collect the diseased samples from 8 districts of region Marathwada.

MATERIAL AND METHODS:

Collection of diseased plant chilli samples: -

A number of fields of chilli growing fields local markets of Marathwada region were visited and samples of diseased chilli fruits leaf, plants were collected. A critical study was made on symptoms produced by pathogen on different plant parts of chilli like leaf, stem and fruits. The fruit samples of chilli showing typical fruit rot symptoms were collected in perforated polythene bags from chilli growing fields and local markets and brought to the research laboratory for isolation and identification of the pathogen, associated with disease.

Identification of fungal forms

Isolated fungal forms were identified on the basis of available literature, including manuals and monographs as A manual of soil fungi" by Gilman, (1959), "Illustrated genera of imperfect fungi" by Barnet H. L., "Hand Book of Soil Fungi" by Nagamani et al. (2006), "The Illustration of fungi" by Mukadam *et al.*, (2006).

The micro slides were prepared in Cotton blue stain and mounted with lacto phenol. Small tuft of the fungus usually with spore and spore bearing structure were transferred into the drop with the help of a flamed, cooled needle. The fungal material was teased using two mounted needles and the mold structures mixed gently in the stain. The cover-slip was placed over the fungal materials without air bubbles in the stain. The lacto phenol mounts were sealed around the edge of the cover-slip with the help of fresh nail polish. The microphotographs and micro measurements were done for every isolated fungal form from conventional and organic Chilly field rhizosphere.

Selection of media for isolation

During investigation usually Rose Bengal and Potato Dextrose Agar (PDA) medium were used for the isolation and maintenance of pure cultures. The constituents of the medium are as follows.

Preparation of plant extracts

Different plants materials (leaves) from different places were collected. Washed under running tap water and then distilled water weighted separately (100 g) and ground in a pestle and mortar by adding sterile water at 1:1 w / v and filtered through muslin cloth. This formed the standard plant extract solution (100 %). The extracts were diluted to 50 per cent for further studies by adding requisite quantities of sterile water (Chandrasekaran and Rajappan, 2002). An effect of plant extract was tested following poisoned food technique, 19 plants against percentage of inhibition / stimulation of growth of the test pathogen. The PDI was calculated by using the formula Eunice and Osuji, (2008). These extracts were also used *in vivo* by using fruit inoculation method used in earlier experiments.

$$\text{Percentage Disease Inhibition (\%)} = \frac{D_c - D_t}{D_c} \times 100$$

Where D_c = average weight of fungal colony (control),

D_t = average weight of fungal colony with plant extract.

RESULTS AND DISCUSSION:

Table No. 1: Effect of 5 % leaf extracts Medicinal plants on mycelial growth and Sporulation of *Alternaria alternata*

Plant Name	Degree of sporulation (visual)	Mycelium dry weight (mg)	PDI
<i>Annona squamosa</i>	+	0.050	57.63
<i>Azadirachta indica</i>	+	0.045	61.86
<i>Carica papaya</i>	++	0.095	19.49
<i>Jatropha curcas</i>	++	0.080	32.2
<i>Nerium indicum</i>	+	0.055	53.39
Control	+++	0.118	

Table No. 2: Effect of 10% leaf extracts Medicinal plants on mycelial growth and Sporulation of *Alternaria alternata*

Plant Name	Degree of sporulation (visual)	Mycelium dry weight (mg)	PDI
<i>Annona squamosa</i>	++	0.075	36.441
<i>Azadirachta indica</i>	+	0.025	78.814
<i>Carica papaya</i>	++	0.106	10.169
<i>Jatropha curcas</i>	++	0.070	40.678
<i>Nerium indicum</i>	++	0.096	18.644
Control	+++	0.118	

* Sporulation: - Absent = -, Minimum = +, Moderate = ++, Maximum = +++

Table No. 1 reveals that 5 % leaf extract of medicinal plants on mycelial growth and sporulation of *Alternaria alternata*. The very less degree of sporulation were found against *Azadirachta indica*, *Annona squamosa*, *Nerium indicum*, *Jatropha curcas*, and *Carica papaya*. The dry mycelial weight were 0.045 mg were for *Azadirachta indica*, 0.050 mg for *Annona squamosa*, 0.55 mg were *Nerium indicum*, *Jatropha curcas*, 0.047 mg were, 0.095 mg for *Carica papaya*. The PDI were 57.63 (*Annona squamosa*), 61.86 (*Azadirachta indica*), 19.49 (*Carica papaya*), 32.2 (*Jatropha curcas*), and 53.39 were for *Nerium indicum*.

Table No. 2 reveals that 10 % leaf extract of medicinal plants on mycelial growth and sporulation of *Alternaria alternata*. The very less degree of sporulation were found against *Azadirachta indica*, *Annona squamosa*, *Nerium indicum*, *Jatropha curcas*, and *Carica papaya*. The dry mycelial weight were 0.025 mg were for *Azadirachta indica*, 0.075 mg for *Annona squamosa*, 0.096 mg were *Nerium indicum*, *Jatropha curcas*, 0.070 mg were, 0.106 mg for *Carica papaya*, and

The highest PDI were 78.814 in *Azadirachta indica* followed by *Jatropha curcas* 40.678, *Annona squamosa*, 36.441 and least count in *Nerium indicum* 18.644 and 10.169, in *Carica papaya*

Similar types of results were recorded by, El-Said (2001), Amir et al., (2011). Ahmed et al. (2009), Baig, (2005). Kakde and Chavan (2011), Rathod (2011), Sinha, S. (1965). Sundararamoorthy et al. (2014) reported that using hot water neem leaves extract (60% w/l) completely inhibited the mycelial growth of *Colletotrichum capsici*. Anandraj (1996) used 10 plant extracts against *Colletotrichum capsici* among these *Azadirachta indica* and *Lantana camera* inhibited the mycelial growth. Hegde (2002) also reported that neem extract showed best inhibitory effect against *Colletotrichum capsici*. Gupta (2002) used 6 plant extracts against *Colletotrichum capsici* among these *Azadirachta indica* and *Allium sativum* were found to be inhibitory. Asha shivpuri, et al. (1997) observed that effect of 10 ethanol plant extracts out of the 10 plant extracts they observed *Azadirachta indica*, *Ocimum sanctum* were most effective against *Colletotrichum capsici*.

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EFFECTS OF GIBBERELIC ACID ON GROWTH AND DEVELOPMENT OF *MOMORDICA CYMBALARIA* FENZL.

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Abstract

The study aimed to determine the effect of GA3 on the flowering and fruit yield of *Momordica cymbalaria*, to determine the best concentration to bring high yield for the tested crop, and to determine the profitability of growing *Momordica cymbalaria* Fenzl using GA3. *Momordica cymbalaria* Fenzl. belongs to the family Cucurbitaceae. It is an herbaceous perennial climbing plant. This plant has many folk claims. In horticultural crops, plant growth regulators (PGRs) are widely used to increase fruit number, set, and size, hence improving plant growth and output. plant growth regulators such as promoters, inhibitors, and retardants play a crucial role in regulating the internal mechanisms of plant growth. Five concentrations (0, 20 ppm, 40 ppm, 60 ppm, 80 ppm, and 100 ppm) of GA3 were used. Applying GA3 has a positive impact on the number of flowers, number of fruits per cluster, and fruit yield. Fruit production, number of flowers per cluster, and number of fruits per cluster all increase with the application of GA3. Higher concentrations of GA3 at 80 and 100 ppm developed greater resilience in flowers. The use of plant growth regulators (PGRs) might be a useful alternative to increase crop production.

Keywords: GA3, *Momordica cymbalaria*.

Introduction:

The *Momordica cymbalaria* plant belongs to family Cucurbitaceae. It is commonly known as melon, gourd, or squash [1]. Eduard Fenzl introduced this name to this monoecious Cucurbitaceae family member in 1859. *Momordica cymbalaria* is a perennial climbing plant available at some point in the Kharif & Rabi season is defined in the states of Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, and Tamil Nadu in South India. In Karnataka it is called Karchikai, in Tamil, it is Athalakkai, in Telugu it is Kasarakai and in Marathi it is Kadavanchi. Crops are not grown by farmers like regular crops but it can grow as wild vegetable. The edible part of this species is the fruit, rich in nutritional value [11]. The fruit of the *Momordica cymbalaria* plant contains high levels of nutrients such as calcium, potassium, and vitamin C, and above all this species is rich in fiber [5,6]. Due to a lack of understanding of nutritional aspects, it is not grown commercially. Therefore, it is considered an underutilized plant [7,9].

Phytohormones increase the quick changes in physiological and biochemical characteristics and raise agricultural productivity [12,14]. Gibberellic acid (GA3) is a molecule that resembles gibberellins and is considered a phytohormone [13]. The pathogenic fungus *Gibberella fujikuroi*, from which they were initially isolated, is the source of their name. Plant growth regulators are artificially produced chemicals that act at extremely low levels at locations other than the site of synthesis to influence various physiological processes that regulate growth and development [12,23]. They are collections of small molecules generated from various structurally unrelated key metabolic processes. It has been found that the practical and reasonable use of plant growth regulators (PGRs) is one of the ways to increase the yield of *Momordica cymbalaria* by producing female flowers and reducing male flowers. Since there is little information on the effect of growth regulators on the sex expression and productivity of *Momordica cymbalaria*.

The present study was carried out to find plant growth regulators at the right dosage suitable to increase the fruit yield potential of *Momordica cymbalaria*. Yield is the final economic product of a crop, determined mainly by fruit weight and the number of fruits per plant. Most yield components have a direct effect on fruit yield. Under good crop management, the highest levels of yield can be achieved through a range of improved practices, including the use of plant growth regulators. The purpose of the experiment is to study the effect of 5 gibberellic acid spray

concentrations i.e. 0, GA3 @ 20 ppm GA3 @ 40 ppm GA3 @ 60 ppm GA3 @ 80 ppm, GA3 @ 100 ppm on the performance of *Momordica cymbalaria*.

Materials and Method

Plant material was collected from Baramati and Indapur Tahsil in the Pune district, and an experiment was carried out under natural conditions in the Botanical Garden of Vidya Pratishthan's Supe College of Arts, Science, and Commerce, Supe, Tal Baramati, Dist-Pune. The first treatment dose was given from June to September and 2nd treatment dose was given from October to January in 2023. To prepare GA3 solution by weighing GA3 to 20 mg (concentration 20 ppm), 40 mg (concentration 40 ppm), 60 mg (concentration 60 ppm), and 80 mg (concentration 80 ppm). Each GA3 was dissolved by adding 70% to 70 ml of the 1000 ml vial and then adding a stream of water to a final volume of 1000 ml. [12]. GA3 solutions were sprayed into each group repeatedly with different concentrations depending on the treatment. All pots are labelled according to treatment. The application of the GA3 solutions were performed three times. The first spraying is done before blooming on each flower using a hand sprayer 3 times per spray. [13,16] Hand held compressed air sprayers are used for spraying in the evening [16,21]. Control plants were sprayed with distilled water. A statistical analysis of variance was performed on the data collected throughout the experiment.

Observations:

In natural conditions, *Momordica cymbalaria* flower and fruit output responded favourably to GA3. The number of fruits per plant and the number of staminate blooms were both significantly impacted by this PGR. When GA3 was given to plants, their yield was noticeably higher than when it wasn't. Utilizing GA3 at 80 ppm and 100 ppm, higher crop production was achieved. Yet, there were notable variations as the concentration escalated to 20 ppm and 100 ppm. Whether GA3 was applied or not was profitable, yielding a return of greater than 100%. However, employing GA3 produced greater returns, especially at concentrations of 100 ppm.



Fig:1 *Momordica cymbalaria* Plant (Flower, Fruits, Seeds Tubers)

Table 1. Observation table showing physical and chemical characteristics of soil used for the experiment

Properties	1 st Set	2 nd Set
Texture	Regur soil	Regur soil
pH	8.09	7.95
Electrical conductivity ($\mu\text{S cm}^{-1}$)	0.027	0.010

Table 2: Observation table 02 showing GA3 Dose treatment details

Treatments	1st Set June to September	2 nd Set October to December
T0	Control	Control
T1	GA3 @ 20 ppm	GA3 @ 20 ppm
T2	GA3 @ 40 ppm	GA3 @ 40 ppm
T3	GA3 @ 60 ppm	GA3 @ 60 ppm
T4	GA3 @ 80 ppm	GA3 @ 80 ppm
T5	GA3 @ 100 ppm	GA3 @ 100 ppm

Fig:2 Five different concentrations of GA3 effect on *Momordica cymbalaria*



Table no 3. Observation table 03 showing Plants Height in CM

Plants' Height in CM			
Dose TreatmentGA3	Set 1	Set-2	Mean
Control	100.1	110.9	105.50
GA3 @ 20 ppm	120.3	143.6	131.95
GA3 @ 40 ppm	140.6	158.4	149.50
GA3 @ 60 ppm	167.9	189.3	178.60
GA3 @ 80 ppm	225.2	241.2	233.20
GA3 @ 100 ppm	295.8	320.5	308.15

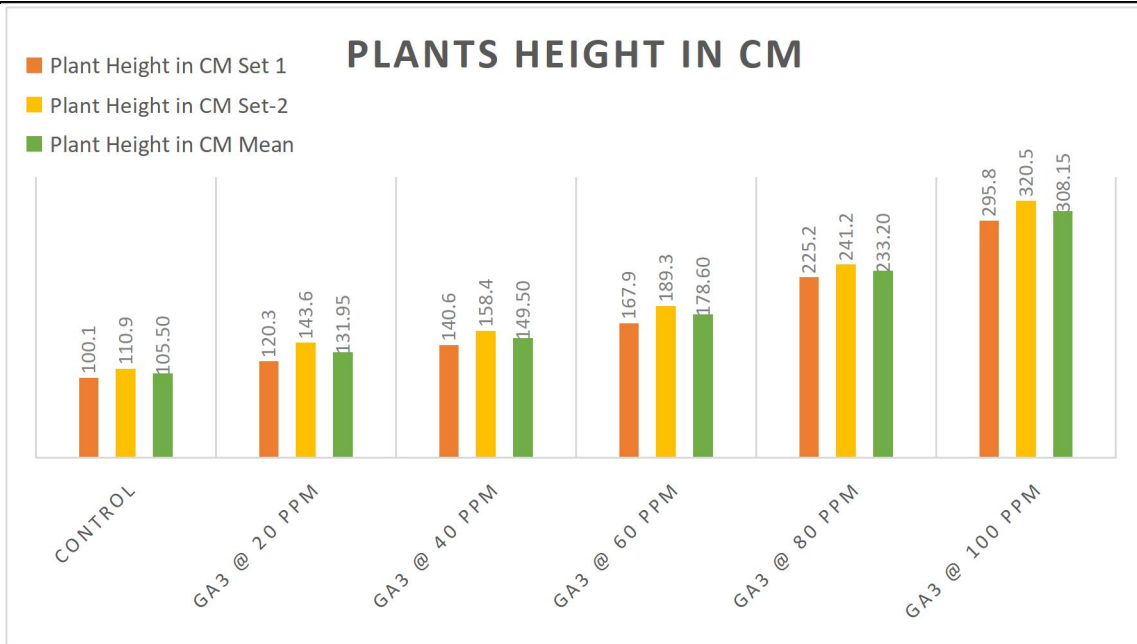
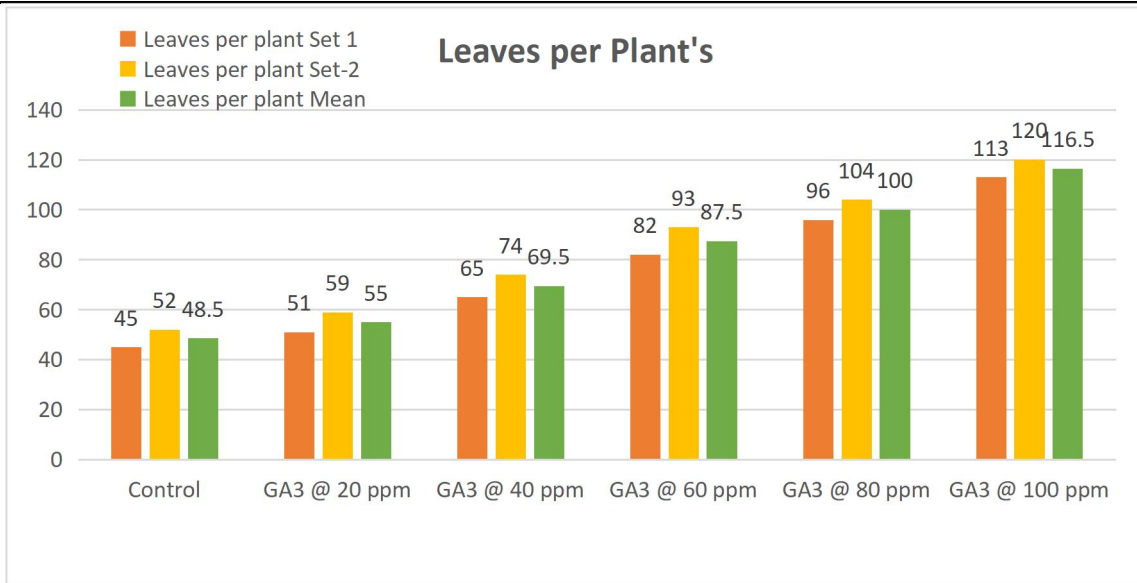


Table no 4. Observation table showing leaves per Plant

Leaves per Plant's			
Dose TreatmentGA3	Set 1	Set-2	Mean
Control	45	52	48.5
GA3 @ 20 ppm	51	59	55
GA3 @ 40 ppm	65	74	69.5
GA3 @ 60 ppm	82	93	87.5
GA3 @ 80 ppm	96	104	100
GA3 @ 100 ppm	113	120	116.5



Flowers per Plants			
Dose TreatmentGA3	Set 1	Set-2	Mean
Control	12	10	11
GA3 @ 20 ppm	16	19	17.5
GA3 @ 40 ppm	23	24	23.5
GA3 @ 60 ppm	30	31	30.5
GA3 @ 80 ppm	38	42	40
GA3 @ 100 ppm	47	49	48

Table no. 05 Observation Table Showing number of Flowers per Plant

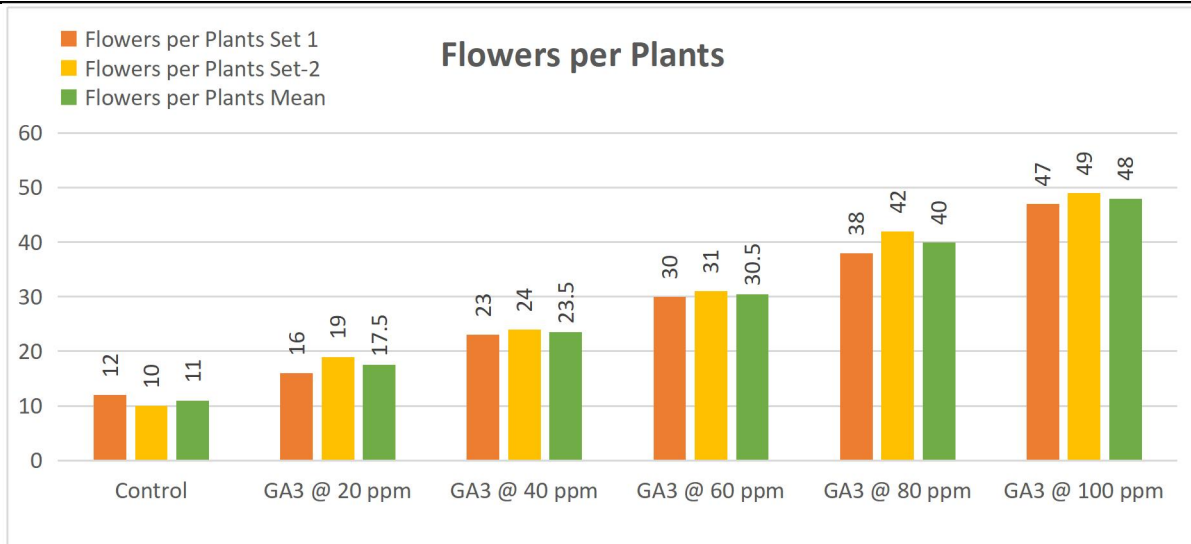
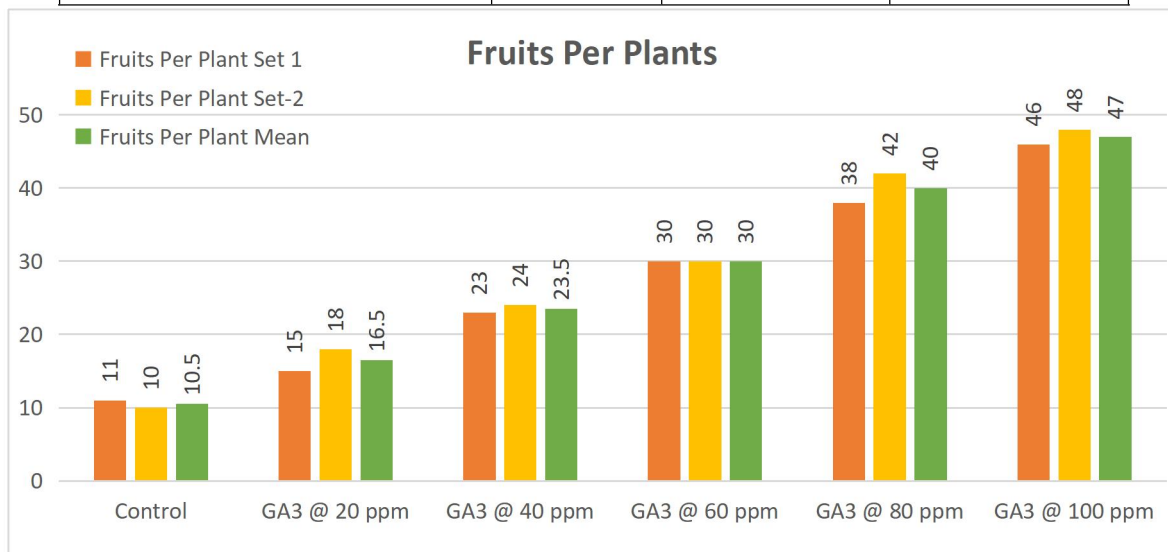


Table no. 06 Observation Table Showing number of Fruits per Plant

Fruits Per Plants			
Dose TreatmentGA3	Set 1	Set-2	Mean
Control	11	10	10.5
GA3 @ 20 ppm	15	18	16.5
GA3 @ 40 ppm	23	24	23.5
GA3 @ 60 ppm	30	30	30
GA3 @ 80 ppm	38	42	40
GA3 @ 100 ppm	46	48	47



Results and Discussions:

The data show that after comparing plants treated with five different concentrations of gibberellic acid to control plants, changes were also observed in the plants as the concentration increased [20,21,23]. These studies showed that increasing concentration increases the number of fruits on plants. Growth parameters such as plant height, number of leaves, number of flowers, and number of fruits increase as the concentration increases as compared to control plants. The rate of increase in plant height with increasing GA3 concentration appears to be non-linear. [18,20] While lower concentrations (20 and 40 ppm) led to moderate increases, higher concentrations (60, 80, and 100 ppm) showed progressively larger increases. The data suggests that for maximizing plant height in *Momordica cymbalaria*, GA3 concentrations between 60 and 80 ppm may be optimal. However, further research with a wider range of GA3 concentrations is needed to confirm this and determine the most effective dose for specific applications.

Acknowledgment

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A REVIEW ON THE GREEN SYNTHESIS OF DIAZEPAM BY CONTINUOUS FLOW CHEMISTRY

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Abstract

“Flow chemistry” is an innovative and rapid emerging technology of chemistry. Major advantages of flow chemistry involves faster and safer reactions, with minimum space and waste, more environmental friendly and of better quality products. Continuous flow processing has been better option to batch process due to the reasons including lower reaction volumes, better temperature control, and ability to accommodate higher pressures without risk. It has emerged as a tool for increased automation in manufacturing operations thereby lowering Operating Expenditure and leading to green chemistry. This review highlights the significant role of continuous flow in the synthesis of Active Pharmaceutical Intermediates-Diazepam in Pharmaceutical Industry.

Keywords: flow chemistry, amidation, cyclization, E-factor, diazepam

Introduction:

Diazepam first marketed as Valium by Hoffmann-La Roche, is a benzodiazepine drug. It is commonly used to treat a wide range of conditions, including anxiety, panic attacks, insomnia, seizures, muscle spasms, restless legs syndrome, alcohol withdrawal syndrome, benzodiazepine withdrawal syndrome, opiate withdrawal syndrome, and Meniere’s disease (Nicholas E Calcaterra, 2014). Diazepam is a core medicine in the World Health Organization's Essential Drugs List, the minimum medical needs for a basic health-care system. Diazepam, first synthesized by Leo Sternbach, has been one of the most frequently prescribed medications in the world since its launch in 1963 (Sternbach, 1961) . U.S. Food and Drug Administration (FDA) encouraging the pharmaceutical industry to pursue continuous manufacturing (CM), by focusing the attention on supply chain issue to enable greater responsiveness, robustness, and higher product quality compared to batch processes (Burcham, 2018) . Recently Diazepam being synthesised by continuous flow (Gutmann, Cantillo, & Kappe, 2015) techniques. It offers faster, cheaper, and more flexible production of Diazepam with a significantly higher level of quality assurance. Flow synthesis minimises the time for synthesis, purification and formulation of drug substances and leading towards the more sustainable alternative to the traditional synthesis (Beach ES, 2009).

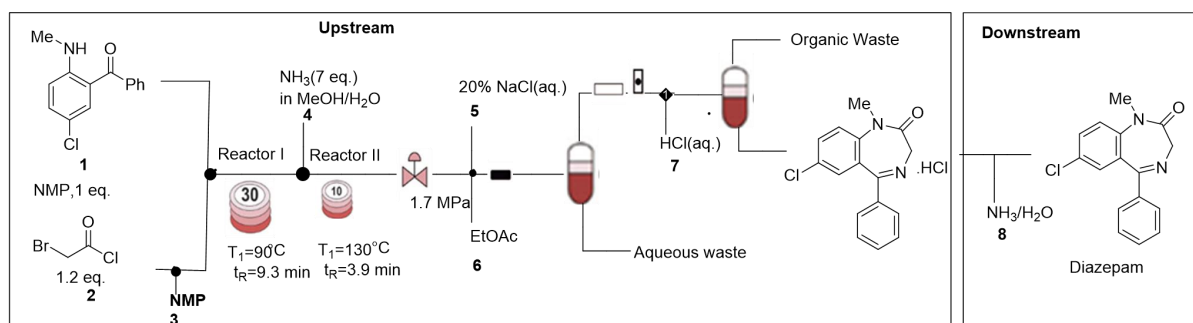


Contribution to Green synthesis by Flow chemistry of Diazepam

Green Synthesis of Diazepam:

Scheme 1 As shown in the scheme 1 Adamo (Adamo, 2016) and colleagues, have developed a continuous manufacturing platform that combines both synthesis and final drug product formulation into a single, highly compact unit. As shown in Fig. A, the crude API was synthesized in a two-step upstream sequence initiated with

the acylation of 5-chloro-2-(methylamino) benzophenone in NMP (1) with neat bromoacetyl chloride (2) premixed inline with a stream of NMP (3) followed by an intramolecular cyclization reaction upon addition of a stream of NH₃ in MeOH/H₂O (4), then furnished the target molecule. The application of elevated pressure (1.7 MPa) and temperatures (90°C and 130°C) in this sequence enabled liquid flow and complete conversion of the starting materials in only 13 min compared to 24 hours of batch operation at room temperature. After a continuous extraction, the organic stream was then passed through the activated charcoal cartridge to remove the dark colored dimer and trimer side-products. After precipitation and recrystallization in the downstream section, the dried diazepam crystals (94% yield) had a purity level that met USP standards. Resuspending in ethanol in the formulation tank then provided a concentrate. At a dosage concentration of 1mg/ml (one dose is 5ml at 1mg/ml) this system can produce ~3000 doses per day.



Scheme-1

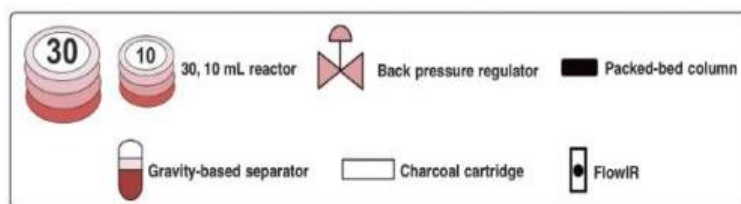
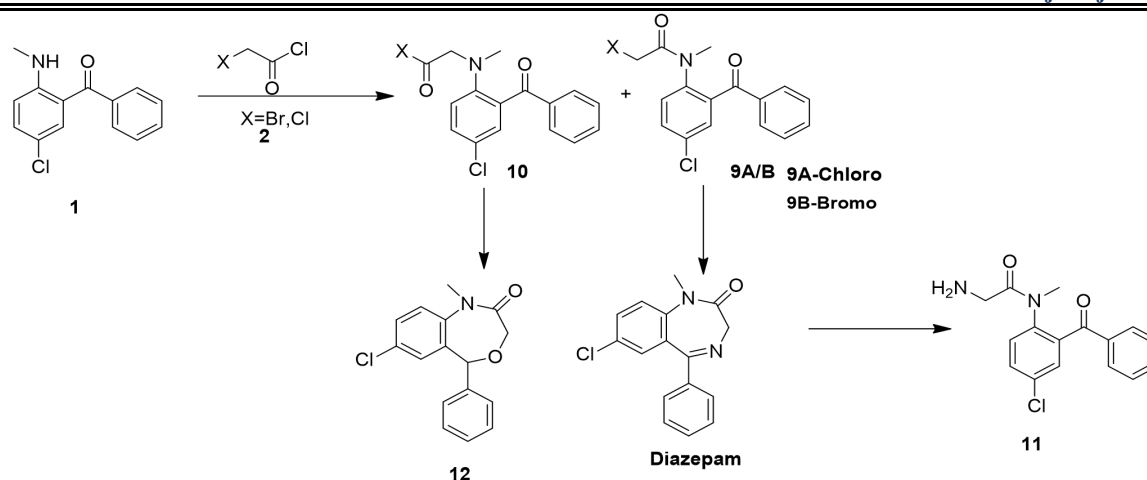


Figure. A

Scheme 2. As shown in the scheme 2 Ewan (Ewan, 2017) and colleagues carried out the screening for solvent, residence time, and concentration for both the steps. As found toluene was the better solvent for N-acylation in first step and NMP for cyclization step. On the basis of these observations, they were able to develop a more complete understanding of the possible outcomes of each synthetic step of our synthetic route to diazepam. These possible reaction pathways are summarized in **Scheme 2**. Guided by this knowledge from screening, they next attempted to optimize the synthesis of diazepam in two continuous steps. They used a two-chip reactor system to allow for finer control of temperature and residence time in each chip. The first chip combined 5-chloro-2-(methylamino)benzophenone and haloacetyl chloride in a 1:2 ratio, respectively (**Figure B**, R1 and R2). This study, using the diazepam synthesis as a model reaction, demonstrates the ability of MS analysis and droplet reactions (Huang, Li, Ducan, Ouyang, & Cooks, 2011, 50(11)) to guide microfluidic synthesis. MS can be used not only as an analytical tool but can also serve as a quick way to predict reactivity and guide microscale synthesis. The use of spray and Leidenfrost droplet reactions as a screening step to guide the larger scale microfluidic screening proved a useful tool in predicting the overall outcome of a reaction. Further, they have demonstrated the continuous synthesis of diazepam in two steps in a microfluidic flow reactor as shown in **Figure B**. Their synthesis features the use of a mixed solvent system, as well as two microfluidic chips in sequence, allowing for optimized temperature control at each step. Additionally, they have identified previously unknown reaction pathways. These results showcase the possibility for microfluidic synthesis coupled with rapid ESI-MS analysis to identify previously unknown reaction pathways and optimize continuous synthesis of APIs



Scheme-2

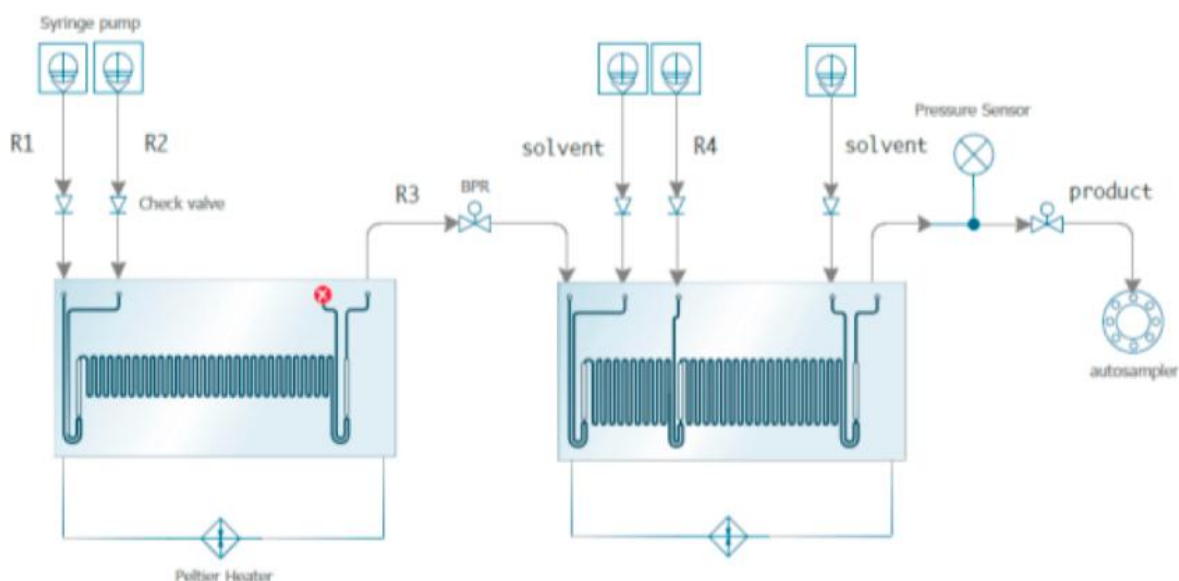


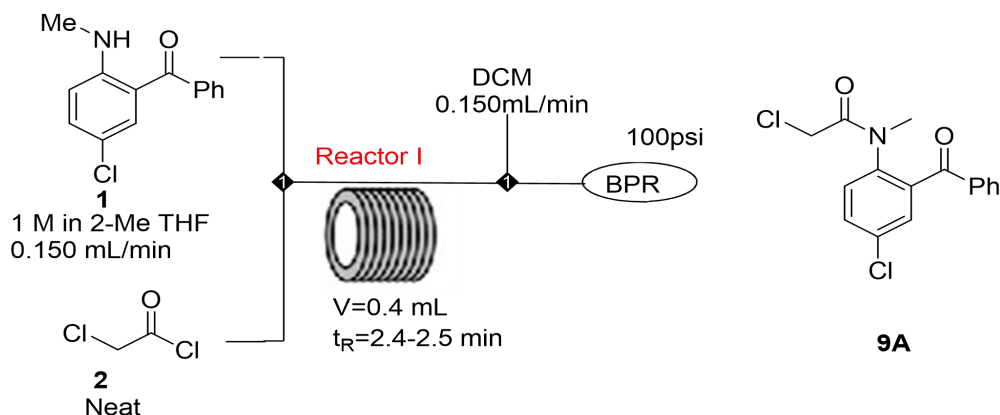
Figure. B Reactor schematic for continuous diazepam synthesis.

Scheme 3 & 4 As shown in scheme 3 & 4, Bedard (Bédard, 2017) and colleagues primarily focused on minimizing the E-factor (Sheldon, 2007) and targeted to decrease it below 25. Solvent is often the primary contributor to E-factor, and after screening they found 2-MeTHF as the better solvent for both steps. Simultaneously they have optimized the reaction condition considering the concentration, temperature, residence time, flow rate, ammonia source and concentration.

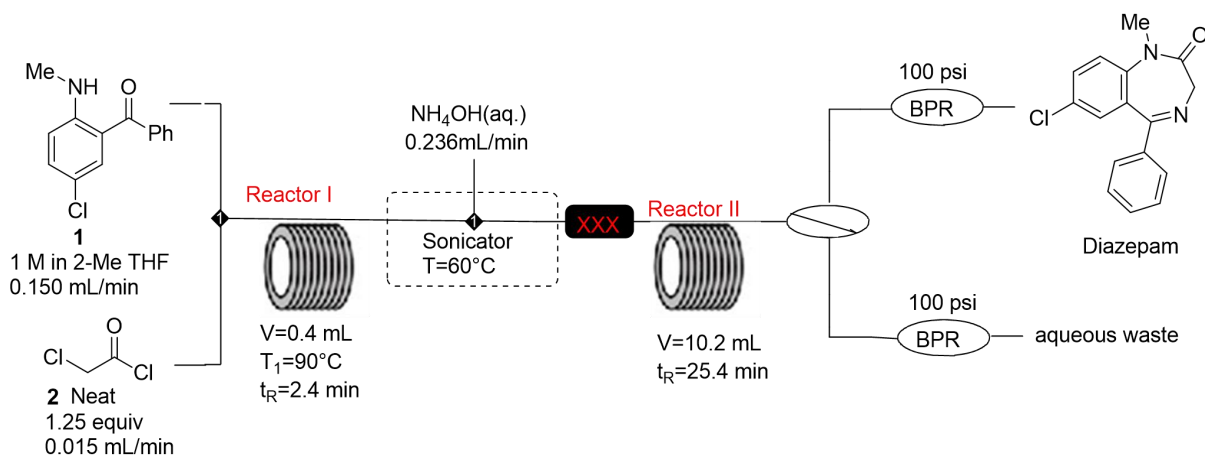
The E-factor for the synthesis of diazepam 1 was decreased by 4-fold (from 36 down to 9) and now resides in the range of fine chemicals processes. A key point contributing to this success was the simplified setup achievable upon using 2-MeTHF as both the reaction and extraction solvent. They have synthesized Diazepam with the following procedure.

Diazepam : A solution of 5-chloro-2-(methylamino)Benzophenone (1 M) and dodecane (0.1 M) in 2-MeTHF was loaded into a SS syringe and pumped via syringe pump into the system at 0.15 mL/min and neat chloroacetyl chloride was loaded into a SS syringe and pumped via syringe pump at 0.015 mL/min. The streams met in a T-mixer (0.0200" ID) before entering a reactor made from 0.0400" ID PFA tubing (0.4 mL volume) preheated to 90°C in an oil bath. Upon exiting the reactor, the stream was met with aqueous NH₄OH solution (28–30 wt. % diluted in water in a 9:1 volumetric ratio) pumped at 0.234 mL/min via syring pump in a sideways T-mixer

(0.0400" ID) that was sitting in a sonication bath preheated to 60°C. Upon exiting the sonicating bath, the stream entered the second reactor made of 0.0400" ID PFA tubing (10.2 mL volume) that was preheated to 100°C in an oil bath. An in-line separation was then performed using a membrane separator containing a 1µm pore PTFE microfiltration membrane. Two BPRs set to 100 psi were installed at the end of the reactor on each side of the membrane separator. The entire system was equilibrated for 1 h, and product collection lasted for 1 h. The solution collected contained diazepam with a 49% calibrated yield determined by GC analysis with dodecane as the internal standard. This solution was then passed through a packed-bed of activated charcoal at 0.15 mL/min, then a sample (0.90 mL) was collected and diazepam was isolated by automated flash chromatography ($R_f = 0.19$ in 30% EtOAc/hexane) as a colorless solid (0.103 g, 40% yield). $^1\text{H NMR}$ and $^{13}\text{C NMR}$ in CDCl_3 are in accordance with reported literature values.



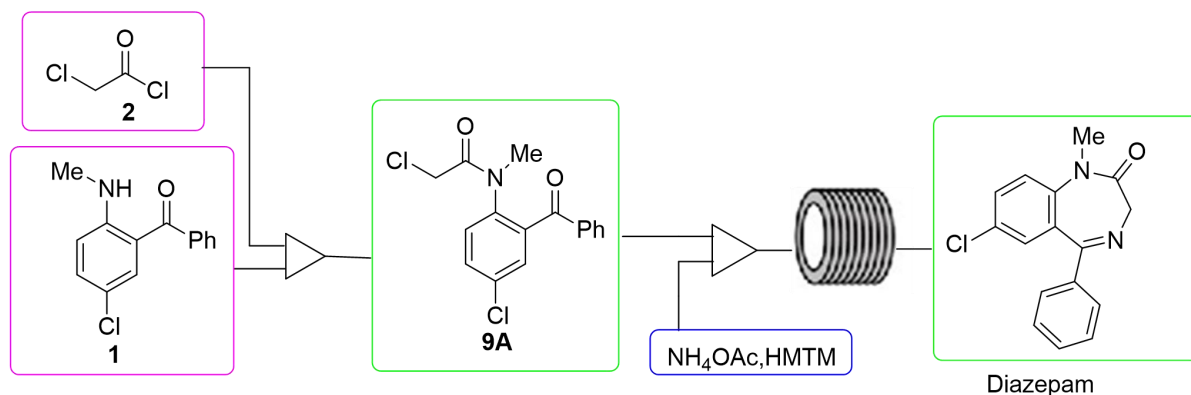
Scheme – 3 Optimization of Amidation



Scheme-4 Cyclization optimization to produce diazepam

Scheme 5&6 As shown in scheme 5 & 6, Nathan Collins (Collins, Malerich, & Krieger, 2020) and colleagues used a very specific and an automated multistep chemical synthesizer, AutoSyn, that makes milligram to gram-scale amounts of virtually any drug-like small molecule in a matter of hours and demonstrate its versatility with the synthesis of ten known drugs. From this starting point, they sought to build an automated, multistep synthesis system capable of synthesizing virtually any organic small molecule accessible by standard laboratory reactions. AutoSyn is an automated synthesis system incorporating four primary components: (i) a fixed configuration synthesis platform comprised of selectable flow chemistry unit operation modules (UOMs) and a reagent delivery system; (ii) a platform for in-/on-line analytical monitoring, control, and data capture; (iii) an integrated software control system that automates end-to-end process operation and monitoring; and (iv) a synthetic route mapping tool to map routes to multistep flow paths with control parameters, creating a complete digital synthesis protocol. They synthesized the Diazepam by two approaches as:

Two-step synthesis of diazepam A pump was primed with a solution of 5-chloro-2-(methylamino)benzophenone (**1**, 0.4 M in toluene), and a second pump was primed with a solution of chloroacetyl chloride (**2**, 0.4 M in toluene). These solutions were pumped (0.06 mL/min each) into a T-mixer and through a PFA reactor (1.35 mL, residence time of 11.3 min) at rt. This reaction mixture was met at a T-mixer with a solution of ammonium acetate and hexamethylenetetramine (0.30 M each in methanol, 0.28 mL/min). The combined stream flowed through a Hastelloy reactor (10 mL, 25 min residence time) heated to 120 °C. Reactor effluent was directed to LC-MS for online analysis. Fractions containing diazepam were collected over 2.5 h and subjected to aqueous work-up individually. Fractions were diluted with EtOAc and washed with water (2x) and brine. The organic layer was dried with Na₂SO₄, filtered, and concentrated. Total diazepam collected was 983 mg in 81% purity, as judged by NMR.

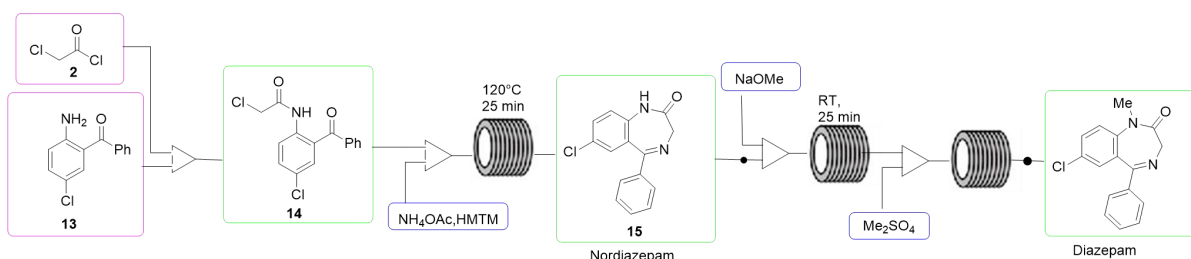


Scheme-5

Two step flow synthesis of diazepam. 2 steps; production rate: 393 mg / h; yield: 96%;
 purity: 81%; time to product elution: 1.25 h; product collection window: 2.5 h.

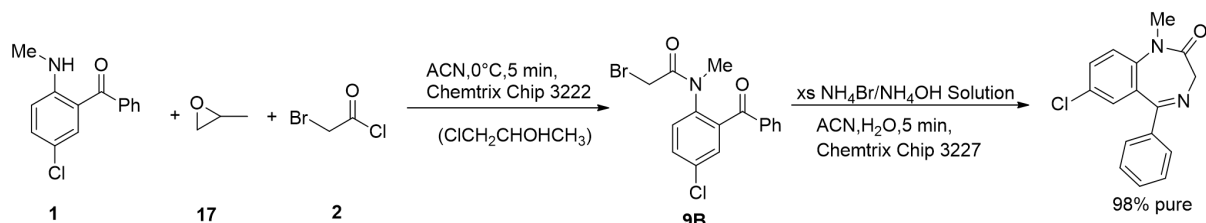
Four-step synthesis of diazepam

2-Amino-5-chlorobenzophenone (**13**, 0.4 M in toluene), and chloroacetyl chloride (**2**, 0.4 M in toluene) were pumped (0.06 mL/min each) into a T-mixer and through a PFA reactor (1.35 mL, residence time 11.3 min) at rt. This reaction mixture was met at a T-mixer with a solution of ammonium acetate and hexamethylenetetramine (0.30 M each in methanol, 0.28 mL/min). The combined stream flowed through a Hastelloy reactor (10 mL, 25 min residence time) heated to 120 °C. The continuing reaction mixture was met at a T-mixer with NaOMe (0.92 M in methanol, 0.40 mL/min). The combined stream flowed through a PFA reactor (1 mL, 1 min residence time) at 30 °C. To the reactor effluent was mixed with iodomethane (1.4 M in methanol, 0.6 mL/min) and flowed through a PFA reactor (10 mL, 5.3 min residence time) heated at 75 °C. Reactor effluent was directed to LC-MS for online analysis. Fractions of the final reaction mixture were collected, and those containing diazepam were subjected to aqueous work-up individually. Fractions were diluted with EtOAc and washed with water (2x) and brine. The organic layer was dried with Na₂SO₄, filtered, and concentrated. Total diazepam collected was 161 mg in 84% purity, as judged by NMR.

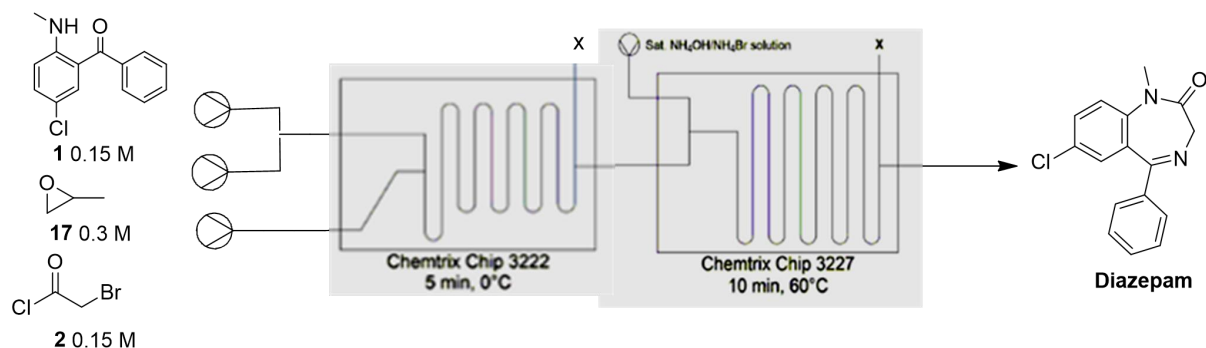


Scheme- 6 Four step flow synthesis of diazepam. 4 steps; production rate: 322 mg / h; yield: 78%;purity: 84%;
 time to product elution: 2 h; product collection window: 0.5 h.

Scheme 7A & 7B: Robert Nicholas (Nicholas, 2022) and colleagues targeted to improve upon the published flow syntheses for diazepam as Ewan *et al.* and Collins *et al.* both report high yields; however, their impurity profiles indicate that intermediate did not fully react and was present in their final products. Rogers *et al.* (Rogers, 2020) noted that the downstream liquid-liquid extraction work-up led to yield deterioration since the product adsorbed to the membranes of the in-line phase separators. As amination reactions in flow are commonly performed with pressurized NH₃ gas or 7N NH₃ in MeOH at high temperatures. Ammonia vapours could escape from a high pressure reactor in the event of a valve or line failure, thus posing a significant manufacturing safety risk upon process upscaling. With these considerations in mind, Robert Nicholas and colleagues focused to improve upon the reported methods by optimizing parameters such as retention time, temperature, solvent, and ammonia source using Chemtrix microfluidic chip reactors. They also evaluated methods for increasing reaction rates and improving chemoselectivity. The inclusion of propylene oxide as an HCl scavenger in Stage 1 improved the conversion of 1 into desired intermediate instead of the less reactive side product 3b. They found that the N-acylation was fast at 0°C, such that the majority of starting material 1 is consumed within 1 min. They have mentioned that saturated solutions of NH₄Br dissolved in 30% NH₄OH were able to convert 9B into Diazepam using moderate temperatures without a back pressure regulator (BPR) (Figure 1C). Use of the NH₄Br/NH₄OH blend produces NH₃ 'on demand' via the common ion effect, thus obviating the need for a BPR that could serve as a process failure point. As a result of these efforts, we were able to develop a more efficient and simplified telescoped process that fully converts 1 into 91% pure diazepam in ~96% yield before final recrystallization.

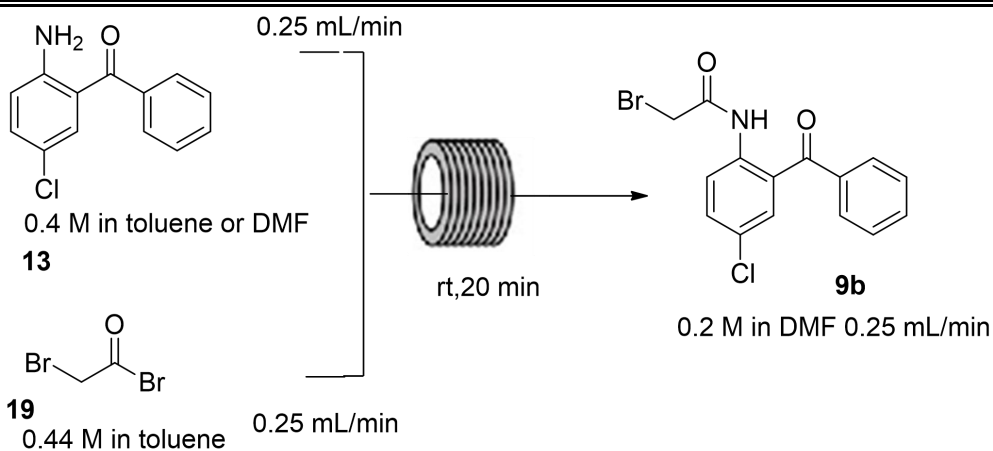


Scheme 7A

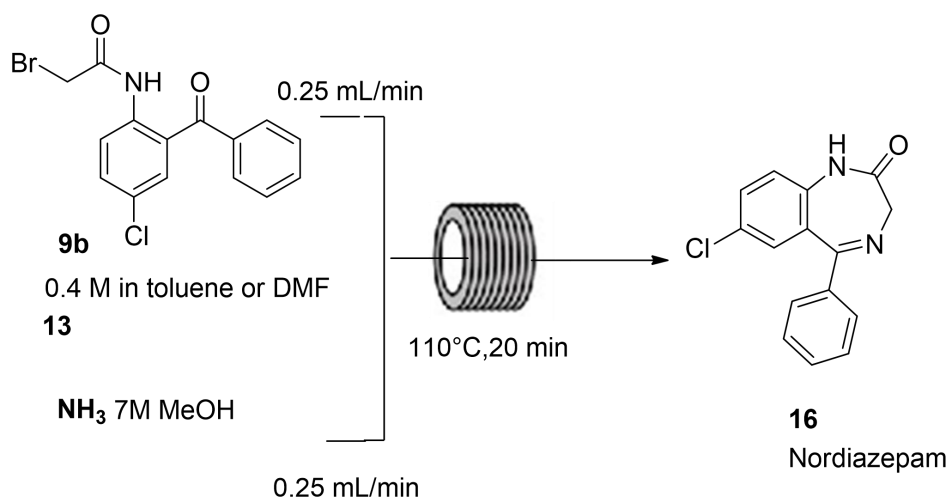


Scheme-7B

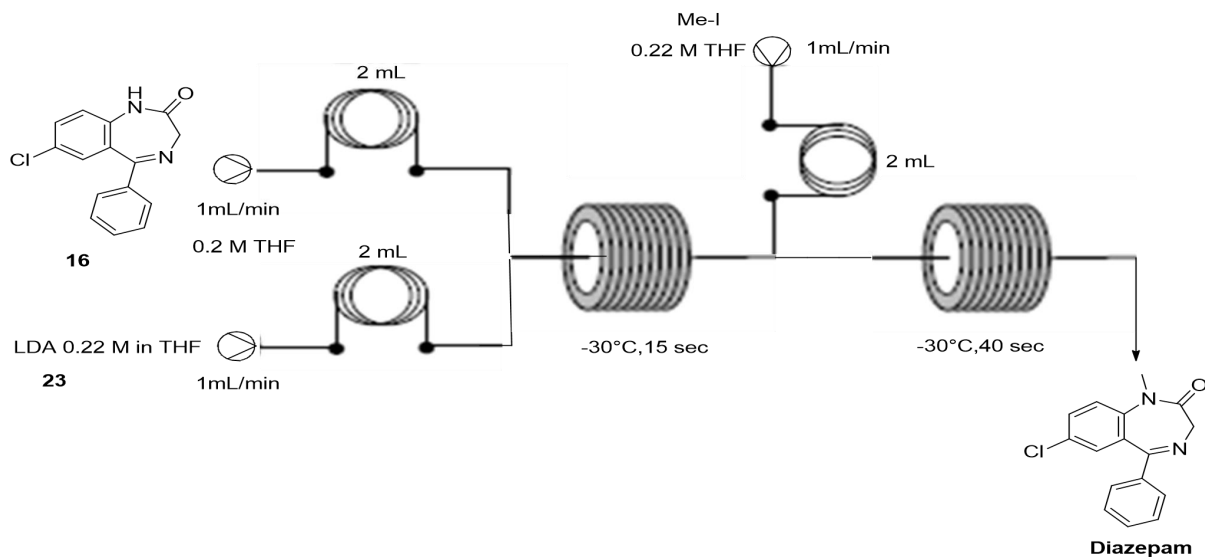
Scheme 8A, 8B & 8C Maria Ivanova (Ivanova, 2023) and colleagues focused on efficient the *N*-alkylation of the obtained heterocycles including Diazepam. They applied various combinations as Me₂SO₄/K₂CO₃ neat, Me₂SO₄/*t*-BuOK/CH₃CN, MeOTf, MeO+BF₄⁻, Me₂SO₄ neat, NaH/methylating agent, LDA/methylating agent, *n*BuLi/methylating agent at different temperatures, ratios and solvents. The results were ranged from bad to moderately good, especially, LDA/MeI was remarkable at low temperatures. They synthesised the diazepam as shown in scheme 8A & 8B with the process mentioned below:



Scheme -8A Amide Formation



Scheme-8B: cyclization



Scheme-8C-N-Methylation

The first step of the synthesis consisted in the formation of *N*-(2-Benzoylphenyl)-2- bromoacetamides **9b**, directly starting from the unprotected 2-amino-benzophenone **13** (Scheme 8A). The selected compound was diluted in toluene (inlet 1) and then was mixed with a 0.44 M solution of bromoacetyl bromide **19** in toluene (inlet 2), the resulting solution passed through a 10 mL PTFE reactor afterwards. The first drop of the solution was furnished after 20 min, while it takes 2 hours to complete this reaction in batch. The product **9b** was formed in 94% yield, calculated on 4 mmol (1.96 g/h, 0.196 kg/h/L) (Scheme 8A). They have done the cyclization step with commercially available 7 M solution of NH₃ in MeOH. The total flow rate of 0.5 mL/min (0.25 mL/min + 0.25 mL/min) was the most beneficial (*t*_R = 20 min). Dissolved the substrate with 0.2 M in DMF. The reaction was performed on 4 mmol scale and the product **16** was obtained in a very good 75% yield (Scheme 8B).

Final step - N-alkylation benzodiazepine **16** in dry THF (0.2 M), LDA **23** freshly prepared and MeI, both at 0.22 M in dry THF. The two first solutions were simultaneously passed through two 2 mL pre-cooling loops at -35 °C both at a 1 mL/min flow rate and were combined within a T-mixer. Then, the flow passed a 0.5 mL reactor at -35 °C, and then it was combined with a flow of the electrophile, which was pre-cooled as well at -35 °C by passing through a 2 mL pre-cooling loop at 1 mL/min. Eventually the combined solution was directed in a 11 mL reactor. The total residence time of this reaction came up to (15 sec + 3 min 40 sec) 3 min 55 sec. The solution was finally quenched with the solution of ammonia chloride, extracted with EtOAc and after a simple column, the product **10a** was obtained in 64% yield, based on 0.8 mmol scale.

Summary Table of Author's with Yield and Purity

Author	Reactor 1 Temp (°C)	Reactor 1 R _T (min)	Acetophenone Conc.(M)	- X	Acid Chloride(Eq)	Reactor 2 Temp (°C)	Reactor 2 R _T (min)	Ammonia Analogue	Reaction Solvent	BP R (PSI)	Reported Yield	Crude Purity
Adamo et al.	90	9.3	1	- Br	1.2	130	3.9	7N NH ₃	NMP, MeOH, H ₂ O	250	78%	Not Reported
Ewan et al.	75	2	0.1	- Br	2	120	0.64	7N NH ₃	Toluene, MeOH	N/A	100%	70%
Bedard et al.	80	2.4	1	- Cl	1.25	100	25.4	NH ₄ OH	2-Me-THF, H ₂ O	100	55%	Not Reported
Collins et al.	20	11.3	0.4	- Cl	1	120	25	NH ₄ OAc/H examine	Toluene, MeOH	N/A	96%	81%
Nicholas et al.	0	5	0.15	- Br	1	60	10	NH ₄ Br/NH ₄ OH	ACN, H ₂ O	N/A	96%	91%
Maria et al.	RT	20	0.4	- Br	Not Mentioned	110	20	7N NH ₄ OH in MeOH	Toluene, THF, DMF, MeOH	N/A	85%	Not Reported

3. Conclusion

This review gives brief knowledge of synthesis of diazepam through continuous flow chemistry. Synthesis of the drug substances and products in a single platform through flow chemistry leads higher safety, automation, high throughput, productivity and within minimum timeframe. Continuous manufacturing is one such strategy for meeting the FDA's vision for Pharmaceutical Quality. Flow chemistry is a sustainable-green approach to batch process due to reduced the E-factor. The major challenge to flow chemistry is scale up issue, each step often requires a different reactor – a cost and scale-up challenge. Batch reactors are more versatile than flow reactors; a single batch reactor can be used for many different reactions, while flow reactors typically need to be designed and sized for a specific process.

Acknowledgements

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Conflict of Interest

The authors declare no conflict of interest.

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CHALLENGES AND PROSPECTS IN ORGANIC FARMING

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Introduction

As the world changes rapidly at an increasing speed and as the planet becomes more and more dominated by it and struggle started in between human and ecosystem. Agriculture is fundamental human activity and crucial for survival on Earth. Agricultural practices changed due to human development.

In India green revolution come in 1960 by Late Dr. Swaminathan, leader of India's green revolution, agricultural scientist who introduced crops giving high yield to end famine in India. It was need of nation. From this period agriculture of India converted to modern industrial system by the adoption of new technology, such as high yielding crop variety seeds, mechanized farm tools, irrigation facilities, use of pesticides and fertilizers. One problem overcome and new one born, which today become health problem in world. Organic farming emerged in several countries as the reaction to the negative consequences associated with industrial agriculture. Organic farming builds on agro-ecological knowledge and has a social agenda, that farmers should have a reasonable income and consumer should have safe, high-quality food. Organic farming is now recognized as one way to achieve sustainable development of agriculture. In the 1990s, policy makers in European national governments and in the EU granted substantial financial support to organic farms (Lampkin,1990). In addition, agri-business discovered the potential in organic products and organic market has emerged.

Need of green revolution

In 1960 India's population was approximately 44 corer only. Due to uncontrolled population, we are today at 144 corer population. It is a population bomb exploded due to different regions. It means that increasing population of nation is a base of all problems. So strict rules should be made by government to control population. To complete the need of food this population, yield is required and in the affinity of high yield, farmers are going to use excess fertilizers and pesticides etc. Here input of farming is increased, yield also increased but health of soil as well as human beings affected. Day by day crop cultivation land is decreasing due to acquirement by peoples for residency purpose. Such excess use of fertilizers and pesticides effect on health of soil, water and environment. So, with control of population, we should move to organic farming.

Need of organic farming

Organic farming is one of the beneficial method in the agriculture system where there is no use of chemical products. Excess use of chemical products in farming causes water, air and soil pollution. The degradation in the environment leads to the decreasing of fertility of soil. So, to maintain fertility of soil we should adopt organic farming. It gives us healthy life. So, concept of organic farming is emerged where this process involves farming by natural compounds such as animal and plant waste. Only use of organic compounds is not an organic farming. We should focus to improve the quality of soil there by sustaining life on the earth. The method should maintain the relationship between nature and its living beings by supporting the cycle of nature. For better life organic farming should be adopted. But in organic farming so many challenges are there Infront of organic farmers.

Literature About the Organic Farming

1. Literature about farming systems (e.g. Ellis, 2000), and agro-ecology and agro-ecosystems has much in common with resilience theory. Farms can be considered as learning systems in constant co-evolution with their environment. In this sense, sustainable development of farms is a measure of the persistence of individual farmers or farm families as learners and co-evolvers who are continuously trying to improve the quality of their ecological relationships and argues for a shift in thinking in agriculture from thinking about productivity to thinking about persistence.

2. Since the results of the empirical work should be related to the development of organic farming, and since it should be possible to draw conclusions relevant for other contexts than the Sölktäler valleys, the second level of analysis was carried out within the resilience framework using appropriate literature on organic farming, agriculture and resilience (Berkes, F.,1998).
3. Farmers' experiences with organic farming are strongly connected to EU policies in Sölktäler. Organic farming renders the highest level of financial support in the Austrian Agri-environmental Program (BMLFUW, 2001c).

Framework

The perspective that I have chosen is the window that I look through the social ecological resilience. As elaborated in an earlier section, social ecological resilience builds on theories and empirical studies describing the functions and dynamics of ecosystems, and the premise that humans and nature are interdependent. Resilience theory is useful for understanding the complex issues characteristic of farming and the models represented in this framework are useful for understanding the human ecosystem interface that defines farming. The results from the empirical study are analysed within a social-ecological resilience framework, and organic farming is also analysed in the resilience framework.

Objectives of the Paper

This paper attempts to utilize resilience as a theory for assessing and exploring organic farming. . Therefore, there are two overall objectives of this paper

1. To gain increased understanding of the current development of organic farming;
2. To explore the capacity of organic farming to build farm resilience.

Research methodology

The choice of methods arises from my assumptions about the world and how people behave. My assumptions, framework, research approach, and the methods used are all discussed in this section. They can be likened to an hourglass, since the research follows a process of concentration and limitation in the first part, which then opens again to broader conclusions in the second part. Underlying assumptions contribute to the choice of framework, which leads on to the approach. The choice of methods follows from the case study approach. The outcome of the empirical study is then analysed with literature and theories and finally critically reflected upon. The hermeneutic spiral illustrates the iterative dynamic between empirical data, theory and literature throughout the research process.

Background of Organic farming

Organic farming emerged as a movement with a social and ecological agenda for change based on a deep critique of mainstream agriculture. Organic farming in Europe was pioneered in the 1920s by the Austrian Rudolf Steiner and the biodynamic agriculture he developed. Consequently, the first organic farm in Austria was biodynamic, established in 1927. Later Hans and Maria Müller built up so-called organic-biological agriculture in Switzerland together with Hans Peter Rusch, and in Great Britain, Albert Howard and Lady Eve Balfour were the most prominent founders of the organic movement. The driving forces were a holistic view of nature, concerns about the consequences of the industrialization of agriculture, a back-to-the-land movement, and research on soil fertility'

The Relation Between Organic Principles and Farmers Perspectives

The relation between farmers' perspectives on organic farming and the IFOAM organic principles is multi-faceted. First, there are multiple perspectives on what organic farming is in the literature and among practitioners. A farmer can take different perspectives on organic farming depending on which aspects of organic farming he or she speaks of. Second, the organic principles as stated in the IFOAM Basic Standards, only partly overlap with the general aims of EC Regulation 2092/91. Third, the motives behind conversions to organic farming differ, as well as the degree to which the organic principles are known and strived for. In the process of translating organic principles into regulations, only elements that can be measured are useful. These need to be assessed in inspections, and if successful, the farm or enterprise can be certified as organic. All these issues may confuse the discussion of what organic farming is.

Challenges in organic farming

Some challenges are discussed below-

1. Lack of awareness

Number of farmers are unknown about organic farming, their benefits, marketing, calculation of input and output of organic farming. They are in the race of maximum yield and money. Here health of soil and water is not maintained and there is maximum use of fertilizers and pesticides. Free soil and water analysis should be provided by agricultural department to farmers and ratio of fertilizers which control use of it. Not only farmers but also peoples should also aware about organic produces for their health. For example- organic fruits, grains, vegetables etc. for best health.

2. Marketing and prices

Is there is time to farmers for marketing is a question. Eighty percent farmers facing today Labouré problem in farming. Due to lack of awareness about organic produce and health, in market both have same prices. For organic produce separate market is not available, so good prices are not for it.

3. Shortage of biomass

Biomass is a renewable organic material that comes from plants and animals. It is a base for organic farming. Use of biomass increases the nutrient need of soil and productivity. But collection of plant waste and its decomposition is time consuming and costly. So, farmers does not adopting it rather than they are burning it which causes environmental issues like air pollution. Ex. Farmers around Delhi- Haryana and Panjab state burning wheat waste, responsible for Delhi pollution. It should be purchased by government to produce bio-fertilizers. Animal waste collection is easy but quantity is less. For plant biomass collection machine should be provided by government on subsidy base then farmers may collect it and convert to fertilizer by decomposition.

4. Inadequate infrastructure

Farmers are unknown about the organic produce certifying agencies. Government should provide certifying agencies and crop value deciding agencies which promote the organic farmers.

5. High coast and unavailability of inputs

The cost of organic input is high and time consuming in which man power is required. In comparison industrially produced agrochemicals are low cost and giving good results. Although organic inputs are homemade, very few farmers are aware about the complete science of making organic fertilizers and pesticides through natural process. So, trainings should be provided to farmers.

6. Pest control

Another critical challenge of organic farming is that of pest controls that are as old as farming itself. Pests such as rodents or insects, if not controlled, are responsible for the destruction of crops. For that reason, humans have been using chemicals known as pesticides to deal with them effectively for a long time now. However, as many of those chemicals are not of natural origin and are toxic to the environment, they are not allowed in organic farming.

Role of government

Central as well as state government to promote organic farming implemented certain policies in the country.

1. Paramparagat Krishi Vikas Yojana (PKVY)

This scheme is launched by central government in 2015. Aim of this scheme is to adopt organic farming village and cluster them. Such villages are promoted to enhance the soil health. Cluster formation, training, certification and marketing are supported under this scheme. Assistance of 50,000 per ha/3 years is given as intensive to a farmer towards organic farming.

2. Mission Organic Value Chain Development for North Region (MOVCDNER)

The scheme promotes third party certified organic farming of niche crops of north east region through farmer producer organization (FPOs) with focus on export. Farmers are given assistance of Rs 25000 per hectare for three years for organic inputs including organic manure and bio-fertilizers among other inputs. Support for formation of FPOs, capacity building, post-harvest infrastructure up to Rs 2 crore are provided in the scheme.

3. Capital Investment Subsidy Scheme (CISS) Under Soil Health Management Scheme

Under this scheme, 100 percent assistance is provided to state government, government agencies for setting up of mechanized fruit and vegetable market waste, agro waste compost production unit up to a maximum limit of Rs 190 lakh per unit (3000 Total Per Annum TAP capacity). Similarly, for individual's and private agencies assistance up to 33 percent of cost limit to Rs 63 lakh per unit as capital investment is provided.

4. National Mission On Oilseeds and Oil palm (NMOOP)

Under the mission, financial assistance at 50 percent subsidy to the tune of Rs. 300 per hectare is being provided for different compounds including bio-fertilizers. Supply of rhizobium culture, phosphate solubilizing Bacteria (PSB), Zinc solubilizing Bacteria (ZSB), Azotobacter, Mycorrhiza and Vermi compost.

Discussion & Results with Conclusion

The specific objectives of the paper as described above structure the discussion of my results in papers. The first part of the discussion grapples with the relation between organic farming and farmers' perspectives. The second part deals with the concept of farm resilience. The last part discusses organic farming Conclusion.

There has been found is that organic farming the right path to reach sustainable development in India, that Can resilience theory be a compass in this paper. I believe that organic farming may be one of several ways to proceed and I also believe that resilience theory is a vital instrument for understanding the quality of the development. Complicating these assertions is the proposed gap between organic principles and practice. If farms followed or 'lived' the principles, it would build farm resilience. The ecological, social and economic aspects of farming would be taken into account, including the responsibility for future generations. Certain elements of the current practices of organic farming may compromise farm resilience, however. Rules can never capture the richness of principles. A regulation is a common denominator, but not all that a set of principles aims for. Thus, the gap between principles and practice of organic farming stems from the nature of standards, which cannot capture the ideal they are meant to represent.

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BIOEFFICACY OF BIOLOGICAL CONTROL OF WILT OF BRINJAL CAUSED BY FUSARIUM OXYSPORUM USING DIFFERENT LEAF EXTRACTS

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ABSTRACT:

Wilt is an important disease of brinjal crop causing significant reduction in yield. In present study, the pathogenic fungus was isolated from infected plant parts and identified based on morphological and cultural characters as *Fusarium Solani* f. sp. *melongenae*. The in vitro efficacy of different plant extracts viz, *Azardicha indica*, *Argemone mexicana*, *Datura stramonium*, *Eucalyptus globus* were tested to control brinjal wilt pathogen. Different concentrations 5, 10, 15 and 20% of plant extracts was used in the study. All the plant extracts showed significant reduction in the growth of pathogen (Madavi, S. And R.P. Singh, 2005). Among the different extracts 20% of *Azardiachta indica* was found most effective followed by *Argemone mexicana*, *Datura stramonium*, *Eucalyptus globus*.

Key Words: Biological Control, Pathogen, Wilt disease, Leaf extract etc.

INTRODUCTION:

The eggplant (Brinjal) is native of India. Brinjal is grown as an important vegetable crop in all over world. It is grown in India over an area of 0.4 million hectares with an annual production of 7.8 million tons. (Raghvendra M.P. et al., 2002) Among the different diseases that attack brinjal crop, wilt has become a major disease-causing significant reduction in yield. The wilt of brinjal is characterized by yellowing of foliage drooping of apical shoot to ultimate death of whole plant. The pathogen is a soil inhabiting fungus and forms in the senescing tissues of the diseased plant and may survive in the soil for many years. There are many methods which are presently being used to control various plant pathogens including wilt pathogen such as physical, chemical, biological, cultural etc. Effective and efficient management of crop disease is generally achieved by the use of synthetic pesticides. due to increased awareness about the risks involved in use of pesticides, much attention is being focused on the alternative methods of pathogen control. The spiraling up cost chemical fungicides particularly in those countries where pesticide is imported. pollution to soil, water, air by the accumulation of obnoxious chemicals residues due to continuous use of fungicides and development of resistance races to these chemicals are therefore now facing the scientist to look for methods which are ecologically, friendly, safe and specific for pathogens. The recurrent and indiscriminate use of fungicides have posed a serious threat to human health and to the existing human eco geographical conditions as some of them have already been proved to be either mutagenic, carcinogenic or teratogenic. Keeping in view the drawback of chemical management of plant disease, the use of plant extracts in the management of plant disease is gaining importance. Perusal of earlier literature indicated that numerous attempts have been made in exploiting host resistance, modified cultural practices and fungicides. considering the wilting of brinjal observed over the past several years. Objective of this research were made to evaluate focally available plant extracts to control *Fasarium Solani* f. sp. *Melongenae*.

MATERIALS AND METHODS:

Roots and plant parts were collected from infected brinjal parts showing characteristic symptoms of wilt, from the field. Plant parts were sampled from the late winter -early autumn. The plant parts were then examined under microscope to confirm the presence of respective pathogen *Fusarium solani* f. sp. *Melongenae* and the infected plant parts were cut into pieces (2-3 mm), surface sterilized with 0.1% mercuric chloride solution for 30 seconds. The isolation was made from root as well as from the foliar parts of wilted brinjal plants. (Kiran K., S. Liguraju and S. Adiver, 2006). The plant parts were washed three times with sterilized distilled water and then were transferred aseptically on Potato Dextrose Agar (PDA) media. (Datar V, V., 1987). After the development of the fungal

colonies stock cultures were prepared using PDA in test tubes and stored in refrigerator at 4°C. Brinjal wilt pathogen was isolated from infected brinjal plants and was identified.

Plants used in the present study are *Azardiachta indica* which belongs to the family Meliaceae commonly known as “neem”. The plant is found throughout India and its derivatives are of great use in agriculture, public health, medicines, cosmetics and many more. The leaves, bark, seed and flowers are bitter, astringent, acrid, depurative, refrigerant, demulcent, insecticidal, expectorant liver tonic, etc. An important of application of neem products in agriculture is their ability to nitrogen release from the nitrogenous fertilizers.

Ocimum sanctum, commonly known as “Tulsi” belongs to the family Lamiaceae found throughout India. The plant is much erect, branched, softly pubescent under shrub, 30-60 cm high with red or purple sub-quadrangular branches, leaves simple, opposite, elliptic, whole plants is used as medicine for various diseases. Tulsi leaves contain a bright yellow volatile oil which is reported to possess antibacterial properties and acts as insecticide. *Eucalyptus globules* commonly known as *Eucalyptus*, which belong to the family Martaceae, one of the reputed fast-growing trees of the world.

Datura stramonium plant is said to have been used as a narcotic as early as A.D. 37. It is one of the favourite sources of “knockout drops”. It contains on alkaloid scopolamine which is said to produce hallucinatory effects. The smoking of the narcotic produces hallucinatory effects. The smoking of the narcotic produces pronounced diversions in ideas, emotions and even perception. The leaves and tops of stramonium are mixed with lobelia herb, lobelia inflate, often called Indian tobacco, to make asthma powders, commonly used to seek relief from asthma cigarettes made of these mixtures are smoked.

The extract is prepared from roots and leaves, which are used as antifungal. Fresh leaves were washed through under tap water followed by sterilized water the leaves air, dried and were grinded with the help of pestle and mortar by taking (1:1 w/v) one gram of extract was added in 1ml distilled water separately for each plant extract and filtered through Muslin Cloth and 100% plant extract solution was prepared. The extracts were poured in the flasks plugged with cotton and heated at 100°C for 10 minutes to avoid contamination. The plants extracts [4] Different concentration (5,10,15,20%) of plant extracts was incorporated to potato dextrose medium agar for inoculation of the test pathogen in sterilized petridishes. The isolated pathogen was grown on potato dextrose agar medium was placed at the center of petridishes containing different concentration of the poisoned medium and incubated at 27±2 °C for 6 days. Radial growth (cm) of fungus was measured after inoculation till 6 days at an interval of 24 h.

Table: Disease control efficacy of leaf extract against fungi

Plant extracts	<i>Alternaria alternata</i>	<i>Aspergillus niger</i>	<i>Curvularia lunata</i>	<i>Phomopsis vexans</i>	<i>Fusarium solani</i>
<i>Azadirachta indica</i>	62.15	74.25	64.20	49.30	55.57
<i>Argemone mexicana</i>	55.30	45.50	54.23	61.90	64.20
<i>Annona squamosa</i>	57.20	63.20	60.30	65.27	50.30
<i>Datura stramoniums</i>	28.20	30.52	55.40	22.15	23.15
<i>Calatropis procera</i>	30.42	26.40	48.50	27.30	44.20
<i>Ipomoea fistulosa</i>	52.63	55.63	37.80	73.29	72.63
<i>Ipomoea fistulosa</i>	52.63	55.63	37.80	73.29	72.63

Jatropa curcas	36.15	46.15	30.12	46.20	35.12
Lantana camara	45.30	56.27	47.52	45.30	60.12
Parthenium hysterophrus	50.26	40.26	59.33	52.92	50.26
Ocimum santum	60.00	73.20	25.15	16.20	60.00
Nerium indicum	32.15	29.15	42.50	40.15	20.30

Percent control efficacy

Result & Discussion:

During the study of present investigation, the different plants have its own importance in the point view of antimicrobial compounds. For this investigation 11 plant extracts were taken to check the antifungal activity against the major Brinjal pathogenic fungi. (Nene Y. and L., Thapiyal, 2000.)

It is clear that the highest disease efficacy was seen from Datura against the Phomopsis vexans. The lowest efficacy was seen in Argemone mexicana against the Fusarium solani. Annona squamosa shows the less efficacy against all selected five fungi. Azadirachta indica shows more powerful against the Curvularia lunata. Ipomoea fistulosa shows the lowest activity.

It is clear from the table different medicinal plants were selected for study during the investigation highest percent of a disease control efficacy (DCE) was observed in Annona squamosa leaf extract against the Phomopsis vexans i.e. (75.27 %). The Argemone mexicana shows 64.20 % against the Fusarium solani. The Azadirachta indica showing 64.20 % efficacy against the Curvularia lunata and 62.15 % against the Alternaria alternata. Among these 11 medicinal plants Azadirachta indica showing highest 74.25 % efficacy against the Aspergillus niger. The Ipomoea fistulosa also showing the notable efficiency against the Phomopsis vexans 73.29 % and 72.63 % against the Fusarium solani. Parthenium hysterophrus shows disease control efficacy against the Curvularia lunata. During the investigation lowest disease control efficacy was observed against the Phomopsis vexans. Calotropis procera showing the less efficacy against the Alternaria alternata, Aspergillus niger, Phomopsis vexans and Fusarium solani. More disease control efficacy was seen for Curvularia lunata. Against the Alternaria alternata, Azadirachta indica and Ocimum santum were seen more efficient. For the Aspergillus niger, Azadirachta indica 74.20 % Annona squamosa 62.02 % Ocimum santum 73.20 % Showing more efficient. For Curvularia lunata Azadirachta indica 64.20 % Annona squamosa 60.30 % Parthenium hysterophrus 59.33 % showing the disease controlling efficacy. For Phomopsis vexans plant like Annona squamosa 65.77 % Ipomoea fistulosa 73.20 % Argemone mexicana 61.90 % showing the efficacy for the Fusarium oxysporium. Ipomoea fistulosa 72.63 % Argemone mexicana 64.20 % and Ocimum santum 60.00 % efficacy was observed.

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STUDY ON SOIL POLLUTION: CAUSES, EFFECT ON HUMAN HEALTH AND CONTROLS

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Abstract:

Developmental activities such as construction, transportation and manufacturing not only affect the natural resources but also produce large amount of wastes that leads to pollution of air, water, soil, and oceans; global warming and acid rains. Untreated or improperly treated waste is a major cause of pollution of rivers and environmental degradation causing ill health and loss of crop productivity. From among the pollutions in the environment, soil pollution is considered as the most important type of the pollution due to its widespread detrimental effects both for the environment and human being. Attempt is made to study about the major causes of soil pollution, their effects on our environment and the various measures that can be taken to control soil pollution.

1. Introduction:

Soil is one of the important and valuable resources of the nature. Life and living on the earth would be impossible without healthy soil. 95% of human food is derived from the earth. Making plan for having healthy and productive soil is essential to human survival. Entrance of materials, biological organisms or energy into the soil will cause changes in soil quality. This problem causes soil to remove from its natural state. But the live soil is the soil which enjoys small animals like insects and worms and plants, fungi, bacteria and other microbes are grown in the live soil [2]. Soil is the thin layer of organic and inorganic materials that covers the Earth's rocky surface The soil is composed of 50% of organic and inorganic matters, and 50% of air and water which fills existing vacant spaces of the soil and keeps live organisms of the soil. Soil pollution is defined as the build-up in soils of persistent toxic compounds, chemicals, salts, radioactive materials, or disease causing agents, which have adverse effects on plant growth and animal health.. Generally polluted water also pollute soil. Solid waste is a mixture of plastics, cloth, glass, metal and organic matter, sewage, building debris, generated from households, commercial and industries establishments add to soil pollution. Fly ash, iron and steel slag, medical and industrial wastes disposed on land are important sources of soil pollution. In addition, fertilizers and pesticides from agricultural use which reach soil as run-off and land filling by municipal waste are growing cause of soil pollution. Acid rain and dry deposition of pollutants on land surface also contribute to soil pollution.

2. Causes of Soil Pollution:

Soil pollution is caused by the presence of man-made chemicals or other alteration in the natural soil environment. This type of contamination typically arises from the rupture of underground storage links, application of pesticides, and percolation of contaminated surface water to subsurface strata, oil and fuel dumping, leaching of wastes from landfills or direct discharge of industrial wastes to the soil. The most common chemicals involved are petroleum hydrocarbons, solvents, pesticides, lead and other heavy metals. This occurrence of this phenomenon is correlated with the degree of industrialization and intensities of chemical usage. A soil pollutant is any factor which deteriorates the quality, texture and mineral content of the soil or which disturbs the biological balance of the organisms in the soil. Pollution in soil has adverse effect on plant growth.

2.1 Agricultural sources (Indiscriminate use of fertilizers, pesticides, insecticides)

Soil nutrients are important for plant growth and development. Plants obtain carbon, hydrogen and oxygen from air and water. But other necessary nutrients like nitrogen, phosphorus, potassium, calcium, magnesium, sulfur and more must be obtained from the soil. Farmers use fertilizers to improve soil deficiencies. Fertilizers contaminate the soil with impurities, which come from the raw materials used for their manufacture. Mixed fertilizers often contain ammonium nitrate (NH_4NO_3), phosphorus as P_2O_5 , and potassium as K_2O . For instance, As, Pb and Cd present in

traces in rock phosphate mineral get transferred to super phosphate fertilizer. Since the metals are not degradable, their accumulation in the soil above their toxic levels due to excessive use of phosphate fertilizers becomes an indestructible poison for crops. Plants on which we depend for food are under attack from insects, fungi, bacteria, viruses, rodents and other animals, and must compete with weeds for nutrients. To kill unwanted populations living in or on their crops, farmers use pesticides. The remnants of such pesticides used on pests may get absorbed by the soil particles, which then contaminate root crops grown in that soil. The consumption of such crops causes the pesticides remnants to enter human biological systems, affecting them adversely. Pesticides not only bring toxic effect on human and animals but also decrease the fertility of the soil. Some of the pesticides are quite stable and their bio- degradation may take weeks and even months.

2.2 Industrial effluents and solid wastes

It includes fly ash, chemical residues, metallic and nuclear wastes. Large number of industrial chemicals, dyes, acids, etc. find their way into the soil and are known to create many health hazards including cancer. In general, solid waste includes garbage, domestic refuse and discarded solid materials such as those from commercial, industrial and agricultural operations. They contain increasing amounts of paper, cardboards, plastics, glass, old construction material, packaging material and toxic or otherwise hazardous substances. Since a significant amount of urban solid waste tends to be paper and food waste, the majority is recyclable or biodegradable in landfills. Similarly, most agricultural waste is recycled and mining waste is left on site. The portion of solid waste that is hazardous such as oils, battery metals, heavy metals from smelting industries and organic solvents are the ones we have to pay particular attention to. These can in the long run, get deposited to the soils of the surrounding area and pollute them by altering their chemical and biological properties. Hospital wastes they create many health problems as they may have dangerous pathogen within them besides dangerous medicines, injections.

2.3 Urban activities

Urban activities generate large quantities of city wastes including several Biodegradable

materials like vegetables, animal wastes, papers, wooden pieces, carcasses, plant twigs, leaves, cloth wastes as well as sweepings and many non-biodegradable materials such as plastic bags, plastic bottles, plastic wastes, glass bottles, glass pieces, stone / cement pieces. Microbial decomposition of organic wastes generates large quantities of methane besides many chemicals to pollute the soil and water flowing on its surface. Many dangerous chemicals like cadmium, chromium, lead, arsenic, selenium products are likely to be deposited in underground soil. Similarly underground soil polluted by sanitary wastes generates many harmful chemicals. These can damage the normal activities and ecological balance in the underground soil.

2.4 Deforestation

Forests and grasslands are an excellent binding material that keeps the soil intact and healthy. They support many habitats and ecosystems, which provide innumerable feeding pathways or food chains to all species. During the past few years quite a lot of vast green land has been converted into deserts. Soil Erosion occurs when the weathered soil particles are dislodged and carried away by wind or water. Deforestation, agricultural development, temperature extremes, precipitation including acid rain, and human activities contribute to this erosion. Humans speed up this process by construction, mining, cutting of timber, over cropping and overgrazing. It results in floods and cause soil erosion.

3 Effects of soil pollution:

Contaminated soil is used to grow food; the land will usually produce lower yields than it would if it were not contaminated. Soil that has been contaminated should no longer be used to grow food, because the chemicals can leech into the food and harm people who eat it. The lack of plants on the soil will cause more erosion, spreading the contaminants onto land that might not have been tainted before. In addition, the pollutants will change the makeup of the soil and the types of microorganisms that will live in it. If certain organisms die off in the area, the larger predator animals will also have to move away or die because they have lost their food supply. Pollution runs off into rivers and kills the fish, plants and other aquatic life. Dangerous chemicals entering underground water,

Release of pollutant gases, Release of radioactive rays causing health problems Pollution of drinking water sources etc are the major problems due to soil pollution. Thus due to soil pollution whole ecosystem can change.

4 Control of soil pollution:

To control soil pollution, we can limit construction in sensitive area. In general we would need less fertilizer and fewer pesticides if we could all adopt the three R's: Reduce, Reuse, and Recycle. This would give us less solid waste.

4.1 Reducing chemical fertilizer and pesticide use

Applying bio-fertilizers and manures can reduce chemical fertilizer and pesticide use. Biological methods of pest control can also reduce the use of pesticides and thereby minimize soil pollution. For example, use of pheromones and hormones to attract or repel insects.

4.2 Reusing of materials

Materials such as glass containers, plastic bags, paper, cloth etc. can be reused at domestic levels rather than being disposed, reducing solid waste pollution.

4.3 Recycling and recovery of materials

This is a reasonable solution for reducing soil pollution. Materials such as paper, some kinds of plastics and glass can and are being recycled. This decreases the volume of refuse and helps in the conservation of natural resources. For example, recovery of one tonne of paper can save approximately 17 trees.

4.4 Reforesting

Control of land loss and soil erosion can be attempted through restoring forest and grass cover to check wastelands, soil erosion and floods. Crop rotation or mixed cropping can improve the fertility of the land.

4.5 Solid waste treatment

Proper methods should be adopted for management of solid waste disposal. Industrial wastes can be treated physically, chemically and biologically until they are less hazardous. Acidic and alkaline wastes should be first neutralized; the insoluble material if biodegradable should be allowed to degrade under controlled conditions before being disposed. As a last resort, new areas for storage of hazardous waste should be investigated such as deep well injection and more secure landfills. Burying the waste in locations situated away from residential areas is the simplest and most widely used technique of solid waste management. Environmental and aesthetic considerations must be taken into consideration before selecting the dumping sites. Incineration of other wastes is expensive and leaves a huge residue and adds to air pollution. Pyrolysis is a process of combustion in absence of oxygen or the material burnt under controlled atmosphere of oxygen. It is an alternative to incineration. The gas and liquid thus obtained can be used as fuels. Pyrolysis of carbonaceous wastes like firewood, coconut, palm waste, corn combs, cashew shell, rice husk paddy straw and saw dust, yields charcoal along with products like tar, methyl alcohol, acetic acid, acetone and a fuel gas.

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A REVIEW ON POLLUTION FROM PHARMA INDUSTRY

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Abstract

The purpose of this article is to alert the society from various types of wastes from pharmaceutical industry which consists of discarded pharmaceuticals, accessories such as sharps, discarded test strips and other equipment. It's a type of medical waste that comprises unused pharmaceuticals as well as extraneous items like used test strips and other equipment. Analgesic, antidepressant, antihypertensive, contraceptive, antibiotic, steroids and hormones, among other pharmaceutical chemicals, have been discovered in water samples. Though the concentrations measured are minute, they are very harmful to humans, animals, and aquatic life. It's cause for concern because it jeopardizes both human and environmental health. This article tries to understand that enhancing transparency at every stage of the production process is a crucial measure in mitigating the environmental impact of medicine industry.

Key Words: SPCBs, Pharma Industry, Biomedical Waste, Environmental pollution, Medicinal byproducts, Industrial wastewater, Health Hazards and drugs.

Introduction

As we know the pharmaceutical waste, whether from a hospital, clinic, pharmacy or private residence, cannot be disposed of in the same manner as regular waste due to the risks involved and must be managed differently (Kapoor, 2015a, 2015a; Patneedi & Prasadu, 2015). The traditional wastewater treatment technologies, (Khan et al., 2019) such as activated sludge, are unable to remove active pharmaceutical compounds and other wastewater elements completely from these waters. (Ali et al., 2017) Pharmaceutical effluents have a direct or indirect impact on the environment and health, particularly in areas near pharma industrial zones. A variety of challenges arise while dealing with pharmaceutical waste (Ghazal et al., 2022; Kümmerer, 2008; Mugumura, 2015; Rogowska & Zimmermann, 2022). We covered waste types, Pharmaceuticals are synthetic substances that come from a variety of chemical families and may respond differently in the environment. Pharmaceuticals are a subset of chemicals. They are designed to be physiologically active in living creatures, (Kapoor, 2015b) resist biodegradation and have lengthy half-lives. This makes them more dangerous in nature (Donnik et al., 2019). Release is constant and everywhere, diffuse and uncontrollable and they cannot be prohibited. Regular monitoring of pharmaceutical ingredient concentrations in pharmaceutical effluents entering drinking water sources is required to protect the environment and life forms from health dangers (Ihsanullah et al., 2022; Ilyas et al., 2019; Nassiri Koopaei & Abdollahi, 2017; Rout et al., 2021; Samal et al., 2022). The current study discusses such toxicity, health risks, and environmental dangers caused by pharmaceutical pollutants (Zuccato et al., 2006).

Even a trace amount of pharmaceuticals in drinking water over an extended period of time can have serious effects on human health and aquatic life, even if the concentrations are many orders of magnitude lower than the minimal therapeutic dose (Jones et al., 2001; Patneedi & Prasadu, 2015). There are presently no regulations from the Bureau of Indian Standards that restrict the amount of medications in drinking water or effluent (MacKnight, 1993). When pharmaceuticals go into the environment, it has been demonstrated that they cause harm. It has been discovered that ambient concentrations at some pharmaceutical manufacturing sites are far higher than those brought on by therapeutic use. Pharmaceutical waste can be generated by a variety of activities within a healthcare facility, such as incomplete IV preparation, general compounding, breakages, ampoules, needles, and IVs that have only been partially used, outdated and unused preparations, fallow unit doses, personal medications, and outdated pharmaceuticals (Chartier, 2014a; Padmanabhan & Barik, 2019a). Energy recovery, reduction, re-use, reuse, avoidance, and disposal are some waste treatment and management alternatives. Furthermore, pharmaceutical chemicals can reach the environment via a variety of pathways, including animal waste runoff, sewage lines, landfill sites, treated wastewater discharge and seepage. Despite the fact that many pharmaceutical chemicals may

be depleted in aquatic settings due to a variety of physical and biological processes, trace quantities of human and veterinary pharmaceutical compounds, as well as their metabolites, have been detected in a variety of aquatic habitats (Shalini et al., 2010; Smith, 2002a).

Pharma Industries and its relation to Environment Risk

This waste includes discarded pharmaceutical products like prescription and over-the-counter medications, as well as the chemical sludges and wastewaters produced during pharmaceuticals manufacturing (Smith, 2002a). It also includes waste medical items, like used gloves and sharps that contact pharmaceuticals. Because of the health hazards and ecological risks this waste poses, it requires specialized disposal processes that ensure safety (Chartier, 2014a; Misra & Pandey, 2005a). Pharmaceutical waste may come from various sources, from manufacturing plants to facilities that provide medical or veterinary services. Below are a few commercial and industrial sources of pharmaceutical waste:

A. Pharmaceutical Manufacturing Plants

Pharmaceutical waste is commonly generated in pharmaceutical production companies. The chemical residues left behind from the manufacturing operations must be disposed of in the plants that create pharmaceuticals (Franks et al., 2011a). Physical waste is generated in several pharmaceutical production operations. Unused supplies, spent chemical containers with residues inside, or rags and mop heads used to clean equipment and wipe up spills could all be culprits. Pharmaceutical plants cannot dispose of this waste in a landfill because the chemicals may leach into the soil and groundwater, thereby hurting the environment and poisoning the local water supply (Chartier, 2014; Franks et al., 2011; Misra & Pandey, 2005; Padmanabhan & Barik, 2019). Plants, on the other hand, cannot simply flush unused medications and chemicals down the toilet. This could disrupt surface water treatment, taint nearby bodies of water, and endanger wildlife (Patneedi & Prasadu, 2015). To prevent endangering human health, harming the environment, and incurring costly regulatory penalties, the plant must dispose of this trash in accordance with tight laws. Some chemical residues linger on the equipment surfaces while medications are processed in manufacturing factories. When factories clean their contaminated surfaces or drain and sanitize holding tanks, the water they utilize becomes contaminated with pharmaceutical residues (Misra & Pandey, 2005b). To avoid health and environmental damage, institutions must dispose of contaminated water in a responsible manner.

Health Care Institutions and Extended Care Facilities

Every day, pharmaceutical goods are used in health care and long-term care facilities. Expired medications, used syringes, empty prescription bottles, and other debris contaminated with pharmaceutical substances are examples of waste products (Caron et al., 2005). Many of these materials, if incorrectly disposed of, could cause environmental damage or significant health impacts. Controlled substances are a particular concern in long-term care and health-care settings. Morphine and other opioid medicines are frequently used in these hospitals following surgery or in palliative care (Alshemari et al., 2020; King et al., 2011). If these chemicals were not properly disposed of, they could lead to addiction. Health care and extended care institutions, like pharmaceutical production factories, cannot just dump these goods in the garbage or pour them down the sink without risking major health and environmental harm (Lundgren & McMakin, 2018; Padmanabhan & Barik, 2019b). They want dependable, practical garbage removal services to maintain health and safety while also purging their premises of obsolete products.

B. Personal Care Product Manufacturers

The pharmaceutical manufacturers, manufacturers of personal care products like cosmetics, perfumes, creams and lotions generate waste that requires specialized disposal. Manufacturing personal care products leaves contaminants behind. Spent chemical containers and unused products require careful disposal. The chemical residues left on the manufacturing equipment also produce contaminated wastewater during cleaning and necessitate specialized wastewater disposal (Epstein, 2009; Franks et al., 2011a; Sahota, 2014).

C. Veterinary Offices

Veterinary offices like human health care facilities, consume a large volume of pharmaceutical products. A normal veterinary clinic provides a broader range of services than a typical doctor's office; for example, it is uncommon for

a human patient to see the same doctor for a respiratory condition, an amputation, and end-of-life care (Capleton et al., 2006). As a result, a veterinary clinic may produce more pharmaceutical waste than a conventional doctor's office. Veterinary clinics, like human health care organizations, must dispose of pharmaceutical waste safely in order to protect human and environmental health (Capleton et al., 2006; Kim et al., 2008).

- Bio-accumulative—accumulates as it makes its way up the food chain.
- Handling and storage of hazardous chemicals
- Emission of pollutants—the air pollutants
- Effluents, especially those that are not easily biodegradable and toxic in nature.
- Ecotoxic-damage is caused to the environment.
- Carcinogenic-contribute to the causation of cancer.
- Disastrous due to a catastrophe, mishap, calamity or grave occurrence in any area.

Regulations of Disposal of Pharmaceutical Waste

It involves the following points

The definition of biological waste the operator, its recommended authority, State Pollution Control Boards (SPCBs) in states, and Pollution Control Committees in territories are responsible for permitting and implementing the Biomedical Waste Rules (Brechtelsbauer & Shah, 2020). Recordkeeping, accident reporting, annual reporting, common disposal/incineration locations, segregation, packing, transportation, and storage are all required (Bellan et al., 2012; Brechtelsbauer & Shah, 2020). The pharma wastes monitored by various regulatory authorities such as, The Environmental Protection Agency (EPA) is the main governing body that regulates the disposal of pharmaceutical waste. Drug Enforcement Agency (DEA), Joint Commission (JC), Occupational Health and Safety Administration (OSHA), Fish and Wildlife Services (FWS), Local Publicly Owned Treatment Works (POTW), Department of Transportation (DOT), State Environmental Protection Agencies, State Pharmacy Boards, Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA) (Shalini et al., 2010; Smith, 2002b; Smith et al., 2020; Sreekanth et al., 2014).

Examples of Pharmaceutical Waste

Solid Pharmaceutical Waste

Solid pharmaceutical waste generally encompasses used items containing pharmaceutical residues:

- Contaminated items like gloves, masks, bandages and IV bags and tubing
- Medicine distribution devices like auto injectors, inhalers and nebulizers
- Drugs containing hazardous or non-hazardous chemicals
- Sharps, including scalpels, needles and syringes

Liquid Pharmaceutical Waste

As pharmaceutical manufacturing facilities complete specific processing activities, liquid pharmaceutical waste accumulates. Sludge from chemical processing and contaminated solvents from tank cleaning are two examples of these wastes. Unused liquid pharmaceuticals are sometimes categorized as pharmaceutical waste, although in some states, such as Michigan, they are considered liquid industrial wastes and are governed by separate rules.

Biomedical waste and its Classification

The pharmaceutical sector generates various types of hazardous waste, all of which are regulated by the RCRA (Cabaniss, 2018; Rosenfeld & Feng, 2011). The RCRA categorizes some hazardous wastes into chemical lists. It also categorizes hazardous wastes based on their distinguishing properties. Let's go over some of them below.

Listed Hazardous Pharmaceutical Waste

Many pharmaceutical wastes are included on RCRA hazardous waste lists. Different letters of the alphabet function as trash categories on these lists. A few types of hazardous pharmaceutical waste are included on the RCRA's F and K lists, for example (Cabaniss, 2018; Misra & Pandey, 2005b; Newton, 2008; Rosenfeld & Feng, 2011). The F list specifies hazardous wastes generated by specific industrial and manufacturing operations. Instead of being industry-specific, these wastes fall into the following categories:

- Wastes from electroplating and other metal finishing
- Wastewater treatment sludges from petroleum refineries
- Spent solvents
- Wastes containing dioxins
- Spent wood preservers

In the pharma sector, F-listed wastes are often the product of solvent operations performed in diagnostic labs. Spent non-halogenated solvents like these are examples of relevant hazardous compounds on the F list: Cyclohexanone, Xylene, Methanol, Toluene, Isobutanol, Benzene, Acetone, Ethyl Acetate, N-Butyl Alcohol etc (Shalini et al., 2010; Sreekanth et al., 2014).

Hazardous wastes from specific manufacturing and industrial sectors, such as the production of organic compounds and veterinary medications, are, on the other hand, placed on the K list. Unlike the wastes on the F list, these wastes are specific to a source. Some harmful substances on the K list are as follows:

- Veterinary drugs made from sludges from the wastewater treatment process that contain organic compounds containing arsenic (Diaz-Cruz et al., 2003; Martín et al., 2015).
- Tar byproducts of distillation procedures used to produce drugs for animals that contain arsenic or compounds related to arsenic residue left over from employing activated carbon to make veterinary medications containing arsenic or organoarsenic compounds

It includes the infectious Waste of Any biomedical waste that is infectious or contaminated. Sharp objects like needles, scalpels, broken glass, and razors. Pathological Waste such as body parts of humans or animals, including tissues, fluids, or blood. Pharmaceutical Waste unused drugs, medicine, or creams that are expiring. Anatomical waste, Medical waste, Genotoxic waste, Chemical waste, Heavy metal waste and radioactive waste (Bakare et al., 2013; Gupta et al., 2015; Orescanin et al., 2003; Sharma et al., 2013).

Properties of Hazardous Waste

The RCRA also classifies hazardous wastes according to specific characteristics they have. The list of characteristic wastes is also known as the D list (Misra & Pandey, 2005b; Padmanabhan & Barik, 2019b). The wastes break down according to the following four attributes:

- **Ignitability:** Ignitable wastes mostly consist of liquids with flash points below 60 degrees Celsius, non-liquids that might cause fires, and flammable compressed gases and oxidizers. Inflammable pharmaceuticals usually include more than 24% alcohol or have gel bases.
- **Corrosivity:** The pH of corrosive wastes is often extremely high. Corrosive liquids are defined as those with a pH less than 2 or greater than 12.5, as well as any other liquids that can corrode steel. Corrosive drugs are commonly made up of strong acids and bases.
- **Reactivity:** Reactive wastes can react with water, be unstable in normal conditions, release toxic fumes, or detonate when heated.

Toxic wastes harm living beings when they are swallowed or absorbed into their bodies. Many hazardous pharmaceutical wastes are produced.

Examples of “Non-Hazardous” Pharmaceutical Waste

Despite our extensive discussion of hazardous pharmaceutical wastes, the majority of pharmaceutical wastes are classified as non-hazardous (Jaseem et al., 2017; Leishman et al., 2021; Misra & Pandey, 2005a; Saidan, 2019). Health care institutions typically generate only 5% to 15% hazardous waste. So, what exactly is non-hazardous trash, and why should it be given particular consideration. When it comes to pharmaceutical waste, the label "non-hazardous" is a bit misleading. It refers to waste that is not regulated by the RCRA, not necessarily waste that is completely innocuous if it reaches the environment. Even "non-hazardous" trash can have negative health and environmental consequences. As a result, even if pharmaceutical waste is officially non-hazardous, it still necessitates careful handling and safe, specific disposal processes (Leishman et al., 2021; Shalini et al., 2010).

- The following are some instances of non-hazardous pharmaceutical waste:
- Over-the-counter medications
- Over-the-counter nicotine replacement therapies, in certain states
- Antibiotics and Hormones
- Contraceptives and Endocrine-disrupting compounds
- Drugs OSHA lists as toxic even though the RCRA does not

The process of disposal of Pharmaceutical Waste

Now as we know that for the pharmaceutical waste the comprehensive waste management plan is necessary to guarantee both legal compliance and worker safety. The following recommendations will help you dispose of pharmaceutical waste properly: Prescription drug waste disposal: When disposing of prescription medications, avoid flushing or tossing them away in the trash. You should usually engage with a reputable garbage management company for proper disposal (Brechtelsbauer & Shah, 2020; Chartier, 2014c; Smith et al., 2020).

- Pharmaceutical wastewater disposal: Pharmaceutical wastewater is generated in many pharmaceutical production facilities by cleaning tanks and other manufacturing equipment. This water cannot be disposed of in the sink; instead, you may need to work with a reliable garbage removal firm to properly manage it (Chartier, 2014c).
- Product disposal: It may be required for your business to dispose of contaminated materials such as masks and gloves. You may keep your facility legal by having them collected and disposed of by a garbage removal service (Brechtelsbauer & Shah, 2020; Prüss et al., 1999).

Voluntary Licensing Services (VLS)

When you need a reliable partner in pharmaceutical waste disposal, VLS is here to assist you. We follow initiatives from the EPA and other regulatory bodies and we are happy to consult with your facility about the types of pharmaceutical waste you deal with and also provide the numerous direct services to help your organization with its pharmaceutical waste treatment and disposal (Baker, 2018; Trabanco & Harshaw, 2012):

- Recyclables that is stored in hazardous container containers such as trash drums and totes is referred to as containerized waste. We collect and dispose of this waste responsibly, assuring environmental safety, regulatory compliance, and overall peace of mind for your business.
- Services for waste-to-energy: Waste-to-energy services burn waste and capture the energy emitted as a byproduct. VLS can work with your company to eliminate waste while also creating valuable energy (Sánchez et al., 2023).
- Secure destruction: In order to keep trade secrets secure, proprietary information, manufactured chemicals, and material components may need to be destroyed (Mosallanezhad et al., 2023; Bellan et al., 2012).
- VLS may offer confidential destruction, which allows you to keep your procedures private. Contact VLS for Sustainable and Responsibly Managed Pharmaceutical Waste

Collaborate with VLS Environmental Solutions to appropriately and sustainably dispose of your facility's pharmaceutical waste. We can work with practically any type of organization, from pharmaceutical manufacturing plants to healthcare facilities, and we have extensive experience managing pharmaceutical waste from birth to death (Brechtelsbauer & Shah, 2020; Chartier, 2014c; Franks et al., 2011b; Mariano Gomes et al., 2021; Mukherjee & Dhiman).

Conclusion

Finally the in this review it has been tried to summarize that the general populace consumes pharmaceuticals, which are physiologically active compounds, daily basis. Wastewater and sludge associated with sewage treatment activities have been shown to have the greatest quantities of waste pharmaceuticals. It is clear that medications have a big influence on the natural world. Today, the pharmaceutical industry uses reverse distributors to gather unwanted medications from pharmacies and medical facilities. One may also see this endeavor as an expansion of the pharmaceutical industry's current product stewardship initiatives.

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INFLUENCE OF OPTICAL STUDIES ON 0.5 MOL BUTYRIC ACID-DOPED KDP CRYSTAL

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Abstract:

In present investigation optical properties of butyric acid doped KDP (potassium dihydrogen phosphate) crystal has been grown by slow evaporation solution growth technique at room temperature. The high optical transparency of grown crystal was assessed using the Shimadzu UV-2450 spectrophotometer. The transmittance data has been used to evaluate the optical band gap of grown crystal. The optical band gap of grown crystal is found to be 3.8 eV. The functional groups of grown crystals were successfully identified by means of FTIR spectral analysis.

Keywords: band gap, growth from solution, optical properties, UV-visible

Introduction

KDP is a well-known hydrogen-bonded, exhibits ferroelectric behavior and undergoes significant property changes with doping. This KDP nonlinear crystal, low in impurities, serves various optical applications such as modulation, frequency conversion, switching, data storage, and telecommunications accessories [1]. Researchers have long explored doping KDP, yet there is a gap in literature regarding the linear optical properties of doped KDP crystals. In this study, we grow a KDP doped crystal using the slow evaporation growth method, characterized it through UV-visible spectral analysis, and reported its optical parameters like transmittance and band gap energy for potential electro-optical applications [2]. FTIR was analyzed for the purpose of functional group of grown crystal.

Experimental procedure

The AR grade KDP salt dissolved in deionized water with continuous stirring for 7-8 hours to attain a supersaturated solution. This solution, doped with 0.5 mole butyric acid, and stirred consistently up to 3-4 hours to ensure uniformity. After getting homogeneity of solution filtered the solution using Whatman filter paper no.1, the resulted solution was left for evaporation at room temperature, yielded transparent 0.5 mole butyric acid doped KDP crystals harvested within 7-8 hours.

FTIR analysis

The FT-IR spectrum of butyric acid doped KDP crystal in the range of 600–4000 cm^{-1} was recorded using a Bruker ALPHA ATR system, as shown in Fig. 1. The peaks at 603 cm^{-1} indicate the presence of M-O bond stretching vibrations from doped crystal. The M-O stretching coordinated bond vibration at 612 cm^{-1} confirms the coordination between KDP and butyric acid. The C-O bond stretching vibration at 989 cm^{-1} is also observed. The C-O deformation at 1177 cm^{-1} is conclusive. The characteristic CH_3 and C triple bond stretching modes of KDP are seen at wave numbers 1364 and 1564 cm^{-1} , respectively. The peaks at wave numbers 1747, 2366 and 2968 cm^{-1} correspond to C=O stretching ketone groups, indicating the presence of carbonyl compounds. 2366 cm^{-1} C \equiv C stretching presence of alkyne groups, potentially from acetylene-like compounds. Wave number 2968 cm^{-1} CH_3 symmetric stretching confirmed the presence of methyl groups in the crystal structures. FT-IR analysis helps to verify the co-existence of butyric acid doped KDP material in both types of crystals.

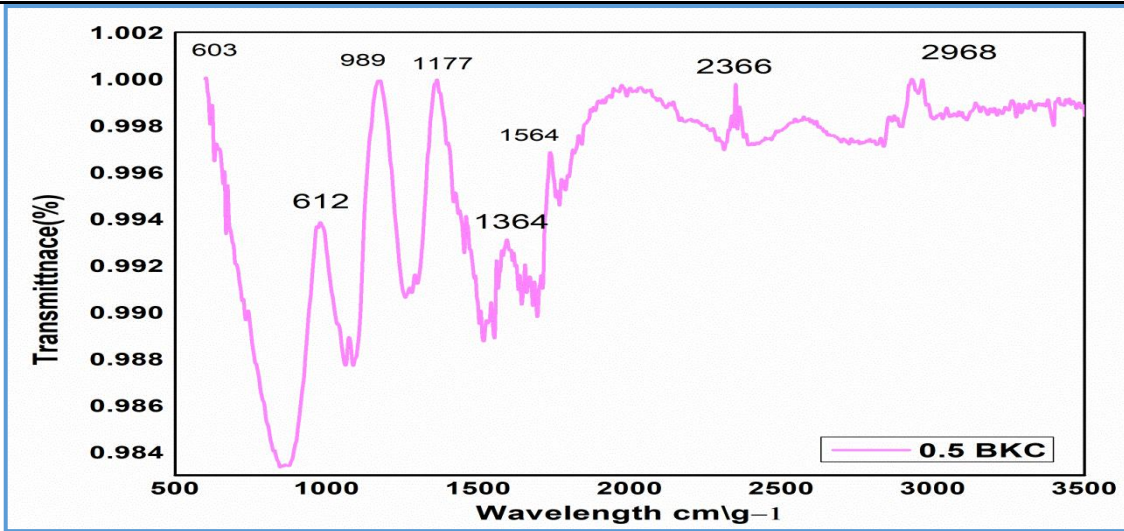


Fig. 1 FT-IR Spectrum

UV VISIBL STUIES

The UV-visible analysis of 0.5 mole butyric acid doped with KDP crystal was conducted using a Shimazu UV2450 spectrometer across the 200-900 nm range. The resulted transmittance spectrum, depicted in Fig. 2, illustrates the crystal's exceptional optical transparency, exceeding 96% throughout the visible spectrum. Notably, the lower cut-off wavelength of 300 nm suggests a broad optical transmittance window, making it conducive for second harmonic generation devices [3]. The transmittance data of the grown crystal has been used to evaluate the imperative optical constants of the grown crystal. The optical band gap of the grown crystal is calculated using the relation

$$(\alpha h\nu)^2 = A(h\nu - E_g),$$

where α is the absorption constant, $h\nu$ is the photon energy and E_g is the optical band gap. The optical band gap of the grown crystal has been determined from the Tauc extrapolation plot shown in Fig. 3. The optical band gap of grown crystal is found to be 3.8 eV which suggests its suitability for optoelectronics applications. The high optical conductivity response of the grown crystal is important for optical information processing devices [5].

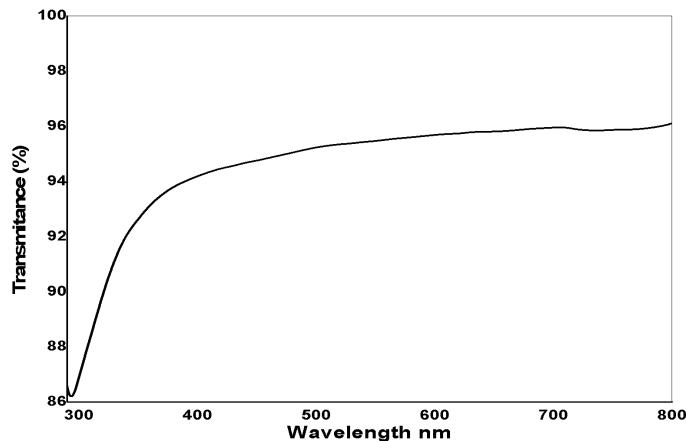


Fig. 2 UV- Visible transmittance spectrum

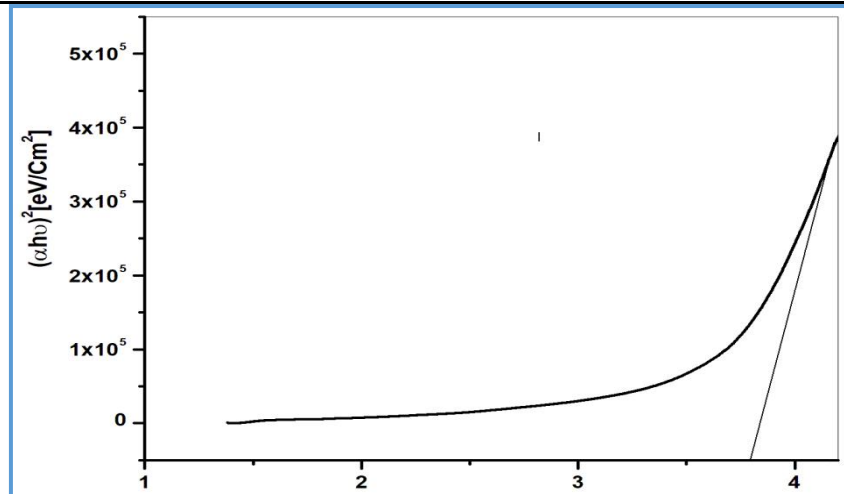


Fig. 3 Taucs graph

Conclusion

The grown crystal has high optical transparency above 96 % in entire visible region. The optical band gap of grown crystal is found to be 3.8 eV. The grown crystal has encouraging optical properties which makes it potential candidate for optoelectronics applications. As well as The prominent peaks of carbon coordinate bonds were successfully identified in FTIR spectrum of butyric acid doped KDP crystal.

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THE EFFECT OF ORGANOCHLORINE PESTICIDE ENDOSULFAN ON GLYCOGEN CONTENT OF FRESH WATER FEMALE CRAB *BARYTELPHUSA CUNACULARIS*

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Abstract:

The pattern of civilization interfering in agricultural issues. According to many biodiversity researchers for controlling crop pest use of Endosulfan of lot of emulsified concentration are regularly used. The regular use of Endosulfan effects on biodiversity of flora and fauna. Especially the effect occurs in aquatic animals like crab.

The Endosulfan is not dissolved in water so far it present in soil, water, on plant debris etc. These residues found in deposited form in body of aquatic animals like crab. When this deposition found, it directly or indirectly effect on various parameters of physiological and metabolically activity.

The study about effect of Endosulfan which regularly utilized in paddy field, deposited in water where the aquatic fauna like crab specially female crab *Barytelphusa Cunacularis* suffering from physiological problem. The glycogen is important bimolecular in life science which play an important role in body building and activity of physiology as well in metabolism. The current study focused about variation found in glycogen content touch the result and discussion with table and graphically.

Key Words: Endosulfan, Glycogen content, female crab *Barytelphusa Cunacularis*.

Introduction:

Glucose occupies the central position of carbohydrate metabolism in an organism, representing complex groups, sequences and cycles of reactions which integrate at various points with reactions concerned with metabolism of lipids and of proteins as these molecules serve the source of carbon in the synthesis of cellular components.

The chief carbohydrate of the solid tissues, while glucose is of the blood and other body fluids. Glycogen, a reserve, or a storage carbohydrate reversibly converted to blood glucose and normally serves to maintain blood sugar level, when supply of carbohydrate from intestinal absorption is inadequate. Glycogen break down into glucose is governed by the extrinsic and intrinsic factors that govern the physiology of organism.

The carbohydrate metabolism essentially constitutes two segments: synthesis of carbohydrates which includes – glycogenesis and gluconeogenesis. While catabolic pathways include – glycolysis, glycogenolysis, pentose pathway, Kreb's cycle and electron transport system. The catabolic pathways not only fulfil the needs of energy demands but also supply the amphibolic intermediates and reduced nucleotides (NADPH), required for protein and lipid metabolism.

Carbohydrates play not only a structural role in the cell but may serve as a reservoir of chemical energy. The major function of carbohydrates is to serve as a fuel and provide energy for the metabolic processes of the animal. In this role total carbohydrate is utilized by the cell mainly in the form of glucose (Harper, 1983). Carbohydrate metabolism is broadly divided into anaerobic segment or glycolysis which consists of breakdown of glycogen or glucose through Embden-Mayerhalf pathway and aerobic segment which consists of oxidation of acetyl-CoA to carbon dioxide and water through citric acid cycle. During the course of oxidation of acetyl-CoA in this cycle, reducing equivalents are formed which ten enter the respiratory chain, where high energy phosphate bonds are generated in the process of oxidative phsophorylation. The sequences involved in carbohydrate metabolism are well established in several crustaceans including crabs (Sreenivasulu Reddy, 1987). It is well known that organ phosphorous and or organochlorine insecticides are known to alter physiological and biochemical state of animals by inducing variations in the activities of several enzymes (Abidi, 1986). Disturbances in carbohydrate metabolism are a major biochemical lesion arising out of the action insecticides leading to compensatory shifts in overall metabolism (Ramakrishnan, 1973).

The effects of Organochlorine insecticides on different aspects of carbohydrate metabolism of non-target species have been studied. Eller (1971) observed hyperplasia of the islets of Langerhans in the trout, *Salmo clarki* on exposure to Endrin suggesting changes in carbohydrate metabolism. Shaffi (1979) reported break down of liver, muscle, brain and kidney glycogen with resultant hyperglycemia and hyperlactemia in nine Indian fishes exposed to heptachlor. Rajendraprasad Naidu *et al.*, (1986) observed marked changes in the activities of LDH, ICDH, SDH, G-6-PDH, and phosphorylase, AAT, AIAT and GDH and in the concentrations of hepatopancreatic glycogen.

Endosulfan induced changes in the biochemical composition of the freshwater bivalve mollusc, *L. marginalis* (Muley and Mane, 1989). RamanaRao and Ramamurthi (1980) have observed glycogen depletion in the hepatopancreas of the snail *P. globosa* after exposure to sumithion. Increased concentration of pyruvate and lactate were observed under organochlorine insecticides – dieldrin and telodrin, intoxication (Hathway, 1965). It has been reported that chronic and acute poisoning of sheep and chicken with organophosphate insecticides like thiophos, chlorophos and methylnitrophos is accompanied by profound changes in carbohydrate metabolism.

Material Methods:

Glycogen content was determined according to Anthrone reagent method (Selfers *et al.*, 1956). Carbohydrates are first hydrolysed into simple sugar using dilute hydrochloric acid. In hot acidic medium glucose is dehydrated to hydroxyl methyl furfural. Compound forms with anthrone a green coloured product with an absorption maximum at 630 nm.

Weight 100 mg of sample into boiling tube. Hydrolyse by keeping it in boiling water bath for three hours with 5 ml neutralise it with solid sodium carbonate until the effervescence ceases. Make up the volume to 10 ml & centrifuge. Collect the supernatant and take 0.5 & 1 ml aliquots for analysis. Prepare the standard by take 0.5 & 1 ml aliquots for analysis. Prepare the Standards by taking 0, 0.2, 0.4, 0.6, 0.8 and 1 ml of the working Standard '0' serve as blank. Make up the volume to 1 ml in all the tubes melding the sample tubes by adding distilled water. Then add 4 ml of anthrone reagent, Heat for eight minutes in boiling water bath. Cool rapidly and read the green to dark green colour at 630 nm. Draw a standard graph by plotting concentration of the standard on the X-axis versus absorbance on Y-axis. The Glycogen content was expressed as mg glycogen/gm. wet. Wt. of tissue.

Result and Discussion:

Changes due to the Effect of Endosulfan pesticide on the Glycogen content of leg muscle, gill muscle, hepatopancreas, heart muscle of Freshwater female crab *Barytelphusa Cunacularis*, after exposure to the concentration of Endosulfan for 24, 48, 72 and 96 hours, the values of Glycogen contents were expressed in term of mg glycogen/gm. wet, weight.

Table: Effect of Endosulfan on Glycogen contents in

Freshwater Female Crab *Barytelphusa Cunacularis*

Sr. No .	Duration of Exposure	Muscle	Gill	Hepatopancreas	Heart
1.	Control	4.64 ± 0.014	5.21 ± 0.006	6.42 ± 0.031	4.45 ± 0.018
2.	24	3.70 ± 0.022*	5.11 ± 0.022**	4.92 ± 0.021***	5.57 ± 0.020***
3.	48	3.42 ± 0.033**	5.85 ± 0.027***	5.65 ± 0.027**	4.23 ± 0.015**
4.	72	3.34 ± 0.020*	4.65 ± 0.037**	5.80 ± 0.016***	3.92 ± 0.007***
5.	96	3.15 ± 0.013***	4.18 ± 0.015**	5.13 ± 0.018**	3.21 ± 0.024***

Note: 1) Values expressed as mg glycogen/gm wet, weight of animals.

2) Each value is mean of six observations \pm S.D.

3) Value are significant at * = $P < 0.05$, ** = $P < 0.01$, *** = $P < 0.001$

& NS – Not significant

Figure (a): Effect of Endosulfan on Glycogen Content in *Barytelphusa Cunacularis* (24 hrs.)

(Each value is the mean of six observations \pm S.D.)

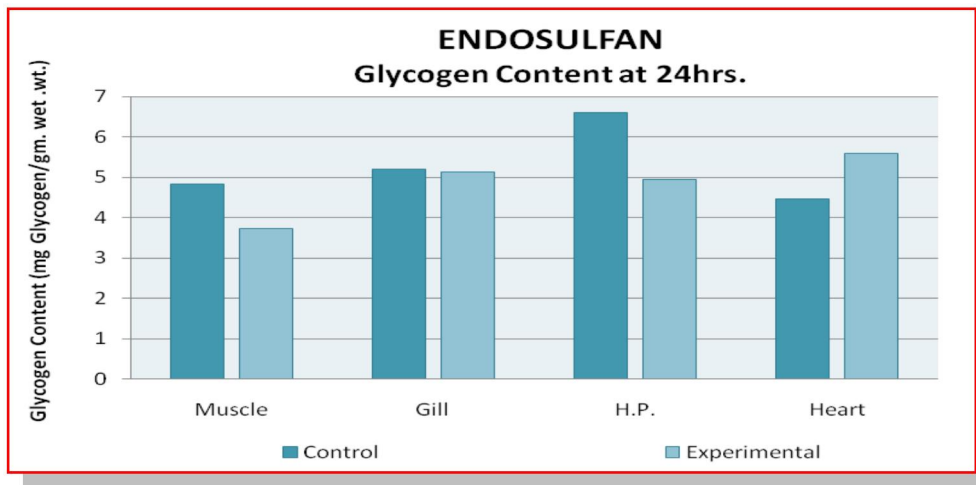


Figure (b): Effect of Endosulfan on Glycogen Content in *Barytelphusa Cunacularis* (48 hrs.)

(Each value is the mean of six observations \pm S.D.)

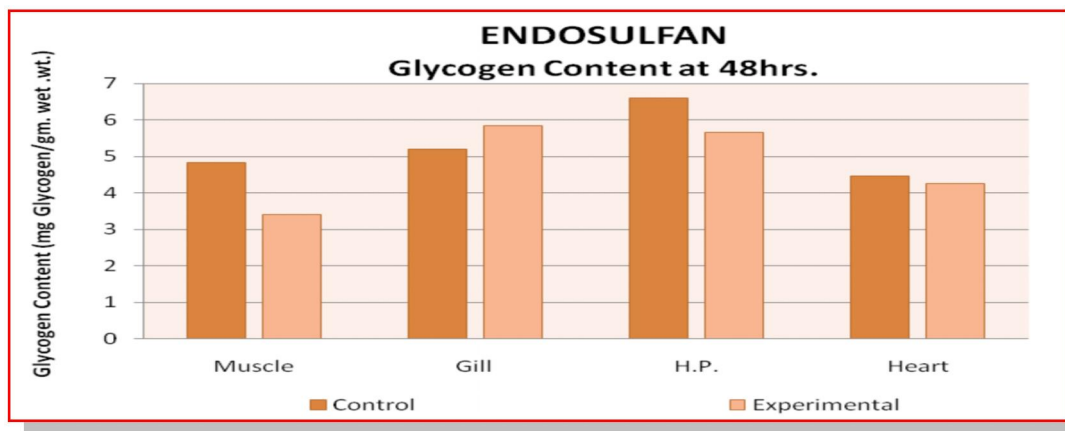


Figure (c): Effect of Endosulfan on Glycogen Content in *Barytelphusa Cunacularis* (72 hrs.)

(Each value is the mean of six observations \pm S.D.)

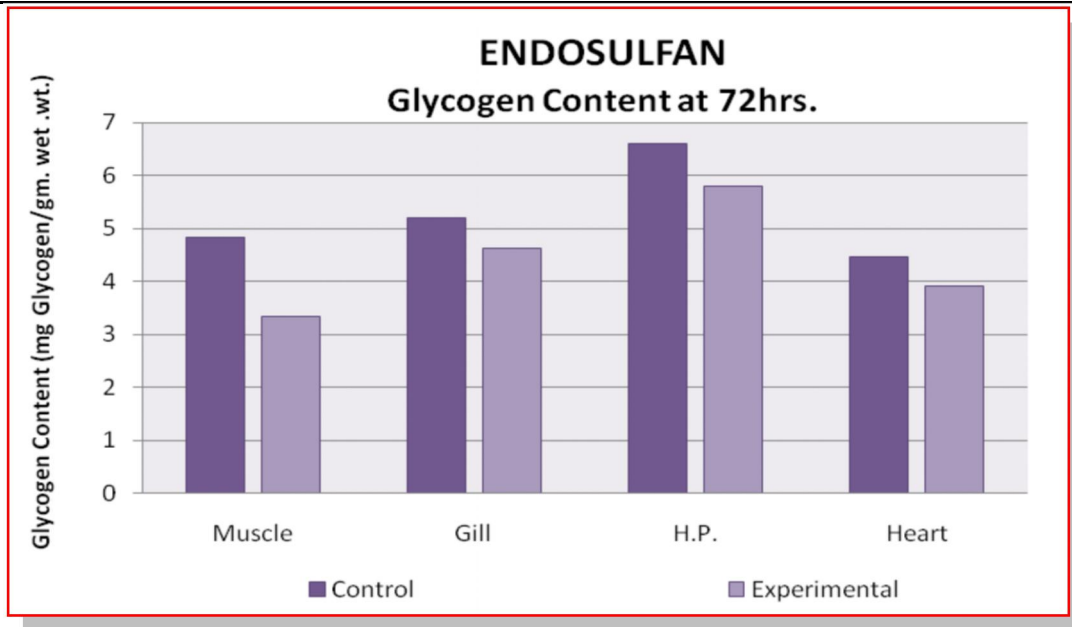
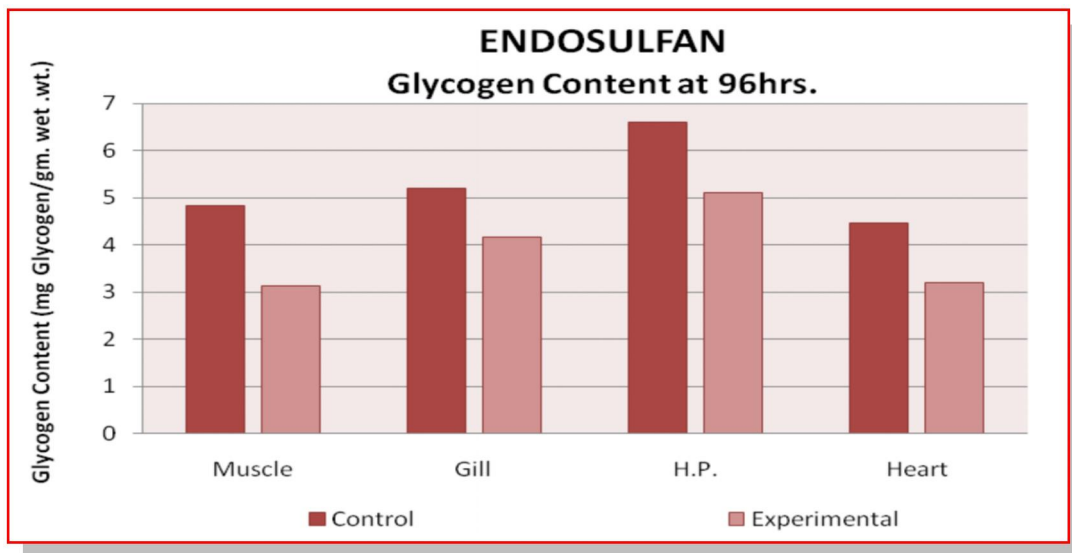


Figure (d): Effect of Endosulfan on Glycogen Content in *Barytelphusa Cunacularis* (96 hrs.)
 (Each value is the mean of six observations \pm)



S.D.The variation in the glycogen content due to exposure of pesticide pollutant given in above Table. The total glycogen contents expressed as mg/gm. wet. Weight in the tissue varied from 3.13 to 4.84 in leg muscle, 4.16 to 5.86 in gill muscle, 4.94 to 6.62 in Hepatopancreas and 3.20 to 5.59 in heart muscles of Endosulfan exposed animals. The glycogen content initially increased in heart muscle at 24 hours and then decreased up to 96 hours, while in gill it increases at 48 hours. Decrease in leg muscle and Hepatopancreas up to 96 hours as compared to control, shown in Table and graphically represented.

Discussion:

The result shows the variation in the levels of organic reserves of various tissues. The carbohydrates are not only important as structural components but also serve as the source of energy. Excess of glucose store as a glycogen, a polysaccharide stored in hepatopancreas in invertebrates and muscle and liver in vertebrates. The hepatopancreas of crustaceans is analogous to the liver of vertebrates and is involved in the synthesis and degradation of several

molecules involved in the metabolism. (Chang & O'conor, 1983). It is utilised according to the need of the organism and so it suggest that carbohydrate are mainly used to meet higher energy demand to combat the stress induced by heavy metals. When energy is required the glycogen is broken down and utilised as a source of energy.

In the present probe when the freshwater female crab *Barytelphusa Cunicularis* were exposed to sub lethal concentration of Endosulfan which causes initial increase in glycogen level in heart muscle, but decrease in leg muscle and gill muscle and Hepatopancreas. But later on after longer exposure upto 96 hours, there was sharp decline in glycogen level in gill muscle, Hepatopancreas and heart muscle. In Dimethoate exposed animals, there was gradual slight increase in glycogen level in hepatopancreas at 24 hours while slight decrease in glycogen level in leg muscle and heart muscle at 24 hours shown in Table. The observed depletion in glycogen content by pesticide pollutant. Several workers results on Crustacean species (Nagabhushanam and Kulkarni, 1981), Pesticides (Rao and Nagabhushanam, 1987).

The decrease in glycogen level in hepatopancreas and muscle of freshwater Snail *Pilaglobosa* exposed to Endosulfan has been observed by Kulkarni *et al.*, (1984) observed a marked decline in tissue glycogen and carbohydrate level in the tissue of the crab *O. senexsenex* and explained that this might be due to the enhancement of glycogenolysis by increase in phosphorylase activity. Venkata Reddy observed a decline in the glycogen content in the gill, muscle and hepatopancreas of crab, *Oziotelphusasenexsenex* exposed to phosalone and suggested that it may be due to either a reduction in glycogenesis or increased glycogen utilisation through the glycolytic pathway.

The steady decrease in the tissue glycogen clearly indicates its rapid conversion by the respective tissues as a consequence of endosulfan intoxication. Depletion of glycogen would result in the disruption of enzymes associated with carbohydrate metabolism. Glycogen depletion is more prevalent under hypoxic conditions and it is quite likely that a situation similar to hypoxia might be occurring in the tissues of Endosulfan exposed crab.

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MEASUREMENT OF AEROSOL OPTICAL DEPTH, TURBIDITY, AND VISIBILITY BY DIRECT SOLAR RADIATIONS USING A RADIOMETER

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Abstract

A multi-wavelength radiometer has been used for studying atmospheric aerosol at Beed in Maharashtra for wavelengths 501, 536, 585, and 695 nanometres at half-hour intervals throughout the day for cloud-free conditions. The data has been analyzed for studying atmospheric aerosol optical depth from which several atmospheric aerosol properties have been studied. The Langley plots measured aerosol optical depth has variability, and is the most pragmatic approach to calibration of the atmosphere's instability. This change in Aerosol Optical Depth is measured for aerosol particle size and concentration. Further Turbidity and Visibility were also measured.

Key Words: - Solar radiations, Radiometer, aerosol, aerosol optical depth, Turbidity.

1. Introduction

The Particles in the atmosphere arise from natural sources, such as windborne dust, sea spray, and volcanoes, and from anthropogenic activities such as the combustion of fuels. Whereas an aerosol is technically defined as the suspension of fine solid or liquid particles in a gas, common usage refers to the aerosol as the particulate component only. Atmospheric aerosols are generally considered to be particles that range in size from a few nanometres to ten micrometres in diameter. Airborne particles can change their size and composition by condensation of vapor species, by evaporation, by coagulating with other particles, by chemical reaction, or by activation in the presence of water supersaturation to become fog and cloud droplets. Ground-based spectral measurements of atmospheric optical depth represent relatively simple and inexpensive means of monitoring total aerosol variations for application in meteorology, climatology, and air pollution transport. Earth's atmosphere is a huge aerosol system, and particles are produced in many different ways. These particles are held together by chemical forces and range from clusters of a few molecules to particles of about 20 micro-diameters. A small percentage of the gases are converted to particulate matter which adds to the total concentration and contributes significantly to visible degradation. The effect of pollution on light scattering is particularly strong in urban and industrial air basins [1-3].

In metrology, the aerosol particles are often labelled as condensation nuclei. The presence of these aerosols causes a decrease in the contrast between objects nearby and some distance away. Small concentrations of aerosols are significant in making objects invisible in full daylight. As the humidity increases the aerosol particles gradually change both in size and physical properties and finally become cloud and fog droplets, ice particles. In this way, aerosol is used for cloud formation. The effect of dust considerably on particle size concentration and composition with wavelength of radiation. Dust, smoke, and fog make a certain disease. Usually, the coarse particle of aerosol sticks to the mucous membrane of the outer respiratory organs. Highly dispersed aerosol can, however, penetrate deeper and remain in the lungs. The disease is common among workers in types of cement, slate, asbestos, crushing, and welding [4-5]. Optical depth magnitude yields information related to aerosol size distribution and changes in the density of the particulate matter in the atmosphere during the day. The standard Langley plot technique which is the most pragmatic approach to calibration is appealing in its simplicity but is susceptible to systematic error related to the atmosphere's instability [6-7].

Various methods are used by several investigators to obtain information about the properties of atmospheric aerosols. Wood Cock collected sea spray particles on small glass plate exposure from an aircraft and determine their size distribution as well-developed droplets at a constant high relative humidity [8]. Friedlander attempted to

explain the size distribution as an interaction of coagulation and sedimentation [9]. , , and researched Atmospheric Extinction Using Direct Solar Radiation Measurements Made with a Multiple Wavelength Radiometer [10]. Aerosol optical depth is determined by subtracting from the measured optical thickness estimable compound of Rayleigh scattering and gas absorption by Shaw et al [11].

This work aims to define turbidity and visibility factors from the observed aerosol optical depth from the continuous record of solar radiation on multiwavelength radiometers.

2. Experimental technique

In the continuous record of direct solar radiations on a multiwavelength radiometer for cloud-free conditions for one month, a simple technique of Lambert-Beer’s law is applied to extract the aerosol optical depth. The measurements were reported manually with 30-minute interval for wavelengths 501, 536, 585, and 695 nanometres from March to April for cloud-free conditions in the Beed district in Maharashtra.

The absolute air mass is calculated for every 30-minute interval for that day and by direct radiation data aerosol optical depth is calculated. The attenuation of solar radiations traversing the atmosphere is given by Lambert-Beer law as

$$I(\lambda) = I_0(\lambda)e^{-\tau(\lambda).m}$$

Where, $I(\lambda)$ =Direct solar irradiance at the Earth’s surface.

$I_0(\lambda)$ = Spectral irradiance at the top of the atmosphere.

$\tau(\lambda)$ = Total optical thickness at λ .

m = absolute air mass.

3. Result and Discussion

1) Aerosol Optical Depth (AOD)

The Aerosol Optical Depth obtained by the Langley plot method for four wavelengths 501, 536, 585, and 695 nanometres shows the following features a) there is a change in the Aerosol optical depth for the morning and afternoon periods. Hence two independent linear plots are observed for each day of observation. The average optical depth is obtained by averaging morning and afternoon optical depths for individual days. The average optical depths obtained over the observation period are formulated in Table 1. The visibility vs. optical depth plot for wavelength 501, 536, 585, and 695 nm is shown in Figure 1,2,3 and 4 respectively.

$\lambda=501$ nm			$\lambda=536$ nm			$\lambda=585$ nm			$\lambda=695$ nm		
Optical depth	Turbidity	Visibility	Optical depth	Turbidity	Visibility	Optical depth	Turbidity	Visibility	Optical depth	Turbidity	Visibility
1.59	0.66	5.87	1.65	0.54	7.37	2.05	1.27	3.06	1.16	0.51	7.56
0.94	0.39	10.02	0.96	0.48	8.12	0.8	1.12	7.48	0.92	0.40	9.6
1.34	0.54	7.11	1.32	0.76	5.14	1.1	0.93	6.27	1.12	0.50	7.7
0.95	0.39	9.93	0.83	0.41	9.45	0.81	0.64	7.72	1.22	0.54	7.17
0.94	0.38	9.92	1.11	0.55	7.06	1.15	0.54	5.45	1.19	0.52	7.38

1.20	0.50	7.76	1.54	0.78	4.99	1.77	0.72	3.52	1.66	0.74	5.28
1.18	0.48	8.04	1.72	0.86	4.54	1.18	0.73	5.31	1.25	0.55	7.04
0.93	0.38	10.22	0.99	0.44	8.83	0.99	0.52	7.46	0.99	0.44	8.8
0.65	0.26	14.58	0.78	0.34	9.02	0.44	0.27	9.48	1.32	0.59	6.52
1.60	0.65	5.99	1.75	0.87	4.48	2.08	1.21	3.45	1.42	0.65	5.98
1.42	0.58	6.72	1.34	0.68	5.72	1.27	0.97	6.45	1.37	0.61	6.42
1.01	0.41	9.47	1.54	0.77	5.04	1.6	0.69	5.14	1.33	0.59	6.6
0.86	0.35	11.12	0.96	0.46	6.23	1.17	0.58	6.23	1.01	0.45	8.62

b) In the real sense, the aerosol optical depth is obtained by subtracting Rayleigh’s optical depth and optical depth due to gases. The optical depth due to gases is considered negligibly small [12-14]. The optical depth due to Rayleigh atmosphere is shown in Figure 5 [15].

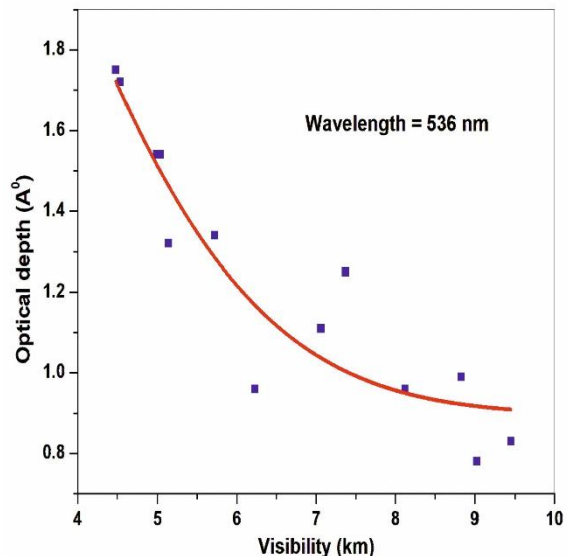
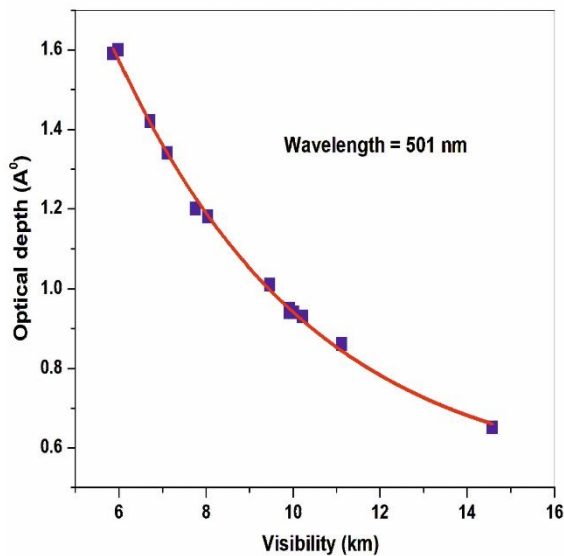


Figure 1. Visibility vs. optical depth (501 nm) **Figure 2.** Visibility vs. optical depth (536 nm)

It is observed that these values 501 nm = 0.1212, 536 nm = 0.0968, 585 nm = 0.0700 and 695 nm = 0.0276. The increase in the optical depth for the afternoon period indicates the accumulation of aerosol particles leading to the increase in density of particulate matter in the app atmosphere during this period.

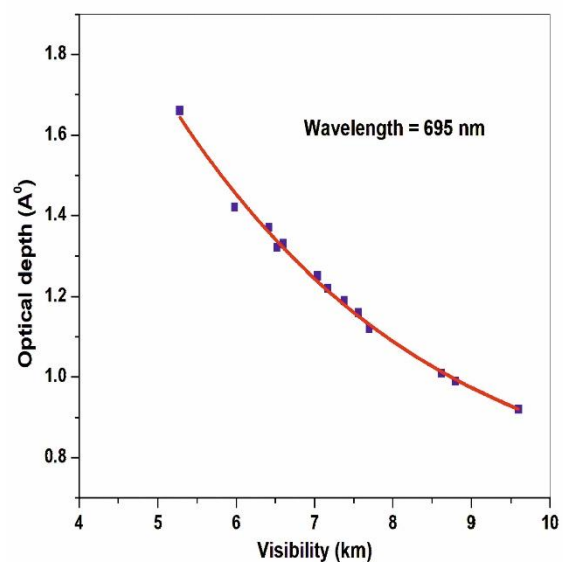
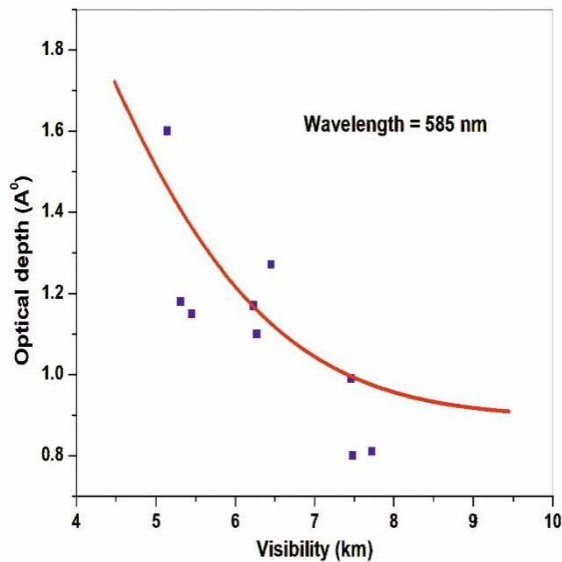


Figure 3. Visibility vs. optical depth (585 nm) **Figure 4.** Visibility vs. optical depth (695 nm)

This increase in particle density is due to the local resources pouring the particles into the region. The sources producing aerosol are motor vehicles, small industries, etc. Hence the daily variation in optical depth is related to human activities which are more in the forenoon period [16-19].

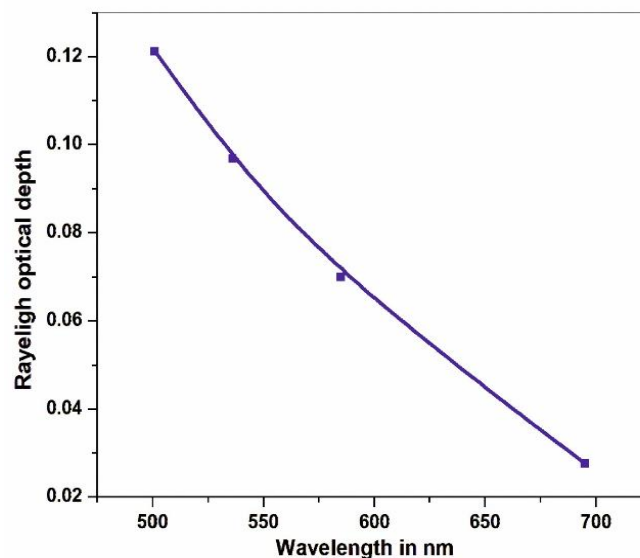


Figure 5. Wavelength vs. Rayleigh optical depth.

2) Effect of Coagulation on visibility

Visibility is nothing but the distance that can be seen easily by our eyes. Generally, it gives the distance of the horizon that can be made from the observing station. Knowing the turbidity coefficient $\sigma(\lambda)$ that is scattering coefficient, and we can easily find out the visibility by using equation

$$V = \frac{3.912}{\sigma(\lambda)}$$

where, V is visibility in kilometre, the visibility for each day is calculated for the wavelength 501, 536, 585, 695 nm as shown in Table 1.

In our measurements, visibility increases in the afternoon, and coagulation of aerosols results in a rapid decrease in the concentration of the smaller particles at the same time number of larger or giant particles increases. Under natural conditions, the aged aerosols are found in the air masses which have also undergone the process of washing out by precipitation and dilution with other pure air masses which causes the decrease of the number of larger particles hence due to the coagulation process of giant as well as Aitken articles decreases simultaneously. From this consideration, we see that strong coordination between Aitken and giant particles cannot exist [20-21].

3. Conclusions

A multi-wavelength radiometer has been used for studying atmospheric aerosol at Beed in Maharashtra. The data has been analysed for studying atmospheric aerosol optical depth from which several atmospheric aerosol properties have been studied. The Langley plots show that aerosol optical depth has variability from morning to afternoon period, in most cases, Aerosol optical depth has higher values in the afternoon period as compared to the morning period. This change in AOD may be due to small-term variations in the aerosol particle size and concentration. The continuous record of independence of the direct solar irradiance enables us to determine the turbidity coefficient and observe that has an average value, indicating less polluted air as compared to urban areas.

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NAMALYCASTIS FAUVELI -DERIVED EXTRACTS AS INHIBITORS OF BARNACLE SETTLEMENT: AN EXPERIMENTAL STUDY

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Abstract:

Given the regulations governing the use of conventional toxic chemicals against marine fouling organisms and the real-world barriers to the commercialization of natural product antifoulants, there is an immediate need for eco-friendly, potentially commercially viable compounds with antifouling properties. The goal of the current study is to investigate antifouling chemicals that are both ecologically friendly and effective. Through laboratory assay, it was demonstrated that the Polycheate *Namalycastis fauveli* could significantly reduce barnacle toxicity (LD50 range of 10 mg/ml) while inhibiting barnacle settlement (EC50 range of 12 mg/ml). According to an analysis of structure-activity connections, the expression of antifouling activity is significantly influenced by the Polycheate *Namalycastis fauveli*

Introduction:

Biofouling is posing major challenges to the development of aquaculture and the marine industry. In the marine environment, biofoulers, which include macro- and micro-foulers like barnacles, bryozoans, and tubeworms, invade natural and artificial surfaces submerged in saltwater. Micro-foulers include marine bacteria, algae, and protozoa. Observed that the build-up of biofoulers on ship hulls causes surface corrosion and drag, which significantly reduces the maneuverability and carrying capacity of the ship. [2] Observed that in addition, biofouling results in significant material and financial expenses for the upkeep of navy ships, seawater pipelines, and mariculture. [3] Noted that antifouling chemicals, such as copper and butyl tin (TBT), have been added to maritime paints to prevent biofouling and to act as broad-spectrum metal biocides. These biocides are highly effective, yet they can be exceedingly hazardous to a variety of non-target organisms. [4] find a new, safe substance with strong anti-micro and anti-macrofouling capabilities. These biogenic substances may also prove to be useful in the creation of paints that prevent fouling in the future. Naturally, much diversified microbial communities seen in marine habitats have untapped potential to produce a range of chemical deterrents used in defense that are functionally unwanted. [5] Acknowledged marine natural materials are a potentially good supply of fresh antifouling compounds. In the last few decades, a large number of chemicals with potent antifouling action have been extracted from marine sponges, corals, and algae [6]. The primary aim of this study is to comprehend the process of larval barnacle settlement, with the ultimate goal of creating non-toxic antifouling agents using an extract derived from Polycheate *Namalycastis fauveli*. The current work focuses on examining the antifouling capacity of marine Polycheates interaction against the settling of *B. amphitrite* cyprid larvae.

MATERIALS AND METHODS

Collection and extraction of marine Polycheate *Namalycastis fauveli*

The Polycheate *Namalycastis fauveli* were collected during the low-tide of the intertidal area of the west coast of Ratnagiri, India. The collected samples were rinsed with sterile sea water to remove associated debris and salt. Methanol and Methylene chloride extract of the Polycheate *Namalycastis fauveli* was prepared as described by [7] the organic extract was fractionated by the Thin Layer Chromatography on silica gel. The extracts were fractionated using. The solvent system used was chloroform: methanols as the zone of separation were observed under ultraviolet fluorescence using 230-240nm and 250-270 nm lamps. The separated material was recovered from the plates by scraping and eluted with HPLC grade methanol. Methanol was removed by rotary evaporation under vacuum for using them for the antibarnacle activity.

Collection and rearing of barnacle cyprid larvae

Barnacles *B.amphitrite* was collected from west coast of Ratnagiri, India. Adult barnacles released the first stage

nauplii and the positively phototrophic nauplii were collected in the filtered and sterilized sea water containing antibiotics. The young nauplii were fed daily with microalgae *Dunaliella tertiolecta*. The rearing vessels were kept in 28° C and 15:9h (L: D) photoperiod.

Settlement Assay:

Barnacle settlement assays were undertaken using the method by [7] approximately 50-100 cyprids were placed to polystyrene container containing 5ml sea water as control or 5 ml desired concentration of vacuum dried test material. From two to six concentration of test solution, each with replicates was rested to compare the frequency of attachment in experimental solutions with attachment in the controls. Test petridishes were incubated for 22hr at 28°c and 15:9 Lights: dark regime. Attached and unattached cyprids were counted

Statistical analysis:

All the experiments were performed in triplicates to ensure probability and reproducibility of the results. One-way ANOVA analysis was used to test for significant differences between the concentrations of Polychaete *Namalycastis fauveli* on antifouling activity against fouling barnacle bioassay.

Results and Discussion:

Percentage of Settlement inhibition and Lethality of polychaetes *Namalycastis fauveli* at different concentrations

Conc. of extract (Mg/ML)	No. of Cyprids used	% of mortality LD50	Nos. of Cyprids Settled (EC50)
8 mg/ml	100		7070
10mg/ml	100		6065
12mg/ml	100		5048
14mg/ml	100		3033
16mg/ml	100		10020

The crude extract of Polychaete *Namalycastis fauveli* significantly inhibited the cyprid larval settlement (P<0.5) than the control. It showed antifouling activity with EC50 value ranging from 16mg/ml and they were also lethal to cyprids with LD50 value 12mg/ml. *Namalycastis fauveli* extract has slightly inhibited larval settlement with EC50 value 12mg/ml. The extract showed promising activity, they were also toxic to 10mg/ml.

Biofouling is causing serious problems for marine industries and navies around the world [3]. Marine biofouling is a complex accumulation of organisms on artificial structures comprising micro along with macro foulers. [8] reported that micro-fouling facilitates macro-fouling process. [9] Proved the marine organisms such as corals, algae, sponges and ascidians are useful to produce antifouling substances which maintain from undesirable encrusting organisms. The biochemical mechanisms that Polychaetes have developed as a chemical defense for the growth inhibition of epiphytic micro and macro organisms comprise a potential alternative for the prevention of biofouling. In this regard, sessile, soft bodied marine organisms maintain clean surface are identified as possible sources of Natural Product Antifoulants (NPAs). Polychaetes, as rich in chemical defense mechanisms are one of the most studied organisms for the isolation of NPAs. [10] studied the Natural products and their synthetic analogs exhibiting anesthetic, repellent and settlement inhibition properties but non-toxic to non-target organisms are preferred as potential antifouling agents. The Possible antifouling properties of the compounds were isolated from the sponge was first noticed by [11] the further studies in this direction revealed the tremendous antifouling potential of some of the bioactive metabolites inherent in the sponges [2].

The antifouling strategy of Polychaete *Namalycastis fauveli* was tested in the laboratory on larval settlement. The crude extract of Polychaete *Namalycastis fauveli* has significantly inhibited the cyprid larval settlement (P<0.5)

than the control. It has shown antifouling activity with EC₅₀ value ranging from 16mg/ml and they were also lethal to cyprids with LD₅₀ value 10mg/ml. *Namalycastis fauveli* extract slightly inhibited larval settlement with EC₅₀ value 10mg/ml. The extract also showed promising activity and were also toxic to 12mg/ml. This compound has proved the outstanding antifouling activity even at low concentrations. It meets many criteria for a low-toxic/non-toxic antifouling additive and its application for antifouling purposes.

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EXPLORING THE ANTIBACTERIAL PROPERTIES OF POLYCHEATE *CAPITELLA CAPITATA* EXTRACTS

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Abstract:

Drugs made from natural products are the mainstay of pharmaceutical care. Millions of species of plants, animals, marine life, and microorganisms exhibit a remarkable chemical variety, making nature an appealing source for novel medicinal candidate molecules. In this field of study, annelids particularly polychaetes and worms have become more well-known due to their structurally fascinating chemicals and bioactivity. The antibacterial properties of Polycheate *capitella capitata* acetone extract were investigated. Animal body tissues were extracted, and the extracts were tested against three types of pathogenic fungi. The antimicrobial activity data showed that the greatest activity was against *S. aureus* (8.0 mm), whereas the lowest activity was against *E. coli* and *S. typhi* (1.0 mm). The extract demonstrated antibacterial activity against the majority of pathogens in the current investigation.

Keyword: Antibacterial activity, Polycheate *capitella capitata*

Introduction:

Known as the "mother of origin of life," the ocean is also the source of naturally occurring products with distinctive structural qualities, most of which are accumulated in living things. While some of these compounds have been developed as analgesics or to treat inflammation, others demonstrate pharmacological activities and are useful for the invention and discovery of bioactive compounds, primarily for fatal diseases like cancer, AIDS, arthritis, etc. The life-saving medications are primarily prevalent in invertebrates, algae, and microbes, but they are rare in vertebrates. Large research areas for the extraction of biological substances from seas and oceans have been made possible by modern technologies. Research into marine organisms' antibacterial activity has been popular for many years. Marine invertebrates, particularly sponges, ascidians, bryozoans, and mollusks, are the source of a huge amount of naturally occurring compounds, some of which are presently undergoing clinical trials (Proksch et al., 2002).

The marine biosystem's most notable component, the polychaete annelids, has almost untapped potential as a source of bioactive compounds. Primarily filter feeders, polychaete worms frequently contribute significantly to the biomass and consumer production in the intertidal and sublittoral communities found on rocky coasts (Field et al., 1980). Kranjnjak and Berg (1992) isolated the tetrapeptide FMRE amide from *Nereis* and described its function as a neurotransmitter from polychaete. In the case of live marine surfaces, the host organism's organic compounds may also have an impact on the colonization process. These metabolites can influence bacteria in several ways, such as by inhibiting bacterial growth or cell death or by inducing chemotactic responses. Secondary metabolites have been discussed in relation to their function as a chemical defense against epibiosis (Paul, 1992). There is very little information available, according to a survey of the literature on the antibacterial activity of annelids, particularly polychaetes. Conversely, a vast amount of research is accessible in other invertebrate categories. Given the dearth of knowledge in this area, an attempt was made today with aim to assess Polycheate *capitella capitata* possible antibacterial properties.

Material and methods:

Collection and preparation of samples

The Polycheate *Capitella capitata* were collected during the lowtide of the intertidal area of west coast of Ratnagiri, India, between 15 and 17 June, 2009. The collected samples were rinsed with sterile sea water to remove associated debris and salt. The samples were weighed (10 g) and preserved separately in methanol, ethyl acetate and petroleum ether (1:2) and brought to the laboratory. Samples were then soaked in the above mentioned solvents for 48 h, the extracts were then obtained from the soaked samples by grinding, using pestle and mortar and filtering through Whatman No.1 filter paper, the filtrate were centrifuged at 3000rpm. The solvent was evaporated under reduced

pressure using desiccators and the residue was weighed and dissolved in Dimethyl formamide (1 mg/ml). The extracts were fractionated using Thin Layer Chromatography. The solvent system used was chloroform: methanol (9:1). Zone of separation were observed under ultraviolet fluorescence using 230-240nm and 250-270 nm lamp. Separated material was recovered from the plates by scraping and eluted with HPLC grade methanol. Methanol was removed by rotary evaporation under vacuum for using them for the antibacterial activity.

Antibacterial susceptibility assay

The Polycheate *Capitella capitata* fractions were tested for inhibition of bacterial growth against human pathogenic bacteria. The clinical isolates were sub cultured from stock culture 24 h prior to the experiment in nutrient agar media and used for the study. The fractions of The Polycheate *Capitella capitata* were tested for antibacterial activity by disc diffusion method (Avelin et al., 1991). The bacterial strains such as *Escherichia coli*, *Staphylococcus aureus*, and *Salmonella typhi* used for the antibacterial activity. All the bacterial strains were enriched in nutrient broth at 37°C for 18 - 24 h. Paper disc method of Bauer et al. (1966) was used for screening antibacterial activity of Polycheate *Capitella capitata* fractions.

This method was based on diffusion capacity of test chemicals through an agar medium. To determine the effect of the Polycheate *Capitella capitata* against bacteria (*Bacillus subtilus*, *Bacillus aurius* and *Escherichia coli*) applied 20µl of pure fraction to a sterile filter paper disc (6mm in diameter). Allow to air dry for 1hr to remove traces of the carrier solvent (methanol), than placed on a newly spread lawn of fungi and bacteria on each replicate plate. One disc treated with Polycheate fractions concluded as experiment, along with the disc treated with methanol as control. Zone of inhibition (i.e. the distance from the edge of the filter paper disc to the growing edge of the microbes) measured by using minimum inhibitory concentration (MIC). The growth area is almost round or oval, hence the growth area (mm) was measured using the mathematical formula $D=2r$.

Results:

The area growth level of control *Staphylococcus aureus* was a found to be 30mm. The area of growth in experiment Polycheate *Capitella capitata* was found in fraction- I, II, and VII (30mm), fraction III (20mm), IV, V and VI (29mm) (Plate 12 and Fraction I –VII). The zone of inhibition level was not significantly ($P>0.05$) in II, IV and V (3%), however fraction III (33.33%) was significant at $P<0.05$ levels. There was no inhibition occur against *Staphylococcus aureus* in Polycheate *Capitella capitata* fraction in fraction II, VII, and I.

The area of growth level of control *Bacillus subtilus* was a found to be 32mm. The area of growth level inhibited by the Polycheate *Capitella capitata* was found in fraction- I, II, IV and VI (32mm) and fraction- III and V (31mm) in diameter, and fraction VII (27mm). The zone of inhibition not significantly inhibited ($P>0.05$) in III and VI (3%) however fraction VII (15%) significant ($P<0.05$). There was no inhibition occur against *Bacillus subtilus* in Polycheate *Capitella capitata* fraction- I, II, IV and VI. Total growth level of control *E.coli* was a found to be 32mm. Total growth level of inhibited by the Polycheate *Capitella capitata* was found in fraction- I (31%), and fraction-II, IV and VII (32mm), fraction V (27mm) and fraction VI (29mm) (Plate 14 and Fraction I –VII). The zone of inhibition not significantly inhibited ($P>0.05$) fraction I (3%), III (6%) and fraction VI (9%) however fraction V (15%) was significant ($P<0.05$). There was no inhibition occur against *E.coli* in Polycheate, *Capitella capitata* fraction- II, IV and VII.

Discussion

The findings of our study unequivocally confirm the antibacterial properties of Polycheate *Capitella capitata* extracts. The observed inhibition zones and MIC/MBC values provide strong evidence of the bioactivity of the extracts against a range of bacterial strains. This aligns with the initial hypothesis that *Capitella capitata* may harbor bioactive compounds with antibacterial potential. The results of antimicrobial activity revealed that highest activity against *S. aureus* (8.0mm) and minimum against *E.coli* and *S.typhi* (1.0mm). Although the exact bioactive compounds responsible for the observed antibacterial effects require further investigation, our results provide a foundation for future studies. The diversity of bacterial strains affected by the extracts suggests a broad-spectrum antimicrobial potential, which could be attributed to a combination of secondary metabolites present in the Polycheate *Capitella capitata* Natarajan *et.al.* (2010).

Our findings are in concordance with recent studies exploring the antibacterial activities of marine organisms. Notably, similar bioactive properties have been reported in various marine invertebrates and algae. The unique environmental conditions in which Polycheate *Capitella capitata* thrives may contribute to the production of distinct antibacterial compounds, expanding the repertoire of marine-derived antibiotics. While our study focused on the antibacterial efficacy, future research should delve into the mechanisms underlying the observed effects. Elucidating the mode of action of Polycheate *Capitella capitata* extracts against specific bacterial species will contribute to a deeper understanding of their therapeutic potential and may facilitate the development of novel antimicrobial agents McKay *et. al.*, (2005).

The discovery of antibacterial properties in Polycheate *Capitella capitata* extracts holds promise for various applications. From ecological perspectives, these compounds may play a role in the natural defense mechanisms of the organism. On a practical level, the development of novel antibiotics or antimicrobial agents derived from marine sources, such as Polycheate *Capitella capitata*, could address the growing challenge of antibiotic resistance. It is important to acknowledge the limitations of our study, including the preliminary nature of the investigation into bioactive compounds and the need for more detailed mechanistic studies. Future research should aim to isolate and identify specific compounds responsible for the antibacterial activity and explore their potential for pharmaceutical and biotechnological applications. In conclusion, our study provides compelling evidence supporting the antibacterial properties of Polycheate *Capitella capitata* extracts. This research contributes to the growing body of knowledge on marine-derived antimicrobial compounds and opens avenues for further exploration and application in the fields of medicine and biotechnology Zubia *et. al.*, (2005).

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ECOLOGICAL SURVEY OF AQUATIC ENTOMOLOGICAL INSECTS IN THE FRESHWATER HABITATS OF SINA DAM DISTRICT AHMEDNAGAR (M.S) INDIA

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Abstract

The research provides an overview of a study conducted between January and May of 2019, focusing on the significance of water as a universal solvent and its crucial role in sustaining life. With water constituting approximately 71% of the Earth's surface and encompassing diverse habitats like ground water zones, lentic bodies (lakes and ponds), lotic bodies (rivers and streams), and ecotonal water bodies in India, the study explores the importance of these environments for various forms of life, from molecules to humans. Freshwater habitats, including reservoirs, streams, and lakes, are vital ecosystems supporting a rich diversity of aquatic insects. These insects play key roles in both lotic and lentic food chains, influencing the overall ecosystem health by supporting other creatures such as fish and birds. Notably, insects serve as valuable indicators of human activity and water contamination in aquatic environments. The study conducted four sampling locations, strategically chosen to utilize different types of aquatic bug nets for collecting water samples. This research aims to contribute to the understanding of the ecological dynamics within freshwater habitats, emphasizing the importance of water and its associated ecosystems for sustaining life on Earth.

Introduction:

Water, as a fundamental element for life on Earth, shapes ecosystems and sustains diverse forms of life. Sina Dam District Ahmednagar, Maharashtra, represents a unique geographical area with freshwater habitats that play a crucial role in supporting local biodiversity. Among the various inhabitants of these aquatic ecosystems, insects, particularly aquatic entomological species, contribute significantly to the ecological balance and serve as valuable indicators of environmental health. Freshwater habitats encompass a wide array of ecosystems, including ground water zones, lentic bodies (such as lakes and ponds), and lotic bodies (rivers and streams). The diverse nature of these habitats provides niches for a variety of species, creating complex ecological interactions. In the context of Ahmednagar District, where water resources have historically influenced human settlement and development, understanding the dynamics of aquatic ecosystems, specifically focusing on entomological insects, becomes imperative.

Aquatic insects are integral components of freshwater food webs, playing essential roles in nutrient cycling and energy transfer. Their presence and abundance are indicative of the overall health of freshwater ecosystems. Additionally, these insects are known to respond sensitively to environmental changes, making them valuable bioindicators for monitoring water quality and ecosystem integrity. The overarching objective of this research paper is to conduct a comprehensive ecological survey of aquatic entomological insects in the freshwater habitats of Ahmednagar District. By examining the diversity, distribution, and abundance of these insects, we aim to shed light on the intricate relationships within these ecosystems and contribute valuable insights into their ecological dynamics. This study holds significance not only for understanding the local biodiversity but also for providing baseline data that can inform conservation and management efforts in the face of ongoing environmental changes.

In the subsequent sections, we detail the study methodology, present our findings, and discuss the implications of the observed patterns in the context of both local and broader ecological perspectives. Through this research, we aspire to enhance our understanding of the intricate interplay between aquatic entomological insects and freshwater ecosystems in Ahmednagar District. The current study was conducted from January to May of 2019. Using varying-sized aquatic bug nets, the four sampling locations were chosen for the water sample. During the study period, 748 aquatic insects from 15 families and 6 orders were gathered.

Material and Method: -The Sina Dam selected for the present investigation lies in the Eastern side of Western Maharashtra on east of Ahmednagar city. It is situated at about 450 meters of sea level located at 74° 51' (E) longitude and 18° 51' (N) Latitude. It is an irrigation project on river Sina in Karjat Tehsil; river Sina is tributaries of river Bhima in Krishna basin. It is an earthen dam near village Nimgaon Gangarda.

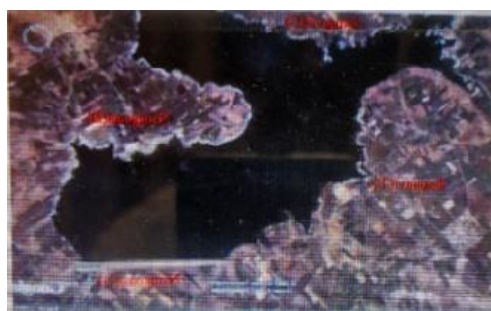
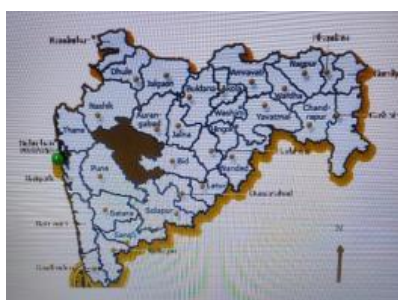
The District has a monsoonic climate, with three distinct seasons: winter, summer, and rainy. The summer months of February through May are when it starts. The winter months of November through February are when it begins. June to October is the start of the rainy season.

It is a highly developed agricultural region. Tehsil's terrain is littered with numerous artificial reservoirs. These reservoirs were built for agriculture and to feed surrounding area and the neighboring hamlet with drinking water. Nevertheless, as time went on, domestic uses of water, such cleaning, bathing, and washing, replaced agricultural uses. The fishing operations in the reservoirs were initiated by the nearby fishermen. The entomofauna from the regions of India that have been studied thus far is inadequately documented in relation to limnology. The early researchers were Dinakaran and Anbalagan (2007), Sharma and Rai (1991), Thirumalai (1999), and Shivaramkrishnan (2005). The current study examines the quantity of entomofauna in the area of these significant water bodies with the goal of identifying common species.

Map Showing Location of Maharashtra State in India.



Using an insect collecting standard pond net (standard-WP2pattern) with a mesh size of 60 µm, water samples were collected for the study of entomofauna from the five corners of the dam during the months of January and May 2019 in the early morning hours. On fields, samples were gathered and kept in absolute alcohols. Certain insects were identified in the locations where samples were transported to the Zoology Department's laboratory and examined under a stereo zoom microscope (Carl Zeiss, Stemi DV4). The specimens were then identified using a standard taxonomic literature key



Results and Discussion: The total individuals recorded in the study water bodies is 749 which belong to 5 orders and 15 families.

Table 1: Species and Relative Abundance of Aquatic Insects Recorded in the Sina Dam Waterbodies

Order	Family	Common Name	Zoological Name	No. of Insects
Odonata	Coenagrionidae	Golden Dartlet	<i>Ischnura auroa (Brauer)</i>	28
Odonata	Coenagrionidae	Pigmy Dartlet	<i>Agricnemis pygmaea (Rambur)</i>	10
Odonata	Libellulidae	Brown-backed Red Marsh Hawk	<i>Orthetrum chrysis</i>	04
Odonata	Libellulidae	Blue-tailed Forest Hawk	<i>Orthetrum triangular (Selys)</i>	11
Odonata	Libellulidae	Blue Marsh Hawk	<i>Orthetrum glaucum (Brauer)</i>	10
Odonata	Libellulidae	Green Marsh Hawk	<i>Orthetrum Sabina (Drury)</i>	20
Odonata	Libellulidae	Ground Skimmer	<i>Diplocodus trivialis (Rambur)</i>	12
Odonata	Libellulidae	Pied Paddy Skimmer	<i>Neurothemis intermedia (Drury)</i>	06
Odonata	Libellulidae	Blue-tailed Yellow Skimmer	<i>Palpuleura sexmaculata (F.)</i>	03
Coleoptera	Dytiscidae	Diving Beetle	<i>Ciliatus sp.</i>	32
Coleoptera	Dytiscidae	Diving Beetle	<i>Laccophilus sp.</i>	10
Coleoptera	Dytiscidae	Diving Beetle	<i>Sandracottus sp.</i>	05
Coleoptera	Dytiscidae	Unidentified	-----	03
Coleoptera	Hydrphilidae	Water Scavenger Beetle	<i>Berosus indicus</i>	50
Coleoptera	Hydrphilidae	Giant Water Scavenger Beetle	<i>Hydrophilus triangularis Say</i>	50
Coleoptera	Lampyridae	Fire Fly	<i>Photinus sp.</i>	08
Hemiptera	Belostomatidae	Giant Water Bug	<i>Lethocerus indicus</i>	22
Hemiptera	Belostomatidae	Small Water Bug	<i>Diplonychus rusticus</i>	04
Hemiptera	Corixidae	Water Boat Man	<i>Ccorixa sp.</i>	10
Hemiptera	Corixidae	Common Pond Skater	<i>Gerris. Sp.</i>	80
Hemiptera	Mesoveliidae	Water Treaders	<i>Mesovelia vittigera Horvath</i>	16
Hemiptera	Notonectidae	Water Back Swimmer	<i>Notonecta sp.</i>	22
Hemiptera	Nepidae	Giant Water Scorpion	<i>Ranatra elongata</i>	78
Hemiptera	Nepidae	Giant Water Scorpion	<i>Ranatra varipea Stal</i>	33
Hemiptera	Nepidae	Water Scorpion	<i>Laccotrephes ruber (L.)</i>	10
Hemiptera	Garridae	Striders	<i>Striders sp.</i>	12
Diptera	Culicidae	Mosquitoes	<i>Culex sp.</i>	160
Diptera	Tipulidae	Crane Flies	<i>Tipula sp.</i>	11
Diptera	Chironomidae	Midges	<i>Chironomidae sp.</i>	21
Plecoptera	Nemouridae	Stone Fly	Unidentified Sp.	08
Total				749

This table provides a detailed account of aquatic insects found in the Sina Dam waterbodies, including their order, family, common name, zoological name, and the number of individuals. Here's a summary of the findings:

- **Odonata:** The order includes two families, Coenagrionidae and Libellulidae, with various species and respective counts.
- **Coleoptera:** Dytiscidae and Hydrphilidae are the families under this order, showcasing different diving beetles and water scavenger beetles.
- **Hemiptera:** This order encompasses Belostomatidae, Corixidae, Mesoveliidae, Notonectidae, Nepidae, and Gerridae families, highlighting various water bugs, pond skaters, water treaders, water back swimmers, giant water scorpions, and striders.
- **Diptera:** Culicidae, Tipulidae, and Chironomidae families represent mosquitoes, crane flies, and midges, respectively.
- **Plecoptera:** This order includes Nemouridae, specifically a species of stone fly.

This data is crucial for understanding the biodiversity of aquatic ecosystems, providing insights into the various species contributing to the ecosystem's health.

The family-wise data of insect diversity reveals interesting patterns during the study period.

1. Libellulidae:

- **Species:** 7
- **Individuals:** 66
- **Percentage of Total Individuals:** 10.80%
- **Percentage of Total Species:** 23.33%
- **Observation:** Libellulidae emerges as the most dominating family, with a significant presence of 66 individuals and representing 23.33% of the total species.

2. Nepidae:

- **Species:** 4
- **Individuals:** 137
- **Percentage of Total Individuals:** 20.45%
- **Observation:** Nepidae stands out as the most dominating family in terms of individuals, comprising 137 individuals and accounting for 20.45% of the total.

3. Culicidae:

- **Individuals:** 80
- **Percentage of Total Individuals:** 13.09%
- **Observation:** Culicidae takes the second position in dominance, with 80 individuals, making up 13.09% of the total individuals.

4. Hydrphilidae:

- **Individuals:** 50
- **Species:** 3

- **Observation:** Hydrphilidae contributes 50 individuals and represents 3 species.

5. **Corixidae:**

- **Individuals:** 90
- **Percentage of Total Individuals:** 14.75%
- **Species:** 2
- **Observation:** Corixidae is significant, with 90 individuals, constituting 14.75% of the total individuals and having 2 species.

6. **Belostomatidae:**

- **Individuals:** 26
- **Species:** 2
- **Observation:** Belostomatidae is represented by 26 individuals and 2 species.

7. **Coenagrionidae:**

- **Individuals:** 38
- **Species:** 2
- **Observation:** Coenagrionidae is observed with 38 individuals and 2 species.

8. **Dytiscidae:**

- **Individuals:** 50
- **Species:** 4
- **Observation:** Dytiscidae is noteworthy, contributing 50 individuals across 4 species.

9. **Lampyridae:**

- **Individuals:** 8
- **Species:** 1
- **Observation:** Lampyridae is represented by 8 individuals and a single species.

10. **Mesoveliidae:**

- **Individuals:** 8
- **Species:** 1

11. **Observation:** Mesoveliidae contributes 8 individuals and one species. **Notonectidae:**

- **Individuals:** 22
- **Observation:** Notonectidae is observed with 22 individuals.

12. **Tipulidae:**

- **Individuals:** 11
- **Observation:** Tipulidae is represented by 11 individuals.

13. Chironomidae:

- **Individuals:** 21
- **Observation:** Chironomidae is observed with 21 individuals.

14. Nemouridae:

- **Individuals:** 8
- **Species:** 1
- **Observation:** Nemouridae contributes 8 individuals and one species.

In summary, Libellulidae, Nepidae, and Culicidae emerge as the most dominant families, showcasing a diverse insect community in the studied waterbodies.

Conclusion: The entomofauna observed in the aquatic habitat is notably rich compared to other lentic insect-inhabiting environments. A total of 30 species of aquatic insects have been identified in the water bodies, and these species play a crucial role, directly or indirectly, in maintaining the aquatic food chain within the dam. The dominance of these insect species also suggests a lower level of pollution in the water bodies.

It is important to note that the study covers a relatively short period from January 2019 to March 2019. As such, the available data on aquatic insects in lentic water bodies may be limited. Therefore, the actual number of species present in the water bodies might differ from the estimates provided in this study. Further, continuous and long-term monitoring would provide a more comprehensive understanding of the aquatic insect diversity and dynamics in the studied water bodies.

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REVIEW OF FUNGAL DISEASE ON MEDICINAL PLANT IN MAHARASHTRA, INDIA

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Abstract

From Ancient time medicinally important plants that basic resources for medicines. This is one of the remunerative influences. These plants natural synthesized product is a basic component in medicine formation. India has rich source of medicinal plant as well as enormous area covered by it. So, India is considered to be the land of Plant based Medicine. These plants may be cultured or unfarmed in different area of India, but suffer from different fungal diseases. Various fungal groups having threatening effect on parts medicinally important plant and decline their medicinal value.

Keywords: Medicinal herb, principle, uses, economic importance, fungal disease.

Introduction

Plant plays vital role to fulfill basic need of human from ancient time but it's also helpful for medicinal purpose curing various diseases inspire primary needs. There are 60-85% people in each country depend on medicinal plant to cure disease [17]. China like country used 40% medicinal herb as traditional medicine for all health-related issue and also treats million patients per year (Refaz Ahmad Dar). India is one of the high biodiversity zones of medicinal plants like western ghat. From history India also place of Ayurveda practice. Medicinal herb practices are an important part of the basic healthcare system in the developing world [17]. There are nearly 8000 species Medicinal plants, but only 960 species of them find for high marketing production, as per the National Medicinal Plant Board [23]. These 960 species plants can be cultured or under wild habitat diversified in different Topographical and environmental situations that are prone to infection.

Review of Literature:

In Indian economy medicinal plants and plant products put up a major part each year as source of both full and part-time employment [14]. The various fungi, unfavourably attack on the medicinal plant parts and to suppress their medicinal value. Powdery mildew disease one of the major fungal diseases in many parts of India as well as other countries [13]. Visible symptoms checked by general analysis and microscopic studies for recognition of fungal species. *Oidium ocimi* infection found on the leaves of the Tulsi plant. The acuteness of infection causes morphological and anatomical damage to plants. So fungal disease on the Tulsi plant indirectly effect on Manufacturing companies of formation of its medicinal by product [15].

Maharashtra is one of the states having high diversity of medicinal plants. Their number varies according to areas, but it also faces problem of fungal diseases. The isolation of *Alternaria alternata* from infected leaves of Tulsi, *Aspergillus niger* from infected bulb of garlic, *Fusarium solani* from infected fruit of Papaya and *Rhizopus nigricans* from infected fruit of Papaya in district Aurangabad. So, *Alternaria alternata*, *Fusarium solani*, *Aspergillus niger*, *Rhizopus nigricans* etc, are common fungi that cause disease to medicinally important plants (Haqeeqat afreen arshi *et al.* 2016). The seven types of fungi species were observed in the Pathre and Chinchpur region of Ahmednagar *Aspergillus niger*, *Aspergillus flavus*, *Fusarium*, *Trichoderma lignorum*, *Trichoderma viride*, *Verticillium lecanii*, *Penicillium* [12].

In the Parbhani and Nanded region, Adulsa (*Adhatoda zeylanika*) was infected by a fungal attack by Necrotic brown spot, White rust, and leaf rust by *Alternaria* and *Collerotricum* species [21]. In Phaltan area from June 2018 to April 2019, total of 54 plant species were infected by powdery mildew fungi, a number of which have medicinal value [4]. In Order Erysiphales, Family Erysiphaceae having powdery mildew fungal genera as *Blumeria*, *Euoidium*, *Leveillula*, *Oidium*, *Ovulariopsis*, *Phyllactinia* and *Uncinula*. The *Oidium* dominant species

were occurred on 46 host plant. Out of these 2-host infected by *Ovulariopsis* and *Uncinula* and 1 host infected by *Blumeria*, *Euoidium*, *Leveillula* as well as *Phyllactinia* [11].

In above investigation observed that powdery mildew disease epidemic due to the climate and temperature. These fungi cause disease in temperature range 15 to 32°C with relative Humidity 15.5 to 100% [11].

The Amravati region of Maharashtra four fungal species identified, out of these fungi *Leveillula clavata* was first recorded on host *Euphorbia geniculata* [20]. The Khandesh region of Maharashtra 35 wild medicinal plant species infected by powdery mildew fungi [20] from 2004 to 2005. Plant Species *Datura*, *kidmar*, *Lendi pimpali*, *Behada* and *Coleus* were causing yield loss. Fungi mostly cause foliar diseases such as in *Piper longum* leaf blight by *Colletotrichum gloeosporioides* and leaf spot by *Alternaria alternata*. In current time increase the pathological problems under cultivation of medicinal plants.

Phyllanthus amarus a small herb in Rahuri tehsil of Ahmednagar district. this is worldwide use for their medicinal purpose. These herbs having medicinally important leaves but *A. niger*, *A. nidulans*, *Alternaria sp.*, *Fusarium sp.*, *Passalora sp.* (Syn. *Cercospora sp.*), and one Unidentified that 6 fungal species attack on it. Lot of the fungal attack was found on *P. amarus* leaves affecting the quality and quantity of products [10]. These plants have therapeutic activity for cure different disorders. In world market demand of plant-based medicine increases. Last ten-year awareness about the marketing output of *P. amarus* increases like the occurrence of stem blight has induced a full crop failure. From the investigation, it is noticed that there is very minor work that has been done regarding the *phyllosphere* fungal diseases. That's why, it is necessary to aware *phyllosphere* fungi that cause dominant loss in infection to stem, branchlets, fruits, and flowers [8].

Rahuri tehsil of Ahmednagar also has some evidence related to 6 fungal species that attack medicinal plants [8]. In the Loni region of Ahmednagar district, some soil-born fungal species that infect plants are as follows.

Chaetomium, *Mucor*, *Rhizopus*, *Phoma*, *Fusarium solani*, *Monilia*, *Trichoderma*, *Aspergillus*, *Gila monilia*, *Nigrospora*, *Fusarium*, *Aspergillus nigar*, *Phoma*, *Memnolelia*, *Cricinalis*, *Fusarium oxysporium*, *Penicillium chrysogenum*, *Penicillium*, *Chaetomium*, *Pythium*, *Rhizoptonia*, *Rhizopus*, *Fusarium chlamydosporis*, *Verticillium*, *Absidas*. [6]. A new fungal species on rotten pomegranates as *Chaetomella raphigera* was isolated from fruit gardens of different region of Maharashtra [6].

In Vidarbha region of Maharashtra different medicinal plants were observed occurrence of fungi *Colletotrichum gloeosporioides* [24]. It grows on *Piper longum*, *Alternaria alternata* cause leaf spots on *Datura* (*Datura innoxia*) and *Behada* (*Terminalia bellerica* and *Colletotrichum dematium* cause leaf blight on *kidmar* (*Aristolochia bracteata*). In November intensity of leaf blight of *Coleus* by *Curvularia lunata* averagely 24.26%, this disease having inverse correlation with high temperature and humidity.

In Purandar tehsil of pune district fruit rot disease on custard apple is dominant. It caused by *Colletotrichum gloeosporioides*. It occurs all over Maharashtra. In Saswad mainly indigeneous variety of custard apple are grown by the popular cultivar. In their fields and bunds fruit rot was noticed. In laboratory isolation of *C. gloeosporioides* Considerable variation in virulence is known (Irwin and Cameron, 1978; Davis et al., 1994; Chakraborty et al., 1996; Fokunang et al., 2000; Abang et al., 2006 and Sanei and Razavi, 2011), Differential cultivar little known about pathotype diversity of the pathogen population in India because of lacking of appropriate knowledge. In the Annona there is necessary to find out resistance gene across *C. gloeosporioides* system. which are not yet well known, that's why virulence analysis on different host varieties is necessary. The variability of the fruit rot pathogen is not known, so study on different plant species infected by *C. gloeosporioides* is important. [9].

Discussion:

The medicinal plants are infected by different fungal attack. Various pathogens Unfavorably influence plant parts and decrease their medicinal value. Such infected parts as drugs may be dangerous for human body. So, it is necessary the identification and management of the infecting fungi in Maharashtra.

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ANTIFUNGAL POTENTIAL OF PLANT EXTRACTS OF MEDICINAL PLANTS AGAINST SEED-BORNE FUNGI ISOLATED FROM CEREALS CROPS

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Abstract

A laboratory experiment was conducted in the Research Centre, Department of Botany to study the effect of some plants against seed-borne fungi isolated from cereals (Sorghum and Maize). *Aspergillus niger* was the most frequently isolated fungi followed by *Rhizopus* spp., and *Mucor* spp., determined by the plating technique the seeds on both the Agar plate method and Standard blotting method Leaf extracts of five plants viz., *Pongamia pinnata*, *Lawsonia inermis*, *Eucalyptus globulus*, *Calatrophs procera*, and *Azadirachta indica* @ 5%, 10% and 15% concentration were evaluated against *Aspergillus* spp. The results showed that all the plant extracts significantly inhibited the mycelial growth of *Aspergillus* spp. The effect of these five plant extracts varied with the concentrations. Leaf extract of *Pongamia pinnata* at 15% concentration caused the highest inhibition of mycelial growth of *Aspergillus* spp. (47.23%) followed by *Lawsonia inermis* (46.40%), *Eucalyptus globulus* (46.20%), and *Calatrophs procera* (46.15%), whereas the lowest inhibition *Azadirachta indica* (45.88%) of mycelial growth was recorded at 5% leaf extract concentration in case of *A. indica* as compared to control. However, seed treatment at a 15% concentration of all the tested plant extracts was also found to be effective in eliminating the majority of fungi and reducing the relative frequency of seed-borne fungi occurring on the seeds and also resulted in a percent germination increase in both Standard blotter and Agar plate method over control.

Keywords: Seed-borne fungi, Antifungal activity, *Aspergillus*, Plant extracts, Seed treatment

Introduction

Cereal cultivation in India stands in first position in agriculture production. In India, about 47% of cultivated land is under cereal cultivation. In India Sorghum, Pearl Millet, Wheat, Maize, & Rice are the main cereal crops that are cultivated on a large scale. These cereals are the main source of food for people and fodder for domestic animals. The majority of the diseases are caused by seed-borne fungi. These seed-borne pathogens are resulting in losses or death of crop plants. The damage caused by plant parasitic pathogen seed-borne fungi is considered worldwide and has an extensive host range. Due to this, they cause potentially serious constraints to crop productivity. Ahmednagar is one of the largest districts of the Maharashtra state of India including 14 talukas. It occupies an area of 17.035 sq. km. It is located between 180 2' and 190 9' North latitude and 700 9' and 750 5' East longitude. *Lawsonia inermis*, *Pongamia pinnata*, *Eucalyptus globulus*, *Calatrophs procera*, and *Azadirachta indica* were collected from different regions in Ahmednagar (Karjat, Jamkhed, Shrigonda, Pathardi) for the present Study Area: In India, cereal cultivation is oldest practice, which has started at the beginning of fanning work done. Many researchers have done work on antifungal properties of plant species some of these are: Traditional agriculture practices have been replaced by the use of synthetic chemicals for the management of plant pathogens, pests, and weeds. This has no doubt, increased crop production but with some deterioration of environmental quality and human health (Cutler and Cutler 1999). Among the various alternatives, are natural plant products that are biodegradable and, non-polluted and the most important unit of the crop is the seed; which should be high quality and pathogen-free. Healthy seeds free from pathogens are used for sowing to achieve desired germination, emergence, healthy seedlings, and plant population [1]. Seed-borne fungi result in heavy losses in crop yield and seed quality. The most abundant seed-borne fungi, *Aspergillus* spp. is ubiquitous and may damage crops in the field and cause post-harvest decay. Certain seeds are frequently reported to be infected by several species of *Aspergillus*, in particular, *A. niger* cause a disease sorghum grain mold disease the disease can be a major problem in associated mycotoxin contamination is indisputably one of the top international threats to Sorghum grain. *Aspergillus* the most frequently isolated fungi were determined by planting the seeds and growing on 7-8 days culture in the presence of fungal mycelium. Biological control of plant pathogens is the natural control method. More use of fungicides like

organo-mercurials, carbamates, etc. have posed serious health problems to humans and the environment so there is a need to search for natural biodegradable sources of bio-fungicides have always been a quest for researchers for control of fungal diseases of plants.

Materials and Methods

Collection of seed sample

Jowar (*Sorghum bicolor* L.) Maldandi 35-1 Seeds, Maize (*Zea mays* L.) African tall seed was collected from various farmers in agricultural farms of the Ahmednagar District of Maharashtra. The seed sample of maize and sorghum was collected in a gunny bag and stored at room temperature 28°C till the processing. The sample was examined for seed-borne microflora according to the international rules for seed testing (ISTA). Standard blotter and Agar plate methods are usually followed where seeds are incubated for a definite period under specific conditions. The associated fungi are identified based on their morphological and habit characters on the seed surface and colony characters on the medium.

Standard blotter method

This method was proposed by Doyer. According to the International Seed Testing Agency (ISTA) Recommendation usually 400 seeds are incubated. The seed is placed in 2-3 layers of moist blotter number of seeds placed in the size of the Petri plates and seed sizes seed are incubated for 7 days under 12 hrs. of light and dark conditions 10-100 usually glass transparent Petri plates of 15mm diameter are used for the test. Three blotters of the size of the Petri plate are dipped in sterilized distilled water and placed in the Petri plate after dropping off extra water. Untreated 8 seeds were plated at equal distances in each Petri plate three hundred seeds of Sorghum and maize samples were examined. The plates are incubated for alternate periods of 12 hours of light and 12 hours of darkness at $27 \pm 28^\circ\text{C}$. The plates are removed on the 7-8 day. After incubation, the fungi developed on seeds are examined under different magnifications of compound microscopes and identified.

Agar-plate method

This is a popular method for the detection of seed-borne microflora, in which seeds are plated on an Potato dextrose agar (PDA) and sterilized Petri-plates of 15 mm diameter containing potato dextrose agar media were used. In each Petri plate, 8 seeds were placed. Three hundred seeds of Sorghum and maize were examined. The plated seeds are usually incubated for 7-8 days at $27 \pm 28^\circ\text{C}$ under 12th hrs. alternating cycles of light and darkness. At the end of the incubation period, fungi growing out from the seeds on the medium are examined and identified. Identification is based on colony characters' mycelia growth and morphology of speculating structures under a compound microscope.

Preparation of aqueous plant extracts

For the study, fresh leaves samples were (100gm) collected from the study area all collected plants were thoroughly washed with 1% mercuric chloride, and washed again with sterile distilled water then blotter dried. 100 g of fresh sample was chopped and then crushed in a surface-sterilized mortar and pestle by adding 100 ml distilled water (1:1 w/v). The extract was filtered through two layers of muslin cloth and again in Whatman filter paper 1. The given sample of liquid was used as a stock solution in the above experiment.

Antifungal activity assay

Leaf extracts of five plants viz., *Pongamia pinnata*, *Lawsonia innermis*, *Eucalyptus globulus*, *Calatropis procera*, and *A. indica* were evaluated against mycelial growth of *Aspergillus niger*. These plant extracts were used at 5, 10, and 15 % concentrations for which 5, 10, and 15 ml of stock solution was mixed with 95, 90, and 85 ml of sterilized molten PDA media. The medium was thoroughly shaken Rotary Shaker for uniform mixing of leaf extract. 16 ml of agar media was poured into sterile Petri plates and allowed to solidify. 5 mm of agar disk of test fungi were cut from an 8-10 days old culture plate by using a sterile cork borer and placed in the center of the Petri plate containing different concentrations of plant extract. There were three replicates of each treatment. The Petri plates without plant extracts serve as a control. The inoculated plates were incubated at 28 to 30°C for 7 days. The percentage inhibition of mycelial growth was calculated as per the formula given by Vincent.

$$I = \frac{C - T}{C}$$

Were,

I = Percent Inhibition;

C = Growth of the pathogen in control and

T = Growth of the pathogen in treatment.

Seed sample treatment with plant extracts

Given the seed treatment with five plant extracts, 300 hundred moderately infected sorghum and maize seeds were treated with each of the plant extracts involving soaking the seeds in the 15% concentration (as it was found to be most effective in the poison food technique) for 12 hours. Treated seeds were dried on blotter sheets overnight at room temperature and then placed on the standard blotter and agar-plate method and incubated for 7-8 days under a 12th alternating cycle of light and darkness at 27 ± 2°C. After incubation seeds were examined for fungal development. Seeds soaked in distilled water served as control. Relative frequencies of seed-borne fungi and percent germination of seeds were calculated. The Relative frequency of the fungus was calculated by the following

Formula: $\frac{\text{No. of seeds containing a particular fungus} \times 100}{\text{Total seeds used}}$

Total seeds used

% germination = $\frac{\text{No. of seeds germinated} \times 100}{\text{Total number of seeds.}}$

Total number of seeds.

Data analysis used different Software

Data were analyzed by one-way analysis of variance (ANOVA) and LSD was calculated at p=0.05 for significance. The analysis was performed with the software R (R Development Core Team 2011).

Results

Isolation of seed-borne fungi

Given techniques such as the Blotter Paper method 9 seed-borne fungi such as *Aspergillus niger* (70.02%), *Mucor* spp. (58.11%), *Rhizopus* spp. (51.3%) *Fusarium pernambucanum* (46.1%) *Aspergillus flavus* (41.2%) *Fusarium aquarium* (39.2%) *Penicillium* spp. (36.05%) *Curvularia lunata* (18.04%) and *Alternaria burnsii* spp. (13%) were isolated and identified.

Table: 1 Effect of leaf extract against Pathogenic Fungi.

Seed isolated fungi	Control		<i>Pongamia pinnata</i>		<i>Lawsonia inermis</i>		<i>Eucalyptus globulus</i>		<i>Calatropis procera</i>		<i>Azadiracht a indica</i>	
	SBMAPM (RF)	(RF)	15%		15%		15%		15%		15%	
<i>Aspergillus niger</i>	70.02	43.02	30.3	25.2	31.5	22.3	33.4	24.3	35.1	26.6	35.3	28.6
<i>Rhizopus sp.</i>	51.3	36.03	24.7	20.9	27.6	22.1	29.5	23.5	30.3	24.4	32.4	26.7
<i>Mucor spp.</i>	58.11	38.11	20.6	17.4	21.5	18.2	23.3	20.4	24.2	21.9	26.7	22.5

<i>Fusarium pernambucanum</i>	46.1	30.02	0	0	0	0	12.2	10.6	13.3	11.1	14.9	12.6
<i>Aspergillus flavus</i>	41.2	26.2	0	0	0	0	8.4	6.9	9.5	7.8	11.4	8.6
<i>Fusarium auuatium</i>	39.2	21.2	17.1	15.6	18.4	16.4	20.3	18.5	21.4	19.7	23.5	21.4
<i>Penicillium spp</i>	36.05	19.6	15.1	12.3	17.3	14.7	20.1	16.5	22.4	18.4	24.1	20.3
<i>Curvularia lunata</i>	18.04	12.8	10.1	8.4	11.6	10.4	12.5	11.7	13.4	11.7	14.2	13.0
<i>Alternaria burnsii spp</i>	13.00	0.00	0	0	0	0	4.3	5.7	5.7	6.9	7.7	8.1
LSD at 0.05	3.25	1.82	1.28	0.91	1.46	0.88	0.93	0.48	0.95	0.53	0.92	0.48
% germination	40	42	54	58	52	55	50	60	48	56	42	47

In the Agar plate method, 9 seed-borne fungi viz., *Aspergillus niger*(43.02%), *Mucor spp.* (38.11%), *Rhizopus spp.* (36.3%) *Fusarium pernambucanum* (30.2%) *Aspergillus flavus* (26.2%) *Fusarium aquatium* (21.2%) *Penicillium spp.* (19.6%) *C. lunata* (12.8%) and *Alternaria burnsii spp.* (8.04%) were isolated. *Aspergillus niger* was the most frequently isolated fungi in both standard Blotter and Agar plate methods

Antifungal assay

The results presented in Table 1 revealed that leaf extracts of all five plants significantly inhibited the mycelial growth of *Aspergillus niger* at all the tested concentrations. Leaf extract of *Pongamia pinnata* at 15%concentration caused the highest inhibition of mycelial growth of *A. niger* (47.23%) followed by *Lawsonia innermis* (46.40%), *Eucalyptus globulus* (46.20%) and *Calatropis procera*(46.56%), whereas the lowest inhibition(41.05%) of mycelial growth was recorded at 5% leaf extract of *Azadirachta indica* as compared to the control.

Seed treatment

All the tested plant extracts were applied as a seed treatment at 15% concentration in both Agar plate and Standard blotter method (Table 2). The results indicated that *P. pinnata* leaf extract was found most significant against seed-borne microflora followed by *Lawsonia inermis*, *Eucalyptus globulus*, *Calatrophs procera*, and *A. indica*. In the case of seeds treated with the leaf extract of *Pongamia pinnata*, the highest frequency was observed in *A. niger* (30.3%) followed by *Rhizopus* sps. (24.7%), *Mucor spp.* (20.6%), *Fusarium aquar* (17.1%), *Penicillium spp.*, (15.1%), and *Curvularia lunata* (10.1%) on standard blotter method as compared to untreated control. On the agar plate method, the highest frequency was again observed in *A. niger* (25.2%) followed by *Rhizopus* sps (20.9%), *Mucor spp.* (17.4%),), *Fusarium aquarium* (15.6%), *Penicillium spp.*, (12.3%), and *Curvularia lunata* (8.4%) as compared to the control. The germination percentage of seed treated with *Pongamia pinnata* 15% leaf extract was 60% in the standard blotter method and 64% in the Agar plate method. Similarly in the case of seeds treated with leaf extract of *Lawsonia innermis*. The highest frequency was observed in *A. niger* (31.5%) followed by *Rhizopus spp.* (27.6%), *Mucor sps.* (21.6%), *Fusarium auuatium* (18.4%), *Penicillium spp.* (17.3%), *Curvularia lunata* (11.6%),

Table 2: Effect of leaf extracts as seed treatment against seed-borne mycoflora of cereals (Sorghum and Maize).

Name of Plant	Average colony diameter(mm)			% inhibition			
	5%	10%	15%	5%	10%	15%	Mean
<i>Pongamia pinnata</i>	45.9	40.33	37.51	44.54	45.55	47.23	45.77
<i>Lawsonia inermis</i>	43.11	41.10	39.33	43.00	44.21	46.40	44.53

<i>Eucalyptus globulus</i>	40.06	38.41	36.12	42.33	44.32	46.20	44.28
<i>Calatrops procera</i>	46.12	42.09	40.13	42.66	44.33	46.15	44.51
<i>Azadirachta indica</i>	49.88	47.70	44.87	41.05	43.34	45.88	43.42
control	80	80	80	0	0	0	
LSD at 0.05	2.14	2.51	2.81	-	-	-	

SBM= Standard Blotter Method, APM=Agar Plate Method, RF=Relative Frequency

While the agar plate method's highest frequency was observed in *A. niger* (22.3%) followed by *Rhizopus* spp. (22.1), *Mucor* spp. (18.2) *Fusarium aquarium* (16.4%), *Penicillium* spp., (14.7%), and *Curvularia lunata* (10.4%) as compared to control. The germination percentage of seeds treated with *C. procera* leaf extract was 56% in the blotter method and 60% in the agar plate method. These leaf extracts eliminate the majority of fungi such as *Fusarium pernambucanum*. *Aspergillus flavus* spp., *Alternaria burnsii* spp. The germination of seed has also been shown to improve as compared to the control. However, in the case of *Pongamia pinnata* and *Lawsonia inermis* leaf extracts were also found to be effective in eliminating seed-borne fungi such as *Fusarium pernambucanum*. In this treatment highest frequency was observed in *A. niger* (33.2%) followed by *Rhizopus* sp. (29.5%), *Mucor* spp. (23.3%), *Fusarium pernambucanum* (12.2%), *Aspergillus flavus*. (8.4%), *Fusarium auuatum* (20.3%), *Penicillium* spp. (20.1%) *Curvularia lunata* (12.5%) and *Alternaria burnsii* sps. (4.3%), while in the agar plate method highest frequency was observed in *A. niger* (24.3%) followed by *Rhizopus* sps. (23.5%), *Mucor* spp. (20.4%), *Fusarium pernambucanum*(10.6%), *Aspergillus flavus*. (6.9%), *Fusarium auuatum* (18.5%), *Penicillium* sps. (16.5%) *Curvularia lunata* (11.7) *Alternaria burnsii* sp. (5.7) in comparison to control. The germination percentage of seeds treated with *Calatropis proceraleaf* extract was 52% in the standard blotter method and 56% in the agar plate method. Similarly, in *Calatropis procera* leaf extracts highest frequency was observed in *Aspergillus niger* (35.1.5%) followed by *Rhizopus* sps. (30.3%), *Mucor* spp. (24.2%), and *Fusarium pernambucanum* (13.3%), *Aspergillus flavus*. (9.5%), *Fusarium auuatum* (21.4%), *Penicillium* spp. (22.4%) *Curvularia lunata* (13.44%) and *Alternaria burnsii* sps. (5.7%), while in the agar plate method Similarly in *Calatropis procera* leaf extracts highest frequency was observed in *Aspergillus* spp. (26.6%) followed by *Rhizopus* sp. (24.4%), *Mucor* spp. (21.9%), *Fusarium pernambucanum* (11.1%), *Aspergillus flavus*. (7.8%), *Fusarium auuatum* (19.7%), *Penicillium* spp. (18.4%) *Curvularia lunata* (11.7%), *Alternaria burnsii* sps (6.9%), In *A. indica* leaf extracts highest frequency was observed in *Aspergillus* spp. (35.3%) followed by *Rhizopus* spp. (32.4%), *Mucor* spp. (26.7%), *Fusarium pernambucanum* (14.9%), *Aspergillus flavus*., (11.4%), *Fusarium auuatum* (23.5%), *Penicillium* spp. (24.1%) *Curvularia lunata* (14.2%) and *Alternaria burnsii* sps. (7.7%), while in the agar plate method, the highest frequency was observed. *Aspergillus* spp. (28.6%) followed by *Rhizopus* spp. (26.7%), *Mucor* spp. (22.5%), *Fusarium pernambucanum* (12.6%), *Aspergillus flavus*. (8.6%), *Fusarium auuatum* (8.6%), *Penicillium* spp. (21.4%) *C. lunata* (20.3%) and *Alternaria burnsii* (13.0) as compared to untreated control. The germination percentage of seeds treated with *A. indica* leaf extract was 46% in the standard blotter method and 50% in the agar plate method

Discussion

Cereal seed is the most important unit of crop production and human & animal health It plays an important role in the agriculture sector, which determines the plant population and final yield. One of the major constraints that deteriorate the seed quality is the seed-borne fungi present inside or on the surface of seeds. Leaf extracts of many higher plants have been reported to possess antifungal activity under laboratory trials. In the present investigation antifungal activity of five plant extracts viz., *Pongamia pinnata*, *Lawsonia inermis*, *Eucalyptus globulus*, *Calatrops procera*, and *Azadirachta indica* was assessed at the rate of 5%, 10%, and 15% concentration against the mycelia growth and sporulation of *Aspergillus* spp. by poison food technique. A similar investigation on the antifungal activity of plant extracts against seed-borne mycoflora was reported by many workers. Among these *Pongamia pinnata* leaf extract was found more effective in inhibition of mycelial growth against *Aspergillus* spp. than other plants.

Further seed treatment was done at 15% concentration as found effective in poison food technique. Seed treatment is the safest and cheapest way to control seed-borne fungal diseases and is used to prevent the biodeterioration of

grains. Seed treatment with *Pongamia pinnata* leaf extract was found most effective in the reduction of seed-borne incidence and improvement of germination in both standard blotter and agar plate methods. It is known that plants synthesize a variety of bioactive compounds in plant tissues like alkaloids, flavonoids, tannins, terpenoids, saponins, and other compounds, reported to have *in vitro* antifungal properties. These antifungal compounds stop or inhibit the development of mycelia growth, inhibition of germination, or reduce sporulation of fungal pathogens, it is considered that these compounds obtained from plants are biodegradable and safe for use as a substitute for disease control in a traditional production system. There is also evidence from the earlier workers, that plants possess antifungal activity that can play an important role in the management of plant disease they are cheap, locally available, and biodegradable and environment friendly.

Conclusion

From both the standard blotter method and agar plate method, *Aspergillus spp.* was found most frequently isolated fungi. Among the various plant extracts tested in the poison food technique, *Pongamia pinnata* leaf extract at 15% concentration was found most effective in the inhibition of mycelia growth of *Aspergillus spp.* Seed treatment with all the plant extracts at 15% concentration which was found effective in the poison food technique was also found to be effective in both standard blotter methods and agar plate methods. Among all the tested plants *Pongamia pinnata* leaf extract at 15% concentration was found more effective in reducing seed-borne incidence and improved germination in both methods. Further studies should be taken to find the exact mechanism of action by which extracts exert their antifungal effect and to find the active compounds responsible for plant biological activity.

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STUDIES ON CLIMATE CHANGE IMPACT AND MANAGEMENT OPTIONS FOR SORGHUM [*SORGHUM BICOLOR* (L.) MOENCH] PRODUCTION IN THE REGION OF AHMEDNAGAR DISTRICT

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Abstract

Crop production and yield of sorghum to assess projected climate changes will observed next year (2020s and 2030s) in the study area to simulate the impact of given projected climate change in the region and to study phenology, biomass, and grain yield of sorghum crops to explore and provided the possibility of employing supplemental irrigation and sorghum cultivars as management options. The research model is the CERES-sorghum model in DSSAT (V4.7) was first used light Climate change and weather conditions of air are some of the current issues that severely impact on agriculture sector. Crop management system change options are needed to minimize the impact and sustain regional food production in whole districts. The objectives of this study were (1) to use and evaluate the CERES-Sorghum Model of DSSAT (V4.7) used for simulating the phonetic characters, growth interception and radiation use efficiency to different organs and calibrated and evaluated for sorghum cultivar maldandi-35-1 using experimental data. Daily weather variables in the past 10 years (2010–2020) that include rainfall, maximum temperature, minimum temperature and solar radiation) were obtained from the nearest weather station. The model evaluation result also showed that the model simulated penology studies, grain yield and above-ground biomass yield with high accuracy with a minimum RMSE of 1.78 for a thesis, 3.1 for physiological maturity, 565.6 for grain yield, and 434.2 for above-ground biomass yield. The analysis of future climate showed that the mean maximum temperature is projected to increase by 1.20C and 1.60C by the 2020s and 2030s time periods. The phenology of sorghum is predicted to significantly ($P < 0.03$) decrease in the 2020s and 2030s. However, the grain yield of sorghum is predicted to significantly ($P < 0.04$) increase in the 2020s and 2030s. The simulation result also showed that grain yield of sorghum will be substantially increased using supplemental irrigation and long-maturing cultivars in future climate conditions.

Keywords: Crop model; Climate change DSSAT; Supplemental irrigation system; RCP; Sorghum crop

Introduction:

Agriculture is the source of economy and livelihood to the majority of the Indian population about 75% of people depend on agriculture and is the basis of the national economy. Ahmednagar district is a large district in Maharashtra where small-scale subsistence farming is predominant. Indian agriculture is heavily dependent on natural rainfall, with irrigation agriculture accounting for more than 40% of the country's total cultivated land. but some states and districts lack this condition. The amount and temporal distribution of rainfall and other climatic factors during the growing season are critical to crop yields and can induce food shortages and famine.

In the lowlands of Ahmednagar, region (Karjat, Jamkhed, Shrigonda, Pathardi) the traditional farming practice depends entirely on a rain-fed crop production system, which is become by poor crop performance and low yields. The major factors responsible for poor yields include moisture stress, low soil fertility, bad skills of farmers, lack of awareness of crop knowledge, and limited access to improved seed and efficient production technologies. The most important factor influencing the productivity of crops in the region is the erratic rainfall patterns [2]. Rainfall is insufficient, uneven in its distribution and unpredictable in its inception [3]. Drought is one of the major challenges affecting crop production worldwide. Climate change will increase the frequency of droughts. It is predicted that, by 2030, water shortages will affect 54% of the world's population. In the arid and semi-arid tropics of India, the probability of drought is highest at the start and end of the growing season. Drought stress at the beginning of the growing season severely affects plant establishment, whereas drought stress at the flowering or grain-filling stages may result in reduced establishment, reduced yield growth or complete crop failure [5]. Climate change in the world is responsible for due to greenhouse gas (carbon dioxide, methane, ozone, nitrous oxide etc.) emissions are

expected to increase temperature and precipitation patterns, which put pressure and uncertainty on crop production. Crop production in such regions is expected to be adversely affected. About 40% of cereals in Ahmednagar are rain-fed which makes climate a key driver of food security in the scientific literature that over the coming decades, higher temperatures and changing precipitation levels caused by climate change will depress crop yields in many countries in the world. This is particularly crucial in low-income countries like Africa where adaptive capacity is perceived to be low. In many African countries, there is a poor economy which has economies largely based on weather-sensitive agricultural production, are particularly depending on climate change. As crops are phenotypically and genetically different, they respond to changes differently. Agricultural production in arid and semi-arid areas is mostly dominated by very few cereal crops and hence, is less diversified in crop production. According to ICRISAT research As a result, giving due attention to crops that are importantly grown and produce reasonable yield in such harsh environments is timely indispensable.

Globally, Sorghum (*Sorghum bicolor* (L.) Moench) is the fifth most important cereal crop after maize, rice, wheat and in Ahmednagar farmers, particularly in dry regions cultivated such crops. It is grown in drought-prone and marginal areas in semi-arid zones where other crops cannot grow reliably. Assessing the impact of climate variability on sorghum production in different parts of the world can be done through the use of crop and climate scenarios. The use of Climate Models helps in improving the prediction of climate behavior on different time scales such as seasonal and annual. Models help to examine the extent to which observed climate variability and change may occur as a result of natural variability, human activity, or both. Results and projections obtained from climate models provide important information that can be used to make informed decisions at national, regional, and local levels., this study attempted to close this gap by assessing how future temperature and rainfall are likely to change in the future in the study area, establishing how these changes affect sorghum production and how adaptation strategy can enhance future sorghum production in the whole Ahmednagar district. It is possible due to Advances in computer technology have made possible the consideration. It is possible in soil, plant, and climatic systems to more accurately predict crop yield. Modeling is used to equations to represent the behavior of a system. Models used to simulate the real predicting the growth of its components, such as leaves, roots, stems and grains.

The DSSAT Model has been used to study soil fertility, water and irrigation management, yield gap analysis, genotype by environment interaction in plant breeding, climate change and climate variability. Recently, the application of crop modeling techniques for assessing the impacts of climate change on crops. The DSSAT model has been used worldwide to simulate crop biomass and yield, and soil nitrogen (N dynamics) under different management practices and various climatic conditions. Thus, this study was focused on calibrating and evaluating the CERES-Sorghum model of DSSAT in the study region, predicting future climate change in the study area and predicting the impact of projected climate change on sorghum production.

Materials and Methods:

The experiment was conducted during the Year 2019-20 main cropping season on the research site of Kada, Agricultural Research Center, which is located in the semi-arid environment of the northeastern. The area is situated at an altitude of 522. Meter above sea level (MASL) with a latitude of 18.96 and longitude of 74.99. The study area is generally characterized as semi-arid where rainfall is highly erratic and low.

Experimental procedure Sorghum cultivar (maldandi-35-1) was sown in the spacing of 65 cm*15 cm on a plot size of 12 m by 12 m and replicated three times. Recently recommended blended fertilizer (NPK) half at planting time and the remaining half at 35 days after the crop emergence. Other crop management practices for the cultivar were applied based on local recommendations. For the evaluation of the model, data on phenology, growth and yield were obtained from the Kada Agricultural Research Center collected from field experiments in 2015, 2016 and 2017.

Description of the DSSAT model DSSAT (Decision Support System for Agro-technology Transfer) is one of the most widely used modeling systems across the world. Currently, used for DSSAT incorporates models of 30 different crops, including several cereal grains, grain legumes, and root crops, modified weather simulation generators and it introduced a package to evaluate the performance of models for climate change situations. The models are process-oriented and are designed to work independently of location, season, crop cultivar, and management system. The models simulate the effects of weather, soil water, genotype, and soil and crop nitrogen

dynamics on crop growth and yield. As a software package integrating the effects of soil, crop phenotype and Weather and management options.

CERES-sorghum model

The Crop-Environment-Resource-Synthesis (CERES)-Sorghum model is one of the components of the DSSAT model. The major components of the model are vegetative and reproductive development, carbon balance, water balance and nitrogen balance. The model also major weather factors, including temperature, precipitation and solar radiation and includes the effect of soil characteristics on water availability for crop growth.

The CERES-sorghum model, included in the DSSAT system, version 4.7 was used to simulate the growth, development and yield of sorghum. It requires genetic coefficients that describe the phenology, growth and yield characteristics for each cultivar. In this study, data for the calibration of the model were generated from a field experiment conducted in 2018 on the research site of Kada Agricultural Research Centre. The crop model was evaluated using phenological and yield data from 2015, 2016 and 2017) obtained from the Kada, Agricultural Research Center. Through the use of a ‘Trial and Error’ method, the calibration was made by establishing a tiny change ($\pm 5\%$) of each parameter. The first step was adjusting of genetic coefficients that determine phenology followed by yield and yield components. The coefficients were used in the subsequent evaluation of the model. The observed dates of anthesis and physiological maturity and yield were statistically compared to the simulated values with the coefficient of determination (R^2), the index of agreement (d)

Willmott *et al.*, (2015) and the mean square error (RMSE). The model evaluation stage is the confirmation that the calibrated model closely represents the real situation. The CERES-maize model was evaluated using field experimental data from 2015, 2016 and 2017 based on phenology, yield and yield components and growth parameters. A set of statistical methods were applied to evaluate the performance of this model, including Root Mean Square Error (RMSE), normalized root mean square error (nRMSE), mean deviation (MD), mean absolute error (MAE), and index of agreement (d).

RMSE=

The possibilities for achieving more benefits of sorghum grain yield were tested by using supplemental irrigation as a management option and cultivars of different maturity groups as genetic options. Virtual cultivars incorporating various plant traits were developed from the baseline cultivar (maldandi-35-1) calibrated for Ahmednagar. To develop these virtual cultivars, three maturity groups of sorghum cultivars were considered: Baseline (no change), 10% shorter maturity, and 12% longer maturity.

Data analysis:

All simulation output data were analyzed using analysis of variance (ANOVA) Software and means were separated using the Least Significant Test (LSD) at a 5% probability level. Simulation years were considered as replications (blocks), as the sorghum yield in one year under a given treatment was not affected by another year (prior year carry-over of soil water was not simulated). In this study, simulation years were unpredictable weather characteristics; therefore, formal randomization of simulation years (blocks) was not needed.

RESULTS AND DISCUSSIONS:

The CERES-Sorghum model uses eleven eco-physiological coefficients for the simulation of phenology, growth, yield, and yield components. The description of each genetic coefficient is indicated in Table 1.

Description of the genetic coefficient of **Maldandi-35-1** within the DSSAT model

Table: 1

Symbol	Definition
P1	Thermal time from seedling emergence to the end of the juvenile phase ($^{\circ}\text{C}\cdot\text{d}$)
P2	Thermal time from the end of the juvenile stage to tassel initiation ($^{\circ}\text{C}\cdot\text{d}$)

P2O	Critical photoperiod or the longest day length (in hours)
P2R	Phasic development leading to panicle initiation (°C.d)
PANTH	Thermal time from the end of tassel initiation to anthesis (°C.d)
P3	Thermal time from to end of flag leaf expansion to anthesis (°C.d)
P4	Thermal time from anthesis to beginning grain filling (°C.d)
P5	Thermal time from the beginning of grain filling to physiological maturity (°C.d)
G1	The scaler for relative leaf size
G2	The scaler for relative leaf size
PHINT	The interval in thermal time between successive leaf tip appearances (°C.d)

Table: 2 Comparison of simulated and observed days to anthesis, days to maturity, grain yield and above-ground biomass yield of sorghum cultivar **Maldandi-35-1**

Parameters	Observed	Simulated	R2	d-stat	RMSE	nRMSE (%)
Days to anthesis	60	64	0.70	0.72	2	2.60
Days to maturity	100	108	0.84	0.79	2	1.3
Grain yield	3028	2739	0.78	0.76	420	10.37
Biomass yield (kg ha-1)	12890	11765	0.67	0.69	886	4.12

Table: 3 Change in annual rainfall (%) and temperature in the 2020s and 2030s as compared to the baseline period

Periods	Rainfall (%)		Minimum temperature (°C)		Minimum temperature (°C)	
	RCP 4.5	RCP 7.5	RCP 4.5	RCP 7.5	RCP 4.5	RCP 8.5
2020s	1.2	3.3	1.1	1.3	1.1	1.5
2030s	4.1	3.1	1.8	2.1	2	2.3

Table: 4 (Simulated grain yield (kg ha-1))

Cultivars	RCP 4.5	RCP 8.5	Baseline		
	2020s	2030s	2020	2030	
SC	2744	2832	2645	2835	2345
SMC	2766	2701	2667	2859	2245
LMC	2643	2856	2945	2976	2156
GM	2678	2890	2987	2976	2443

CV (%)	11.4	11.6	11.1	10.0	12.9
LSD (P=5%)	234.2	240.5	236.1	228.6	232.3

CONCLUSION:

The calibration and evaluation results of the CERES-sorghum model in the semi-arid environment of the Ahmednagar district showed that simulated growth, development and yield of sorghum were in good agreement with their corresponding observed values. The CERES-sorghum model was able to successfully simulate the growth, development and yield of sorghum in whole dis. It can be concluded that if properly calibrated, the model can be used to quantify the possible benefits and prioritization of various crop management.

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BIOPESTICIDAL PROPERTIES OF THE *PONGAMIA PINNATA* (L.) PLANT AGAINST FRUIT BORER OF BRINJAL (*SOLANUM MELONGENA*, L.) UNDER LABORATORY CONDITIONS

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Abstract:

Bio pesticides are biological agents generally used to control various kinds of pest. India is an agriculture based country and more than 80% Indian population depends on agriculture. Brinjal (*Solanum melongene L.*) is one of the important vegetable cultivated in India. But this vegetable is largely affected by different pests under normal condition. Application of chemical pesticides may cause hazardous effects on environment as well as human health. The application of pesticides may bring the resurgence of the target pests against which the chemicals are applied, and also the outbreak of some important pests. Leaves of *Pongamia pinnata L.* was applied for Brinjal fruit borer for assessment of the insecticidal activities. Bioassay experiment was carried out under laboratory conditions to find out effects of Phytoextracts on freshly collected fruits from agricultural fields of Karjat Tahasil of Ahmednagar district of Maharashtra State, India. Phytochemical study demonstrated on brinjal fruits revealed that furanflavone, Karajin, and other toxic phytochemical present in the Leaves may affect the pest and larvae. After treatment of Phytoextracts of leaves of *Pongamia pinnata L.* found mortality of pest larvae. The mortality rate of pest increases as the concentration of leaf extract increases after treatment within 24 hrs. The Biopesticides made from such wild plants may become the alternatives for chemical pesticides

Key Wards – *Pongamia pinnata L.*, bio pesticides, vegetables pest, fruit borer.

INTRODUCTION

The foundation of the economy is agriculture, and the productivity of a nation's agricultural sector greatly influences its economic standing. In common parlance, a vegetable is any portion of a plant that has been enlarged by human consumption; vegetables are an inexpensive and abundant source of vitamins and minerals. The most produced crop worldwide is Brinjal. Cultivated mostly for culinary and therapeutic purposes. This plant's bioactive ingredient is an antioxidant and a rich source of nutrients that are good for people. Because of the current climate, the agriculture industry is going through a transitional period. Aphids, fruiter borer, whitefly, leaf hoppers, aphids, jashid, Hodda beetles, stem borer, bugs, and hoppers are among the insect pests that attack crops. Chemical pesticides are frequently employed in agriculture to shield plants from damage by weeds, insects, and other pests since they are more effective at eliminating caterpillars that are feeding on the crop. However, excessive use of chemical pesticides to eradicate the pest may be detrimental to natural microorganisms and have negative effects on the ecosystem, including its natural resources and beneficial creatures, as well as negative implications for public health. It causes a variety of environmental issues, but it may also have detrimental effects on the ecosystem, causing water to become contaminated by chemicals and pesticides, increasing air pollution, and acidifying the soil. (Arora *et.al.*2012). Plant pathogens are becoming more resistant to pesticides, yet both plants and animals still exhibit some residual harm. (Madhiazhagan *et.al.*, 2002).

In general, Biopesticides are substances that are derived from plants or animals and are used as bio control agents. They can also be used as a substrate for the growth and nourishment of pests, or they can repel or kill them. Environmentally friendly and often targeting a limited range of species, Biopesticides have been a part of plant disease management for a very long time. In general, Biopesticides are substances that are derived from plants or animals and are used as bio control agents. They can also be used as a substrate for the growth and nourishment of pests, or they can repel or kill them (Roychoudhury and Jain, 1991; Singh *et al.* (2001). Environmentally friendly and often targeting a limited range of species, biopesticides have been a part of plant disease management for a very long time (Lale, 1992; Isman, 1995; Pavela, 2009; Roy *et al.*, 2010; Erler *et al.*, 2010). Numerous readily available local plants can be used in their raw form. Additionally helpful compounds for pest management are found in Biopesticides such as *Pongamia pinnata* leaf. We examined the effectiveness of a *Pongamia* leaves extract

against a brinjal fruit borer in the current investigation. Insecticidal qualities are present in the plant. The utility and effectiveness of *Pongamia* leaves extract in controlling the fruit borer of Brinjal, which is typically difficult to handle with chemical pesticides to experimental investigation of eco-friendly techniques of agriculture pest control.

Material and Methodology –

A weed plant material used for preparation of Biopesticides –

Pongamia pinnata L.

Other names for *Pongamia pinnata* L. include *Millettia pinnata*, *Pongamia glabra*, and *Derris indica*. This species is also known by the names pongam, karanj, and variations on these. The karanj tree is a species of tree in the Fabaceae family. (Muhammad Akram and others, 2021). Originally found in humid tropical and subtropical climates, medium-sized shrubs and trees grow quickly. Usually grows to a height of 15 to 25 meters and a diameter of 50-80 cm. A few kinds of nitrogen-fixing trees are known to produce oil-containing seeds (the Flora of Baramati), which are native trees with small, soft, shiny leaves and pink, purple, and white flowers. This tree is unique in that it fixes nitrogen and yields seeds with 30–40% oil content. Planting it as a shade and ornamental tree is common. With a trunk diameter of more than 50 cm, this tree is medium in size and typically grows to a height of around 18 meters. A dense, hemispherical crown of dark green leaves is formed by the thick branches of a typically short trunk. On the inside, the bark is yellow and thinly gray to grayish-brown. The taproot is robust and long; lateral roots are numerous and well developed. Some insecticidal qualities are present in the plant.

Medicinal and other uses -Sensitive in flavour, it can treat intestinal development, ulcers, tumours, piles, and skin conditions (Rout *et al.*, 2009, Pavitra *et al.*, 2010). *Pongamia pinnata* L. leaves have good diarrhoea, anthelmintic properties, and digestive laxative properties. Karanj is a plant whose flower, root, and seed are used medicinally; the roots are useful for cleaning teeth and ulcers. Its effects are specific to exacerbated Vata and Kapha. Its delicate taste can be used to treat skin disorders, ulcers, tumors, piles, and intestinal growth (Rout *et al.*, 2009, Pavitra *et al.*, 2010). The leaves of *Pongamia pinnata* L. are beneficial for diarrhea and have anthelmintic and laxative effects on the digestive system. Karanj is a plant whose flower, root, and seed are used medicinally; the roots are excellent for cleaning teeth and ulcers. Its effects are exclusive to heightened Kapha and Vata. It has shown helpful to apply lubricant and zinc oxide together to treat skin conditions like scabies, eczema, and blisters. Grease has been used as a therapeutic ingredient to stimulate the release of bile from the system, which helps to clear it out and stimulate the appetite and aid in digestion in cases with a slow liver. (Warier, PK, 1995.) Flowers- To alleviate thirst in diabetes, dehydrated flowers in leftovers are blended with extra ingredients and administered as a decoction. Beneficial for bleeding piles, dyspepsia, and elevated blood sugar (Singh MP, 2005). The goal of the current study was to assess the plant's biopesticidal and antibacterial qualities as well as its insecticidal and insect-repelling capabilities owing to furanflavone, karanjin.

Phytoextracts immunoassay –

Pongamia pinnata L. We conducted the experiment using leaves. How to Make Phytoextracts Indifferent agricultural fields, desolate forests, and useless land were used to gather healthy plants. The acquired plant material was cleaned with distilled water to get rid of dirt and dust particles. In the botanical lab at Baramati, an experiment was conducted under controlled laboratory conditions. In order to create Phytoextracts, 100g, 150g, 200g, and 250g of disease-free, healthy plants per contained leaf were crushed and placed in distilled water. This Whatman filter paper No. 1 was used to filter these Phytoextracts. Reduced pressure was used to concentrate the solvents, and one litter of the crude extract filtrates was added by distillation. These functioned as an inhibitory stock solution, which was water.

A) Application of Phytoextracts on the pest –

Fruit borer pests were evaluated individually on freshly made Phytoextracts leaves in the lab using ten pests per petri plate. To assess the Phytoextracts' harmful impact on the live fruit borer, in the petri dish were treated with them. The reading is regarded as the mortality rate and the time to death is measured in hours.

Result and discussion-

- 1) 100 grams of leaf extract: After 24 hours, the pests treated with the leaf extract had a 10% mortality rate. *Leucinodes orbonalis* larvae likewise demonstrated that there was no impact.
- 2) 150 grams of leaf extract: After 24 hours, the pests treated with the leaf extract had a 50% mortality rate. *Leucinodes orbonalis* larvae likewise displayed slower body movement.
- 3) 200 grams of leaf extract: After 24 hours, the pests showed a 70% mortality rate when exposed to the leaf extract. *Leucinodes orbonalis* larvae also displayed body shrinkage.
- 4) 250 grams of leaf extract: After 24 hours, the pests demonstrate a 100% mortality rate when exposed to leaf extract. The insect that completely ruptured and shrank when exposed to plant extract, and its corpse was spread out on a petri dish.



Fig.-1. 100gm of leaves on extract
Leucinodes orbonalis



Fig.-2. 150gm of leaves on extract
Leucinodes orbonalis

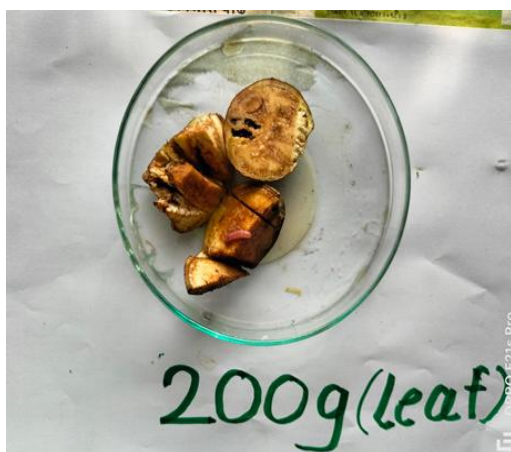


Fig.-3. 200gm of leaves on extract
Leucinodes orbonalis



Fig.-4. 250gm of leaves on extract
Leucinodes orbonalis

Conclusion – The foregoing laboratory experiment made it abundantly evident that weed plants like *Pongamia pinnata L.* have pesticidal properties because they contain poisonous phytochemicals like karanjin. The pest was not significantly affected by 100 g of leaf extract. Leaf extract weighing 150 grams performed less well. The inclusion of karanjin in leaf-based insecticidal formulations is crucial for their efficacy against *Leucinodes orbonalis*, as demonstrated by the 200gm leaf extract. Most effective against pests is 250 gram of leaf extract. Because it generates a large number of secondary metabolites, *Pongamia pinnata L.* is a viable substitute for

chemical pesticides. Karanj is well-known for its primary active ingredient, which works well against large no of insects.

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STUDY OF FLORISTIC SURVEY OF FAMILY ASTERACEAE AND EUPHORBIACEAE FROM KARJAT IN AHMEDNAGAR DISTRICT (M.S.), INDIA

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ABSTRACT

The aim of the present study is to collection, identification, classification, and documentation of the members of the Euphorbiaceae and Asteraceae from Karjat Tahsil, Ahmednagar district (MS), India. The angiosperms are flowering plants with great evolutionary history. They include near about 360000 species in the world. Unfortunately, many angiosperms species in our nation remain unexplored. In the angiosperm plant more than 600 families, some families are dominant in India such as Asteraceae, Fabaceae, Euphorbiaceae, Solanaceae and Poaceae etc. In the present study we focused on survey, collection, documentation and identification of different species of two dominant families' i.e. Asteraceae and Euphorbiaceae from Karjat Tahsil. In this area such kind of taxonomic work is not carried out, therefore, we took this project to find out floristic diversity. We carried out this taxonomic work during March 2022 to December 2023. As per conventional taxonomic techniques, plant materials was collected, prepared herbarium and documented at the research centre. Many plant species that were collected during the field surveys were recognized with the help of some authentic floras, taxonomic literature, and taxonomy experts from Departments of Botany Vidya Pratishthan's Arts, Science and Commerce, College Baramati. A total 47 species of family Asteraceae and 37 species of Euphorbiaceae have been recorded up till now.

Keywords: Floristic Diversity, Karjat Tahsil, Asteraceae and Euphorbiaceae

INTRODUCTIONS:

Study of Floristic diversity is very important to understand the knowing of their floristic knowledge. Floristic diversity can be quantified at any scale, ranging from the total variety of the World to the diversity of an ecosystem, community, population, species, and even individual genes. India has the world's highest biodiversity. In the angiosperm plant more than 600 families, some families are dominant in India such as Asteraceae, Fabaceae, Euphorbiaceae, Solanaceae and Poaceae etc. Over 80% of people worldwide still rely on traditional and folk medicine, the majority of which is based on plant cures, according to the World Health Organization. In the present study we focused on survey, collection, documentation and identification of different species of two dominant families' i.e. Asteraceae and Euphorbiaceae from Karjat Tahsil. One of the biggest and most phenotypically varied families of angiosperms, the Asteraceae is significant for both ecology and economy. There are about 25,000 recognized species in the Asteraceae plant family. Additionally, 1,600 to 1,700 of its genera are dispersed globally. With over 322 genera and 8,910 species, the Euphorbiaceae, sometimes known as the spurge family, is one of the biggest and most genetically diverse plant families. Euphorbiaceae family of flowering plants is the biggest in the Malpighiales order, unlike other angiosperm families. A few family members are essential providers of nourishment. Several are striking because of their vividly colored blooms and bracts, which resemble leaves and have distinct shapes in comparison to other plant families. It is necessary to understand the present diversity status and conservation of regional biodiversity. With the exception of freezing alpine and arctic regions, the family's species are distributed all over the planet, however the bulk of them are found in temperate or tropical regions. Climbers, woody shrubs or trees, annual and perennial herbs, and certain plants with a very distinctive characteristic not seen in other families are all members of this family. It is necessary to understand the present diversity status and conservation of regional biodiversity.

MATERIALS AND METHODS:

Collection and Identification:

In year 2022 and 2023, extensive field surveys and investigations were conducted to cover the growth during the monsoon, winter, and summer seasons. The collection of plant samples was based on their physical and reproductive characteristics (With flowering twigs). As per conventional taxonomic techniques, plant materials were collected, prepared herbarium and documented at the research centre. Many plant species that were collected during the field surveys were recognized with the help of some authentic floras, taxonomic literature, and taxonomy experts from Departments of Botany Vidya Pratishthan's Arts, Science and Commerce, College, Vidyanagari, Baramati.

TableNo.1: Observation Table showing Family Asteraceae plant species in Karjat tehshil of Ahmednagar district (M.S) India

Sr. No	Scientific Name	Vernacular/ Local name	Locality (Village)
1	<i>Acanthospermum hispidum</i> DC.	Landaga	Anandwadi
2	<i>Ageratum conyzoides</i> L.	Sahadevi	BaradgaonDagadi
3	<i>Ageratum houstonianum</i> Mill.	-----	Autewadi
4	<i>Aster amellus</i> L.	-----	Chapadgaon
5	<i>Bidens biternata</i> (Lour.) Merr. & Sherff.	Chikata	Bahirobawadi
6	<i>Blumea balsamifera</i> (L.) DC.	-----	Akhoni
7	<i>Blumea malcolmi</i> (C.I) Hook.f.	-----	Chapadgaon
8	<i>Blumea solidaginoides</i> (Poir.) DC.	-----	Bhambore
9	<i>Caesulia axillaris</i> Roxb.	Maka	Anandwadi
10	<i>Carthamus tinctorium</i> L.	Kardai	BaradgaonDagadi
11	<i>Cosmos bipinnatus</i> Cav.	-----	Chincholikaldat
12	<i>Cyathocline purpurea</i> (Buch.-Ham. ex D. Don)	-----	Deshmukhwadi
13	<i>Cyathocline manilaliana</i> C.P.Raju & R.R.V.Raju - India	-----	Dighi
14	<i>Dahlia pinnata</i> Cav.	-----	Handalwadi
15	<i>Echinopsechinatus</i> Roxb.	Utkatari	Ganeshwadi
16	<i>Eclipta prostrata</i> (L.) L.	Maka	Durgaon
17	<i>Emilia sonchifolia</i> (L.) DC. ex Wight.	Sadmandi	Jalgaon
18	<i>Flaveria trinervia</i> (Spreng.) C. Mohr.	Bajirao	Jogeshwarwadi
19	<i>Gaillardia pulchella</i> Foug.	-----	Handalwadi
20	<i>Gaillardia aristata</i> Pursh.	-----	Jalgaon
21	<i>Glossocardia bosvallia</i> (L.f.) DC.	Pittapapada	Kangudwadi
22	<i>Pseudognaphalium luteoalbum</i> (L.) Hilliard & B.L. Burt	-----	Karpadi
23	<i>Guizotia abyssinica</i> (L.f.) Cass.	Karale	Khed
24	<i>Helianthus annuus</i> L.	Suryaphul	Kolvadi
25	<i>Lagascea mollis</i> Cav.	-----	Kopardi
26	<i>Laggera alata</i> (D. Don) Sch. Bip. ex Oliv.	-----	Koregaon
27	<i>Launaea intybacea</i> (Jacq) Beauv.	-----	Koregaon
28	<i>Launaea procumbens</i> (Roxb.) Ramayya & Rajagopal.	Pathari	Kuldharan
29	<i>Parthenium hysterophorus</i> L.	Congress	Kuldharan
30	<i>Pulicaria wightiana</i> (DC.) C.B. Clarke	-----	Mahi
31	<i>Seneciobombayensis</i> Balakr.	Sonaki	Mahi

32	<i>Solidago Canadensis</i> L.	Sonaki	Anandwadi
33	<i>Sonchusoleraceus</i> L.	Mhatari	Anandwadi
34	<i>Sonchusasper</i> (L.) Hill	Mhatari	Anandwadi
35	<i>Sphaeranthusindicus</i> Linn.	Gorakhmunndi	Malthan
36	<i>Spilanthescalva</i> DC.	Akkkara	Mirajgaon
37	<i>Synedrellavialis</i> (Less.) A. Gray	-----	Nagalwadi
38	<i>Tageteserecta</i> L.	Zendu	Kuldharan
39	<i>Tagetespatula</i> L.	Zendu	Mahi
40	<i>Tagetestunuiifolia</i> Cav.	Zendu	Mahi
41	<i>Tricholepisamplexicaulis</i> C.B. Clarke.	-----	Anandwadi
42	<i>Tricholepisglaberrima</i> DC.	-----	Kuldharan
43	<i>Tridaxprocumbens</i> L.	Ekdandi	Anandwadi
44	<i>Cyanthilliumcinereum</i> (L.) H.Rob.	Sahadevi	Malthan
45	<i>Vernoniadivergens</i> (Roxb.) Edg.	Sahadevi	Mirajgaon
46	<i>Xanthium indicum</i> Koen. In Roxb.	Vinchu	Nagalwadi
47	<i>Zinnia linearis</i> Benth.	-----	Mirajgaon

Table no. 2: Observation Table showing Family Euphorbiaceae plant species in Karjat tehshil of Ahmednagar district (M.S) India.

Sr. No.	Scientific Name	Vernacular Name	Locality (Village)
1	<i>Acalyphaindica</i> L.	Dudhi	Nagalwadi
2	<i>Acalyphahispida</i> Burm.f.	-----	Kuldharan
3	<i>Acalyphawilkesiana</i> Müll.Arg.	-----	Mahi
4	<i>Baliospermummontanum</i> (willd)Müll.Arg.	Danti	Mahi
5	<i>Breynianivosa</i> (W.Bull)	Snow Bush	Anandwadi
6	<i>Brideliaretusa</i> (L.) A.Juss.	Asana	Kuldharan
7	<i>Chrozophoratinctoria</i> (L.) A.Juss.	Suryvarti	Nagalwadi
8	<i>Chrozophorarottleri</i> (Gies) juss.	Suryvarti	Kuldharan
9	<i>Chrozophora plicata</i> (Vahl) A.Juss. ex Spreng	-----	Durgaon
10	<i>Codiaeumvariegatum</i> (L.) A.Juss.	Golden Queen	Jalgaon
11	<i>Croton bonplandianus</i> Baill.	Jamalgota	Jogeshwarwadi
12	<i>Drypetesroxburghii</i> (Wall.) Hurus.	Putravanti	Handalwadi
13	<i>Emblicaofficinalis</i> Gaertn.	Awala	Jalgaon
14	<i>Euphorbia dracunculoides</i> Lam.	Pisola	Handalwadi
15	<i>Euphorbia geniculata</i> Orteg.	Dudhani	Karpadi

16	<i>Euphorbia heterophylla</i> L.	Dudhi	Anandwadi
17	<i>Euphorbia heyneana</i> Spreng.	-----	Durgaon
18	<i>Euphorbia hirta</i> L.	Dudhani	Jalgaon
19	<i>Euphorbia neriifolia</i> L.		Jogeshwarwadi
20	<i>Euphorbia milii</i> Des Moul.	Tawa	Handalwadi
21	<i>Euphorbia notoptera</i> Boiss.	-----	Chapadgaon
22	<i>Euphorbia parviflora</i> L.	-----	Bahirobawadi
23	<i>Euphorbia pulcherrima</i> Willd.	Patti	Akhoni
24	<i>Euphorbia rosea</i> Retz.	-----	Chapadgaon
25	<i>Euphorbia tirucalli</i> L.	Sher	Bhambore
26	<i>Jatropha curcas</i> L.	JangaliYerand	Anandwadi
27	<i>Jatropha glandulifera</i> Roxb.	JangaliYerand	BaradgaonDagadi
28	<i>Jatropha gossypifolia</i> L.	JangaliYerand	Chincholikaldat
29	<i>Jatropha multifida</i> L.	-----	Deshmukhwadi
30	<i>Jatropha podagrica</i> Hook.	-----	Dighi
31	<i>Manihot esculenta</i> Crantz.	Cassava	Chapadgaon
32	<i>Euphorbia tithymaloides</i> (L.) Poir	Slipper Flower	Anandwadi
33	<i>Phyllanthus acidus</i> (L.) Skeel.	RaiAwala	Akhoni
34	<i>Phyllanthus reticulatus</i> Poir.	Datwan	Chapadgaon
35	<i>Ricinus communis</i> L.	Erand	Khed
36	<i>Securinegaleucopyrus</i> (Willd.) Müll.Arg	Pandharphali	Anandwadi
37	<i>Tragiaplukenetii</i> R.Smith	KhajKuhili	BaradgaonDagadi

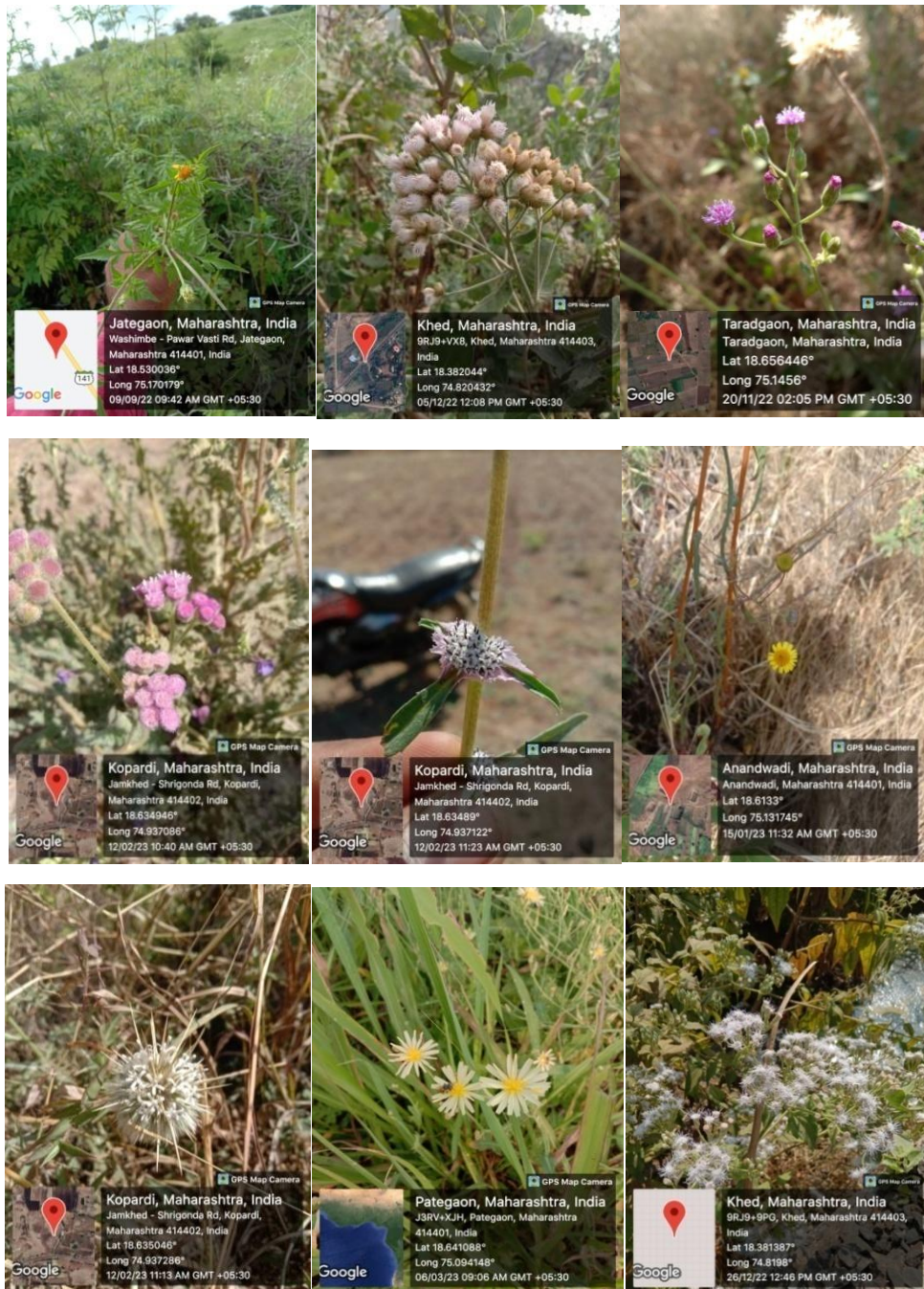
RESULTS AND DISCUSSION:

In the present work, authors have provided information on the Asteraceae and Euphorbiaceae plant Family diversity from Karjat Tahsil of Ahmednagar, Maharashtra, India for the first time. A total of 47 plant species of family Asteraceae and 37 plant species Euphorbiaceae have been recorded. It is also found that in the study area among all the families the dominant families are Asteraceae (47 species) and Euphorbiaceae (37 species). The details are recorded in Table-No.1&2. The family Asteraceae is found in a broad variety of settings, including severe deserts, wetlands, lowland rainforests, and alpine tundra. They are scattered across the planet, spanning practically arctic regions to the tropics. The family Euphorbiaceae is comprised of a major proportion of flowering plants, and the family are also known as the spurge family. The current study, offers a tentative inventory of species, is crucial to understanding the Asteraceae and Euphorbiaceae in Karjat Tahsil of Ahmednagar district. The variety and

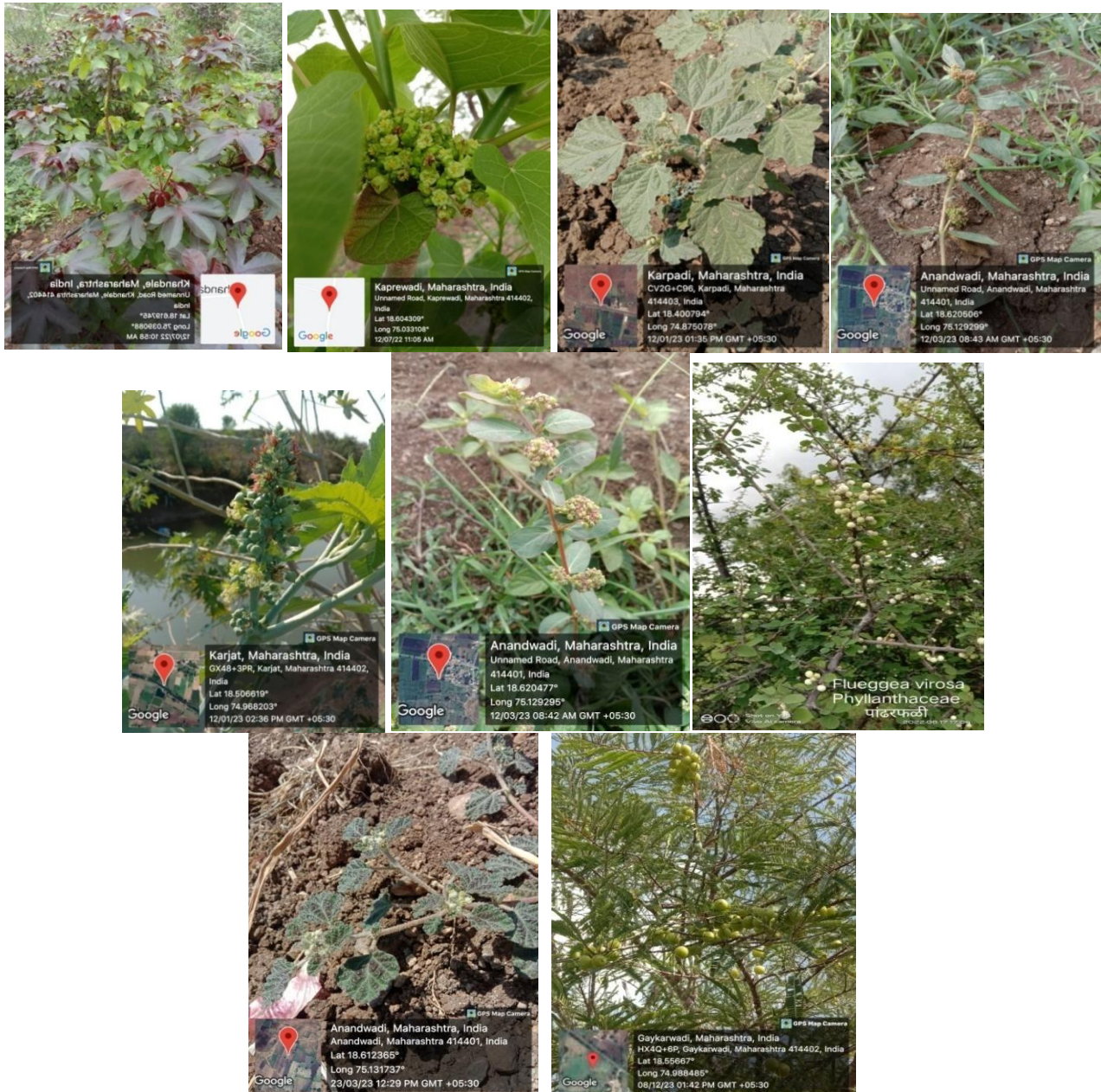
adaptability of the Asteraceae and Euphorbiaceae in the Karjat Tahsil area are described in this data. Additionally, it will be useful in recommending appropriate staple foods, fodder, medicine and ornamentals that contain Asteraceae and Euphorbiaceae from the research region. Government and nongovernmental organizations would also find it helpful in maintaining the vegetation found in the Karjat Tahsil of the Ahmednagar district.

Photograph:

List of Photograph Asteraceae Plant species.



List of Photograph Euphorbiaceae plant species



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STUDY OF PHYSICO-CHEMICAL PARAMETERS OF WATER OF MALVADI LAKE. AHMEDNAGAR, MAHARASHTRA

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Abstract

The present study deals with the seasonal variation in **Physico-Chemical Parameters**. This study was designed to assess the quality of water in **malvadi lake** in nimbalk village Ahmednagar District, Maharashtra, with respect to the physico-chemical Monthly variations in the physical and chemical parameters such as including Temperature, pH, TDS (Total Dissolved Solids), TA (Total Alkalinity), DO (Dissolved oxygen), TH (Total Hardness), Ca (Calcium), Mg(Magnesium), Na (Sodium) and K(Potassium).the present work on physicochemical parameter provide information on quality of water malvadi lake in nimbalk village Ahmednagar. Addition of sewage ,domestic and agricultural waste ,use of organic and inorganic fertilizer may responsible for eutrophication.

Introduction

Water is one of the most important and precious compounds of our life which show impact on climate . All living organisms which present on the earth need water for their survival and growth. without water we can not survive. about 70 % of water available on earth. But now a day due to increased industrialization, over use of fertilizers, human population, in the agriculture, industrial and man-made waste and harmful chemical release of into water body. The term water quality give an indication that which type of water not suitable for human consumption 1. As per change in physical, chemical and biological characteristics of water its show changes in quality of water. some time this change harmful to ecosystem as well as human life Due to use of contaminated water, human population suffers from water born diseases. It is therefore to check the water quality at regular interval of time. Ustad I. R. (2012)et.al 2.Lakes play an important role in urban ecosystem and also serve as an important part of ecological balance. Lakes serve as a source of water for irrigation, drinking and domestic purpose for urban and rural population. KattimaniJ.M (2018) et.al 3. Industrial and domestic effluents which account for the pollution that endangers the aquatic life contain various toxic substancesAhirrao D. V. and Magare S. R. (2018) 7.water the basic and primary need for vital life processes on this planet ,it is also the resource adversely affect both qualitatively and quantitatively by all kind of human activity(dasgupta and purohit;2001) 8.most lake wateris rich in nutrient thatsupport growth of many aquatic macrophyte and algal blooms beside water contaminated with metal like cromiaum ,copper ,iron nikel lead and zink Heavy metals concentration increases in lakes due to anthropogenic activities and the consumption of heavy metals become a threat to the lake's living organisms and to people who eat these living organisms (Sibal & Espino 2018). 4. Water is one of the most important and precious natural resources. But this valued resource is increasingly being threatened as human population grows and demand more water for domestic purposes and economic activities. Protection and management of water bodies have been recognized as priority sector all over the world, since the quality of potable water is directly related to public health. The water body affects the environment in its vicinity like changing of ground water levels, condition of climate etc. The purity and quality are the basic concern to mankind since it is directly related with welfare of human beings (Timmy Katyal and Satake M. 2001). 6Fresh water is very important for human life. Water play a crucial role in human being, agricultural, fisheries, domestic and industries. Due to incresed human activity, industrial activities and use of fertilizers, the fresh water is convert to pollutent water. This is the most serious problum in present condition. The inspection of the fresh water status is important to preservation and ideal the natural eco-system. It is important that the quality of fresh must be determined at consitent time intervel, as due to utilize of pollutent drinking water, human life suffering from varied of pollutent water desease. Jain.S (2021)et.al on the basis of physico –chemical studies it was found that some groundwater sample show very high concentration of ,total hardness and chloride , sodium in MIDC as compared western part of Ahmednagar city (Dadhich ,et.al ;2001)(pandey ,et.al ;2002) malvadi lake is near the MIDC that why it may chance this lake water get contaminated.

MATERIALS AND METHODS

The surface water samples from malvadi Lake were collected between 9.30 am to 12.30 pm. Samples were collected at monthly interval in plastic cans of one litres capacity. Water temperature, pH and recorded at sampling station. Collected water samples were brought immediately to the laboratory for the estimation of various physicochemical parameters like, Total dissolved solid, Dissolved oxygen, Total Alkalinity, Na,K, Total hardness, Ca⁺⁺, Mg⁺⁺. water temperature and pH were recorded by using Thermometer and Digital pH Meter. Physicochemical parameters were analyzed as per standard methods. (APHA, 1992; Diwakar, 1995 and Gupta, Trivedy and Goel, 1986)

Location of the study area:- malvadi lake in ocated nimbalk village Ahmednagar District .malvadi is located at 19°10'15''N 77°40'29''E. It has an average elevation of 417 meters (1744 ft.).The total selected area of the study is 2.30 km.



Result and Discussion

The data on physico-chemical analysis of malvadi lake water has been given in table

Table 1: Monthly variation in physical parameters of recorded malvadi lake during the year 2021-2022

Month	temp	pH	TDS	Mg	Ca	Na	k	Total hardness	alkanity	DO
January	17	7.5	260	18.9	24.9	8.7	4.2	212	154	4.14
February	19	8.1	263	22.2	20.1	7.4	5.4	220	123	4.15
March	22	8.4	375	20	21.2	7.3	4.2	247	134	4.75
April	25	9.0	423	19.5	22.2	19.5	4.4	293	158	5.68
May	26.5	7.5	390	19	24.6	15.2	6.8	310	148	6.30
Jun	24.5	8.3	320	10.5	19.4	10.5	6.7	260	444	5.20
July	20	8.2	360	9.9	20.5	9.9	6.8	270	140	5.70
august	20	7.4	234	10.5	22.0	10.5	6.4	238	198	4.30
September	19.5	7.3	260	14	26.8	14.3	5.3	229	176	4.20
October	18	7.4	231	16.5	26.4	12.5	3.1	210	190	3.10
November	17	7.3	170	17	25.5	8.15	4.5	216	175	3.46
December	18	7.2	227	14	24.5	6.70	5.7	231	178	4.20

The study of various Physico-chemical parameters indicate that the lake exhibit substantial variation in its biotic and abiotic characteristics. The Physico-chemical parameters of water during Feb 2019 to Jan 2020 are given in table No.1. represent the seasonal variation in Physico-chemical parameters of the malvadi Lake. In the present Investigation Water temperature recorded was between 17 C to 26.5C. water temperature was high in summer as compared to monsoon and winter respectively Rise in temperature speed up the biochemical reactions and reduce the solubility of gases. The atmospheric temperature was always found higher than the water temperature. Similar results were also found by Salve and Hiware (2006) in Wana Prakalp reservoir near Parali Vaijanath, Maharashtra, pH The pH of malvadi lake water was slightly alkaline .. Minimum pH was recorded in December (7.2) and maximum in the month of April (9.42). Changes in pH occur in summer season due to scarcity of water, discharge of agricultural waste, industrial waste and domestic waste KhanR.M et.al (2012)observed that values of total solids ranged with in 148.75 to 199.18 mg mg/lit.of PHYSICO-CHEMICAL ANALYSIS OF TRIVENI LAKE WATER OF AMRAVATI DISTRICT IN (MS) INDIA .observed value of malvadi lake was ranged with in 170 to 423 mg mg/lit. deu to sewage discharge lack of water in month of april in summer season total dissolved solid value was very high. observed value of Ca malvadi lake was ranged with in 19.4 to 26.9mg mg/lit. maximum ca observed in sptember month deu to ganesh visharjan.mg observed higher in april month 19.5 Na is measured with the help of flame photometer. The instrument is standardized with the known concentration of sodium ion (7.3 to 19.4 mg/ litre. K is also measured with the help of flame photometer. The instrument is standardized with known concentration of potassium solution, in the range of 3.1 mg to 6.8 mg/litre. **Total Hardness**The effect of hardness is Scale in utensils and hot water system in boilers etc. soap scum's Sources are Dissolved calcium and magnesium from soil and aquifer minerals containing limestone or dolomite. The Treatment of hard Water is Softener Ion Exchanger and Reverse Osmosis process. Thakor FJ et al. (2011) the amount of total hardness in the malvadi lake water was recorded during summer maximum 310 mg/L was and in mid of monsoon was 270 mg/L due to presence of high content of calcium and magnesium in addition to sulphate and nitrate in the sewage waste added during monsoon and low in post winter season 212. As per WHO Standard Desirable limit and Permissible limit for hardness is lies between 200mg/l respectively. high value of hardness are probably deu to regular addition of large quantity of sewage and detergent into lake from near by residential localities **Total Alkalinity** Alkalinity represents the buffering capacities of water; high alkalinity values are indicative of the entropic nature of the water bodies, and unsafe for ecosystem as well as for potable use. Alkalinity of lakes is ranging from 123 to198 mg/lit **Dissolved Oxygen(DO)** 4. Premlata et al. (2009) work on lake water and suggested that the DO is one of the most important parameter. Its correlation with water body gives direct and indirect information e.g. bacterial activity, photosynthesis, availability of nutrients, stratification etc . During summer the long days and intense sunlight seems to accelerate photosynthesis by phytoplankton, utilizing Co2 and giving off O2. This accounts for the greater qualities of O2 recorded during summer (Krishnamurthy R. 1990).). The dissolved oxygen concentration ranged from 3.10 to 6.30 mg/lit. Dissolved oxygen was minimum in and maximum in December.For aquatic organisms, the amount of DO is very important. Numerous chemical reactions in water and its products are also influenced by DO. Algae growth is aided by the high DO content of the water, which in turn raises the biological oxygen demand (Thompson et al. 2022)

Conclusion

Fresh water physico-chemical parameter observation is very important for determining the present states of malvadi lake conditions for water pollution, consistent physico-chemical parameter of water monitoring will help in long term provision, which will be helpful to protect human health and protect fresh water. Fresh water quality is dependent on physico-chemical parameter. Monitoring water quality of lake water is done by collecting regularly water samples and inspection of physicochemical parameters of lake water at different location of lake.in present condition in this lake water was polluted with industrial activity and fertilizer during monsoon season and other human activity lake water was contaminated this water not safe for drinking purpose this type of activity continually goes on which responsible for various human disease.

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THREAT TO LOCAL FISH FAUNA DUE TO INVASIVE SPECIES *OREOCHROMIS MOSSAMBICUS (TILAPIA)* IN TWO DISTRICTS OF MARATHWADA REGION

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Abstract:

This study depicts the menace caused by the invasive species *Oreochromis mossambicus* on local fish fauna like Mrigal, Catla Catla, *Mystus cavasius*, etc. This fish is indigenous to southeast Africa but was introduced to India from Thailand and Sri Lanka. This species currently exists in at least 114 countries and is found to be very harmful to the local fauna. The present research was done by sampling to study the percentage of the population found in the local lakes and reservoirs like Nagapur Lake, Majalgaon Lake, and Nathsagar Paithan Lake. It has been found that this species, *Oreochromis mossambicus*, now occupies 55% of the fish fauna in Nagapur Dam, 40% of the fish fauna in Majalgaon Dam, and 38.80% of the fish fauna in Nathsagar Paithan Dam.

Keywords: Invasive species, Tilapia, *Oreochromis mossambicus*.

Introduction:

The threats to local fish fauna due to invasive species of *Oreochromis mossambicus* on local fish fauna like Mrigal, Catla Catla, Labio rohita, etc. The fish *O. mossambicus* is indigenous to southeast Africa. *O. mossambicus* is commonly known as tilapia. Shallow streams, lakes, rivers, and ponds are the most common habitats for this species. The Global Invasive Species Database recognizes *O. mossambicus* as one of the world's worst invasive alien species (IUCNGISD). The reason was that initially, this species was distributed around the world to increase food security in many underdeveloped nations through aquaculture. But now this species is harming biodiversity.

In 1952, *O. mossambicus* was transported from Thailand and Sri Lanka to the Madras Department of Fisheries and the Central Marine Fisheries Research Institute (CMFRI) in Tamil Nadu, India. This indicates that it has already started to spread around the world. Another species, the Nile tilapia (*Oreochromis niloticus*), was introduced to the nation two decades later (late 1970s). The species exists in at least 114 nations (Dinees, A.M. 2016). While tilapia production has been prohibited in India since 1959, the government repealed the restriction on Nile tilapia production in 2012. However, stringent regulations must be followed, including those that address biosecurity concerns, among many others. (Anon, 2015).

Material & Method:

A) Survey Method: The catch-effort approach is particularly good for population estimation in closed water resources (Shivaji et al., 2015). The percentage of fish that are accessible for capture and are caught by a certain unit of fishing effort is known as catchability (Ricker, 1975). The catch-effort method is used in this study.

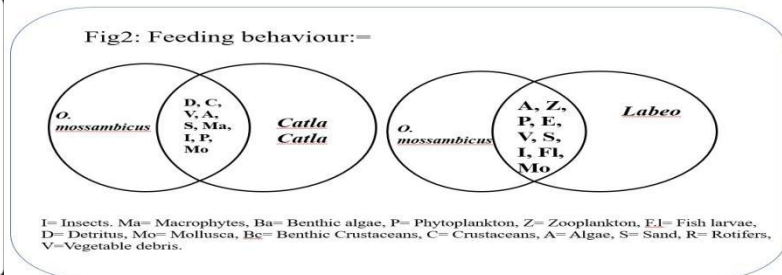
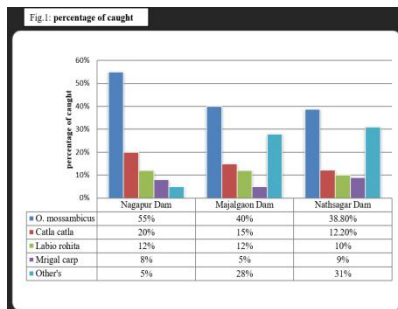
Material: Gill Net, Notebook, Pen, Survey sheet.

B) Eye-estimation method for examination of gut contents: With the assistance of local fishermen and various types of fishing equipment, fish were removed from the lake at various intervals. Each fish's abdomen was dissected, and the alimentary canal was removed and placed in 10% formalin. After the stomach was opened, its contents were placed in a Petri dish and rinsed with water. With the aid of accepted literature, the gut contents, including plant and animal elements, were recognized and counted under a microscope (Goutam Ranjan 2009). According to Hynes's 1950 procedures, the percentage composition of the gut contents was determined. 1950.

Material: Petri dish, Dissecting scissors, Microscope, Dissection box, notebook, etc.

Observation & Result:

The present research was done on *O. mossambicus* in Nagapur Lake, Majalgaon Lake, and Nathsagar Paithan Lake. One observation of our research was that the growth of *O. mossambicus* is very fast. The ratio of *O. mossambicus* in Nagapur Dam was 50–55% and the remaining local fish were 40–45%; in Majalgaon Dam, *O. mossambicus* were 40–45% and the remaining 50–55% were local fish; and in Nathsagar Paithan Dam, *O. mossambicus* were 48–53% and 47–52% were other species of fish. Gut content analysis also shows common food habitats between *O. mossambicus* and other local fish fauna. (Fig.2)



O. mossambicus Greg Hume, [CC BY-SA 3.0](https://commons.wikimedia.org/wiki/File:Oreochromis_mossambicus.jpg), via Wikimedia Commons.

Discussion:

It feeds on cyanobacteria and aquatic invertebrates such as bug larvae, tiny crustaceans, and molluscs, as well as fish eggs and small fish from local fisheries (A. Webb and M. Maughan 2007). It also consumes food intended for other local fish. This is an omnivorous fish; it eats both zooplankton and phytoplankton. This was also corroborated in our study of gut content analysis. (Fig.2) *O. mossambicus* can adapt to fresh, brackish, and marine waters with different salinities (Russell et al., 2012).

When compared to the local fish in the surrounding area, the fish kept growing very quickly. And these are all the reasons that give *O. mossambicus* an edge over other species. That is why most of the water bodies are showing an increased density of this species. (Fig.1)

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ASSESSING CLIMATE RESILIENCE: INVESTIGATING THE INFLUENCE OF ENVIRONMENTAL SHIFTS ON CANCER SUSCEPTIBILITY

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Abstract

Climate resilience in cancer care involves recognizing the interconnectedness between environmental changes, human health, and cancer outcomes. Climate change can lead to shifts in environmental factors such as temperature, air quality, and exposure to pollutants, which can influence cancer risk. Extreme weather events, such as hurricanes, floods, and wildfires, can have direct and indirect effects on human health, leading to disruptions in healthcare services, displacement of populations, and increased stress. Climate-resilient healthcare systems must address vector-borne diseases, which can impact cancer patients who are already immunocompromised. Adapting healthcare infrastructure to withstand climate-related challenges is crucial, including ensuring treatment facilities are equipped to handle extreme weather events and have contingency plans. Public health policies should consider the long-term health impacts of climate change, promoting environmental sustainability, reducing carcinogen exposure, and supporting cancer prevention initiatives. Ongoing research is essential to understand the complex interactions between climate change and cancer, enabling more targeted and resilient cancer care strategies.

Keywords: Climate resilience, Cancer cell, Cause of cancer, Public health

1.0 Introduction

Integrating the concept of climate resilience into the context of cancer cells involves considering how environmental changes, influenced by climate change, may impact cancer risk, progression, and treatment. Here are some considerations:

Environmental Factors and Cancer Risk: Climate change can lead to shifts in environmental factors such as temperature, air quality, and exposure to pollutants. Certain environmental changes may influence cancer risk, either by directly affecting cellular processes or by altering exposure to carcinogens. Understanding these connections can help in developing strategies for cancer prevention.

Extreme Weather Events and Health Impact: Climate change is associated with an increase in extreme weather events. These events, such as hurricanes, floods, or wildfires, can have direct and indirect effects on human health. Disruptions in healthcare services, displacement of populations, and increased stress can all contribute to changes in cancer incidence and outcomes.

Vector-Borne Diseases and Cancer: Changes in climate can affect the distribution of vector-borne diseases. For example, the spread of infectious diseases carried by vectors like mosquitoes or ticks may impact cancer patients who are already immunocompromised. Addressing vector-borne diseases becomes crucial in a climate-resilient healthcare system.

Adaptation of Healthcare Infrastructure: Climate resilience in cancer care also involves adapting healthcare infrastructure to withstand climate-related challenges. This includes ensuring that cancer treatment facilities are equipped to handle extreme weather events, have contingency plans for disruptions, and can continue providing care in the face of climate-related challenges.

Public Health Policies: Climate-resilient public health policies should consider the long-term health impacts of climate change, including its potential influence on cancer rates. Policies that promote environmental sustainability, reduce exposure to carcinogens, and support cancer prevention initiatives contribute to overall climate resilience in the health sector.

Research on Climate and Cancer Interactions: Ongoing research is essential to understand the complex interactions between climate change and cancer. This includes investigating how environmental changes may

influence cancer biology, progression, and response to treatment. Identifying these relationships can inform more targeted and resilient cancer care strategies.

2.0 Environmental Factors and Cancer Risk

Environmental factors play a significant role in influencing cancer risk. While it's important to note that cancer is a complex disease with multiple causes, including genetic and lifestyle factors, exposure to certain environmental elements can contribute to the development of cancer. Here are some key environmental factors associated with an increased risk of cancer:



Fig 1: Environmental Factors and Cancer risk

2.1 Air Pollution: Long-term exposure to air pollutants, such as particulate matter, nitrogen dioxide, and volatile organic compounds, has been linked to an elevated risk of lung cancer and other respiratory diseases. Urban and industrial areas often have higher levels of air pollution.

2.2 Water Contaminants: Contaminants in drinking water, such as heavy metals (e.g., arsenic), industrial chemicals, and disinfection by-products, can pose health risks. Prolonged exposure to these contaminants has been associated with various cancers, including liver and bladder cancer.

2.3 Occupational Exposures: Some individuals may face increased cancer risks due to exposure to carcinogens in the workplace. Examples include asbestos (linked to lung cancer and mesothelioma), benzene (linked to leukemia), and certain chemicals used in industries such as manufacturing and agriculture.

2.4 Radiation Exposure: Ionizing radiation, whether from natural sources (e.g., radon gas) or human-made sources (e.g., medical imaging, nuclear power plants), can increase the risk of cancer. For instance, exposure to ultraviolet (UV) radiation from the sun is a major risk factor for skin cancer.

2.5 Dietary Factors: Certain dietary choices and environmental contaminants in food can influence cancer risk. For example, consumption of processed meats has been associated with an increased risk of colorectal cancer, and exposure to pesticides in food may contribute to cancer risk.

2.6 Tobacco Smoke: Tobacco smoke is a major environmental factor linked to various types of cancer, including lung, mouth, throat, esophagus, and bladder cancers. Secondhand smoke exposure can also increase cancer risk in nonsmokers.

2.7 Endocrine Disruptors: Chemicals that interfere with the endocrine system, known as endocrine disruptors, may contribute to cancer development. These chemicals, found in some pesticides, plastics, and personal care products, can mimic or block hormones, potentially affecting cell growth.

2.8 Infectious Agents: Certain infections are associated with an increased risk of cancer. For example, human papillomavirus (HPV) is a known cause of cervical cancer, and hepatitis B and C viruses are linked to liver cancer.

3.0 Extreme Weather Events and Health Impact: Extreme weather events, such as hurricanes, floods, heatwaves, wildfires, and other climate-related disasters, can have significant and varied impacts on human health. These events can affect communities directly through injuries and fatalities, as well as indirectly through disruptions to healthcare services, water and food supplies, and the spread of diseases. Here are some key health impacts associated with extreme weather events:

3.1 Direct Injuries and Fatalities: Immediate injuries and fatalities can result from events like hurricanes, tornadoes, floods, and earthquakes. Injuries may include trauma, fractures, and injuries related to debris or collapsing structures.

3.2 Displacement and Mental Health: Extreme weather events often lead to population displacement, either temporarily or permanently. Displacement can contribute to mental health issues, including anxiety, depression, and post-traumatic stress disorder (PTSD).

3.3 Waterborne Diseases: Flooding can contaminate water sources, increasing the risk of waterborne diseases such as cholera, dysentery, and giardiasis. Lack of access to clean water and sanitation facilities exacerbates this risk.

3.4 Vector-Borne Diseases: Changes in temperature and precipitation patterns can influence the distribution and behavior of disease vectors (e.g., mosquitoes and ticks), affecting the spread of vector-borne diseases such as malaria, dengue, and Lyme disease.

3.5 Heat-Related Illnesses: Heatwaves can lead to heat-related illnesses, including heat exhaustion and heatstroke. Vulnerable populations, such as the elderly, young children, and individuals with pre-existing health conditions, are particularly at risk.

3.6 Respiratory Issues: Wildfires can result in poor air quality, with increased levels of particulate matter and pollutants. This can exacerbate respiratory conditions, such as asthma and chronic obstructive pulmonary disease (COPD).

3.7 Infectious Disease Spread: Disruption of healthcare services, sanitation, and infrastructure can contribute to the spread of infectious diseases. Crowded evacuation centers and compromised hygiene conditions can facilitate disease transmission.

3.8 Food Insecurity: Extreme weather events can impact agriculture and disrupt food supply chains, leading to food shortages and insecurity. Malnutrition and related health issues may arise due to limited access to nutritious food.

3.9 Infrastructure Damage and Healthcare Disruption: Damage to healthcare infrastructure, including hospitals and clinics, can limit access to medical care. Disruption of transportation networks may hinder the timely delivery of medical supplies and evacuation of patients.

3.10 Increased Vulnerability of Certain Populations: Vulnerable populations, including low-income communities, the elderly, and those with pre-existing health conditions, are often disproportionately affected by extreme weather events due to social and economic factors.

Conclusion

Cancer is a complex genetic disease as a consequence of environmental exposures which serve as the driving force in initiating tumor development and progression. The scientific literatures provide substantial evidences of environmental and occupational causes of cancer. This will fully support an accelerated effort to prevent carcinogenic exposures. In addition to all of the evidences cited, there are many other indications that environmental exposures are linked to various human cancers. The single major risk factor for cancer is age, and the number of our geriatric people is rapidly increasing. If we look only at incident patterns among those aged 65 and 85 years old, there will be a significant increase number of cancer patients over the past 30 years. The same is correct for other ages as well. Cancer has become a widespread disease with epidemic proportions in certain cancer sites in a single generation. Currently, about one in four Americans could expect a cancer diagnosis at some point during his or her life-time.

In summary, incorporating climate resilience into cancer research and healthcare involves recognizing the interconnectedness between environmental changes, human health, and cancer outcomes. By understanding these connections, healthcare systems can better prepare for and respond to the challenges posed by climate change, ultimately improving the resilience of cancer care.

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CLIMATE CHANGE : IMPACT ON PLANT SCIENCE

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Introduction

Among all the Planets only earth has the sign for life and plants are considered as the key organisms for constituting life on earth. Plants are the Autotrophs, they are capable for synthesizing organic compounds from simple inorganic molecules. These organic compounds treated as a food. These Organic compounds prepared for heterotrophic organisms (who do not prepare their own food material) or by plants itself. The energy generated by plant via Photosynthesis is the driver of life on the earth (Berg, et al, 2005); Alnsour, et.al., 2015).

Climate of our earth is very challenging in stage. Continuous hike in around sea levels are significantly affecting the plants growth and yield too.

There are unbalanced situation in Climatic conditions , somewhere prolonged drought in (arid and semi arid Regions) and on the other hand at another places increased flooding is causing problems (mid to high latitudes) . Climate change is very multifaceted phenomenon facing by all of us. It involves many disciplines beyond science such as Society, Economics, politics and most important moral and ethical issues, climatic fluctuations are the global problem , but arise and experience from small scale (climate change.nasa.gov.).

Today, changes in the climate are undoubtedly learning a strong impact on human life, and it is associated with large scale phenomenon (Ahuja, et.al., 2010; Alnsour et.al.,2015).

Due to climatic change global food security threates is create and it is one of the most important changes in the 21 st century. The continuous increase in population in the stressed environment is raising a strong question , how to supply a sufficient food ? (King, et.al., 2009).

Assessment of WHO stated that, 60 % of the world population depends on traditional medicines which are basically obtained from plants. Anthropologic activity play important role and contributing towards climate change around the world (Mishra, 2016).

Due to Sessile nature, plants can not move from adverse conditions like all of us. That's why plants go for other alternative mechanism. Metabolic changes more specifically we can say variation in secondary metabolites content is considered to be one of the plant defense mechanism towards unfavorable condition.(Ober, 2005, Pichersky and Gang , 2009). Secondary metabolites are the compounds not necessary for the normal activity of plants but these compounds such as, Alkaloids, terpenes, cyanogenic glycosides collectively make plant immune system (Hartmann, 2007; Wink , 2003).

Climate change can change the quality of natural products and it affects the taste and medicinal value of some arctic plants (Gore, 2006) . Although it was reported that, such changes could either be positive or negative. Production of Secondary metabolites is influenced by many factors such as, competition between the plants , light, soil and humidity etc (Dean, 2007; Das, 2016).

Medicinal and aromatic plants are less immune to the climate change as compare to the other living organisms. Climate changes causing significant impact on lifecycles and distribution of plants, therefore many medicinal plants become endemic to particular geographical regions.

Research students at University of Washington , Seattle , Studied on coping mechanism of plants with their changing environment. In their research, they collected the data of seven topographically distinguished regions across the Western North America, from the Western Sierra Nevada Mountain range in Nevada to the Eastern Rocky mountain Foothills of Northern Canada, approximately 300 plant species were used in this . After collection of data they compared their findings with changes in climate conditions, for example, rain , temperature and snowfall. The results obtained from the analysis were, very much surprising, above 60 % of plants change their

distribution and shifted towards warmer region , all plants within a region regardless of species moved in the same direction.

According to the rec study published in journal Nature Climate Change, Climate Change could lead to be globally widespread loss plants occur around the world. This study collected data of 50,000 common plant species as well as animals. They concluded that, more than half of the plants would be get affected till 2080 due to continuous rise in green house gas emissions.

Climatic Factors

Plants are depend on certain climatic Factors such as, Light, Temperature, Carbon dioxide (CO₂), rainfall and moisture, to produce the crop products which are, essential for human nutrition as well as health. The amount of these factors varies between locations . Crop management is there fore , a huge challenge because, it is highly dependent on climate and environmental factors. A successful rate of crop production affected the net exporters , net importers and Consumers, as well as for national and food security. Plant growth and it's development are strongly dependent upon the temperature, each species has an optimum or specific temperature range to service on flourish on particular environment.(Hatfield, 2015). Crop Production also provides the food , fodder and fiber for cloths . Continuous increase in population to create plenty of humans on earth and this is one of the major factor affecting climate. Climate change has pronounced effect on biogeography , temperature, rainfall, soil and herbivory .

Table.1. List of Some Climatic Factors.

Sr. No.	Climatic Factors	Effect of Climatic Change	References
01	Rainfall	Due to climate change increase in rainfall and Snowfall is reported all over the world.	Tollefson, 2016.
02	Drought	Extream drought is related to climate change.Due to more release of green house gases into air, air temperature, is increased. Rise in temperature enhances the rate of evaporation.Dry soil is less capable to absorb water from soil.	Climaterealityproject.org.com
03	Air Pollution	The CO ₂ Emissions is the main source for atmospheric pollution , besides this some other air pollutants are responsible	www.iass-potsdam.de/output/airpollution-climate -change

Table.2. List of Major Factors Affecting climate

Sr. No.	Factors	Description
01	Elevation or Altitude effect Climate	At high altitude climate conditions becomes colder
02	Prevailing global wind pattern	There are different wind patterns in Northern and Southern hemisphere wind pattern associated with seasonal variations.
03	Topography	The Topography of the particular area strongly affect the climate . Mountain ranges are known as natural barriers air movement.
04	Effect of Geography	Geography of a Zone(Town and City) t.e. distances from mountains and Sustainable areas of water plays important role in determination of climate. Location of area determines its wind pattern.
05	Surface of the Earth	The quantity of sunlight is absorbed or reflected through surface. Determines the amount of atmospheric heating occurs. Highly vegetated areas are better good absorbs in comparison to snow and Ice covered areas. Snow areas are generally good reflectors.
06	Climate change over time	Cold and Warm conditions are main variant on earth . Sometimes changes in these conditions (Cold and Warm) are very are short but it may takes hundred to thousands of years.

Source:- www.climateandweather.net

Table.3. List Plant Species affected through Drought.

Sr. No.	Name of Plant	Description
01	Triticum aestivum L.	Total growth duration was reduced and decrease in substantial yield was occurred.
02	Hordeum vulgare L.	Same as above.
03	Chenopodium quinoa Wild.	Delay in pre-anthesis and delayed flowering in quinoa.

04	Triticum aestivum L.	Delay in pre-anthesis.
05	Oryza sativa L.	Delay in flowering.
06	Glycine max L.	Drought at the time of grain filling accelerate the maturity and it's down the yield.
07	Pennecetum glaucum L.	Rate of air absorption is increased.

Source:- Farooq et.al.(2012).

Effect of Climate Change to Field Crop

Increase in root to shoot ratio was observed under elevated CO₂ condition, in this condition plant synthesize larger number of chloroplast, mesophyll cell, longer stem and extended diameter length and number of large roots, more lateral root production with changes in branching patterns, (Qaderi and Reid, 2009). Some annual C₃ Plants such as Soyabean, peanut, and rice cultivars etc. Showed positive response in high concentration of CO₂ growth and development of Rice Cultivars is increased and higher grain yield with improve quality was also obtained (Uprety et al. 2010). The different plant species response towards elevated CO₂ level might due to variation in Soil, water, temperature and nutrient availability. (Amedie, 2013).

Effect of Climate Change to Forest Trees

The Forest Ecosystem interaction with a Climate is a Complex issue, due to variation in different processes. Trees have capacity to acclimatize, according to warmer climate, however different species responded differently (Saxe et al. 2001). In temperate bog and forest ecosystems, enhancement in temperature caused photoinhibition in stress and drought (Niinemets, 2010).

Global food security threate

Due to climate change there is reduction in food security, is among the major challenges, farmers deal with change in frequency and intensity of weather and it keeps farming always in high risk (IPCC, 2012). Elevation in temperature is also reducing food safety, due to increased in microbial growth. (Campbell et al., 2016).

Table.4. Factors Responsible for Soil Pollution

Sr. No.	Factors	Description
01	Deposition of Acedic Compounds	Acedic Compounds such as Sulfar dioxide, created acidic environment and affected the soil beneficial microorganisms.
02	Acid Rain	Acid Rain disturb the Soil chemistry and reducing the plant ability to grab nutrients.
03	Aluminum	Soil Pollution mobilizes the, naturally occurred aluminum in inorganic forms which are highly toxic to plants.
04	Algal Blooms	Leaching of Nitrogen and phosphorous in water from contaminated soil cause Algal Blooms, which causes death of

		aquatic plants due to depleted dissolved oxygen.
05	PH	Change in PH cause unfeverable environment for plants.

Source:- Rogers, 2018 (The Effect of Soil Pollution on Plants and Flora).

Government Policies of Harmful Effect of Climate Change on Plants:-

National Action Plan on Climate Change (NAPCC) of India is focus on eight major Policies or targets these are as follows.

1. National Solar Mission
2. National mission for Enhanced Energy Efficiency.
3. National Mission on Sustainable Habitat.
4. National Water Mission.
5. National Mission for Sustaining the Himalayan Ecosystem.
6. Green India Mission.
7. National Mission for Sustainable Agriculture.
8. National Mission on Strategic Knowledge for Climate Change.

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CHARACTERIZATION AND DEPOSITION OF ZNO THIN FILM BY USING CHEMICAL BATH DEPOSITION METHOD

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Abstract

The thin film of ZnO were deposited by using the CBD method. Structure of ZnO is found using XRD method and from XRD data also find strain factor, FWHM, and deposited thin film is also characterized by UV and from UV data it calculate transmittance, absorbance, and band gap parameter.

Introduction

Now a day's research is going in different fields such as nanomaterials, material Sciences, solid state etc. Physics of thin film is a separate branch of physics and in which many people are working. There is a scope of research in classical mechanics too, such as to reduce the friction between two things, to understand the galaxy and its working (how nature works?), few days ago we are able to detect the gravitational waves which were predicted by Albert Einstein years before. Actually we have two worlds one which deals with microscopic things and another one deals with macroscopic one. ZnO is a semiconducting material and it having intrinsic properties. ZnO is deposited in different techniques i.e. chemical bath-deposition sol-gel, sputtering, [1,2]. ZnO that include good transparency, high electron mobility, high thermal conductivity, wide band gap etc [3,4]. ZnO are highly transparent and it use for optoelectronic devices such as solar cells. [5,6].

Experimental

Firstly we have prepared Zinc Nitrate in 100ml distilled water for 0.1M, 0.2M, 0.3M solution using stirrer with heating. After 30 minutes Zinc Nitrate completely dissolved in distilled water solution will be clear and then adding ammonia slowly to the solution, solution becomes turbid. When adding excess ammonia maintain the pH 12 solution becomes clear again. Now solution is ready for deposition.



We have deposited the films for 0.1 M, 0.2 M and 0.3 M solutions of Zinc Nitrate for intervals of 1 hour, 2 hours, 3 hours and 4 hours. But the deposited films were not uniform, continuous and were not well adherent.

Reaction Mechanism :





Fig: Film is not uniform

Deposition of ZnO thin film by Microwave oven

So, we have tried using the microwave oven for deposition. The preparation of solution is same as mentioned above in CBD method. Here we have taken 25ml solution from prepared 100ml solution in a beaker and then inserted the glass substrate (masking) in this beaker. Put beaker in oven with setting Time 40sec. And start the oven, when time is over, we have taken out the beaker and measured the temperature quickly. Note down this time and temperature. This process we have repeated for 40sec, 60sec, 80sec, and 100sec for 0.2M and 0.3M solutions.

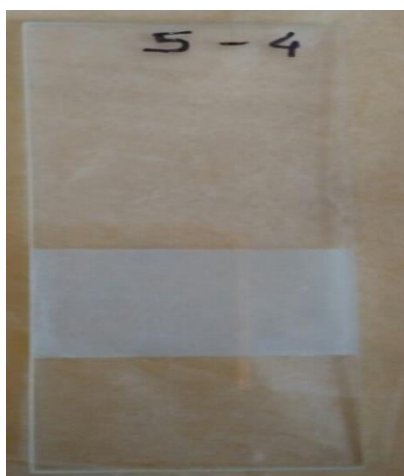


Fig :Film uniform deposited after using oven

Characterization

X- Ray Diffraction Technique(XRD)

X-ray diffraction (XRD) is a powerful technique for determination of crystal structure and lattice parameters. Figure shows the schematics of X-ray diffractometer. Diffraction in general occurs only when the wavelength of

the wave motion is of the same order of magnitude as the repeat distance between scattering centers. This condition of diffraction is nothing but Bragg's law and is given as,

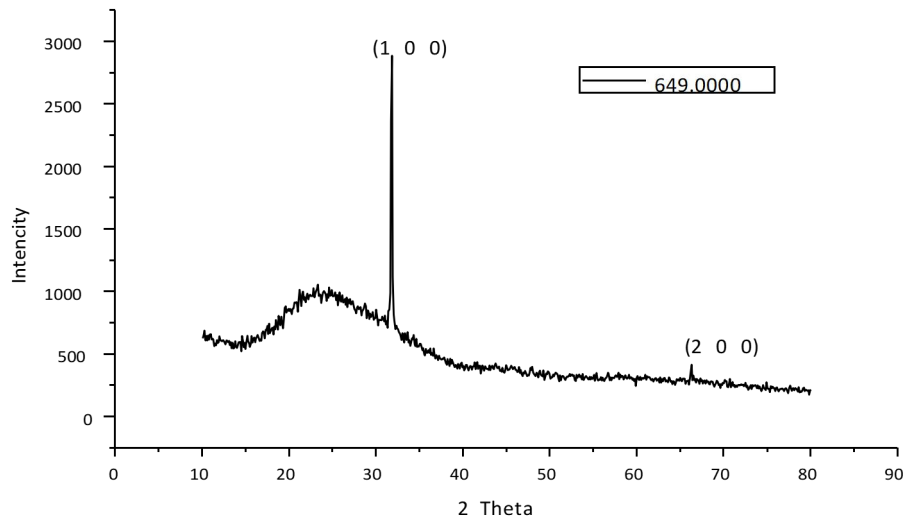
$$2d \sin \theta = n\lambda$$

Where, d = Inter-planar Spacing, θ = Diffraction Angle, λ = Wavelength of X-Ray, n = Order of Diffraction.

But wait, how to produce X-rays. We know the Bohr's 3rd postulate;

When electron hits a core level electron in an atom it knocks out and the other electron in the same atom fills this vacant allowed energy state and thereby emitting a radiation people call it as X-ray. The three basic components of X-ray diffractometer are: -

X-ray source Specimen - X-ray detector they all lie on the circumference of a circle, which is known as focusing circle. The angle between the plane of the specimen and X-ray source is θ the Bragg angle. The angle between the projection of the X-ray source and the detector is 2θ for this reason the X-ray diffraction patterns produced with this geometry are often known as θ - 2θ scans. In θ - 2θ scans geometry the X-ray source is fixed, and the detector moves through a range of angles. The radius of the focusing circle is not constant but increases as the angle 2θ decreases.



from XRD the crystalline size was determined by the Scherrer formula,

$$D = 0.9\lambda / \beta \cos \theta$$

Bragg's Law, $2d \sin \theta = n\lambda$

2θ	θ	θ in radian	$\sin \theta$	$d(A^\circ)$
32	16	0.279111111	0.275501	2.79491
66	33	0.575666667	0.544394	1.41442

STRAIN:- Normal stress on a body causes change in length or volume and tangential stress produces change in shape of the body. The ratio of change produced in the dimension of a body by a system of forces or couples, in equilibrium, to its original dimensions is called strain

Strain=Change in Dimension per unit Original Dimensions

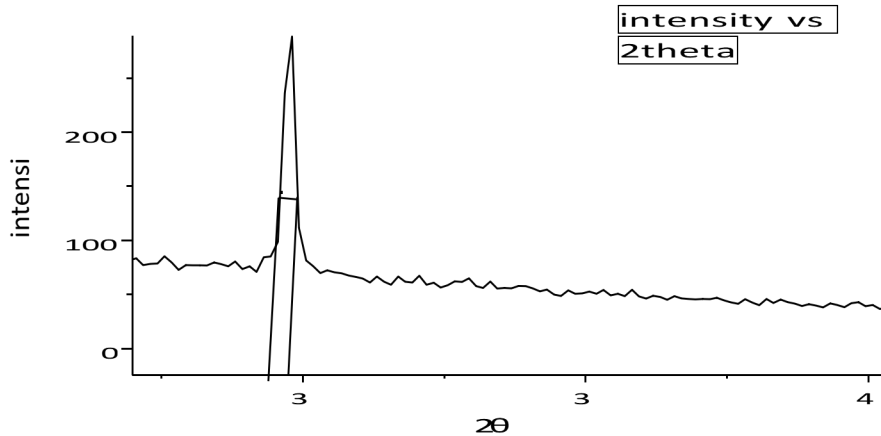
For 100 plane

$$\text{Strain} = \frac{d-d_0}{d_0} = \frac{2.79491-2.8171}{2.8171} = 1.7949$$

For 200 plane

$$\text{Strain} = \frac{d-d_0}{d_0} = \frac{1.4144-1.4085}{1.4085} = 0.00418$$

Graph of FWHM



$2\theta_1$	$2\theta_2$	2θ	$\theta(\text{rad})$	FWHM(β)	$\beta_{in}(\text{rad})$	$\text{Cos}\theta(\text{rad})$	Crystalline size $=0.9*\lambda/(\beta\text{cos}\theta)\text{nm}$
31.66	31.93	31.98	0.2789	0.2637	0.0046001	0.00486	30.13
66.146	66.36	66.146	0.5767	0.2203	0.003843	0.01006	36.47

Annealing : We have annealed the ZnO thin film in furnace by keeping it a temp

500°C for 1 hr and When temp getting 500°C off the switch of furnace and keep the thin film in furnace until the furnace becomes cooled until the furnace becomes cooled.



Analysis: After annealing we get Zinc Oxide Thin Film.

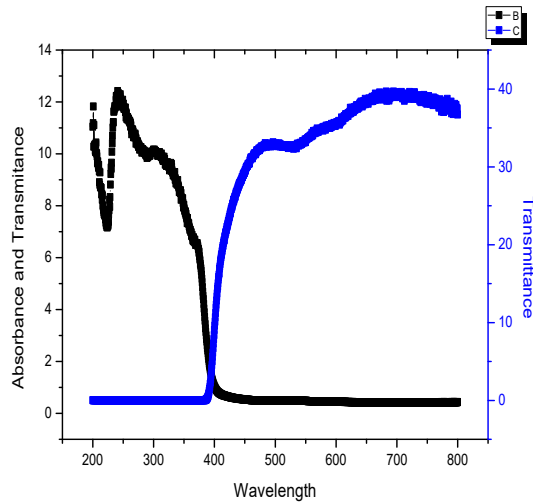
UV-visible spectroscopy

Zno optical properties are examined using UV-vis spectroscopy by plotting the transmittance and absorption graph determined the energy gap value of the zinc oxide films.

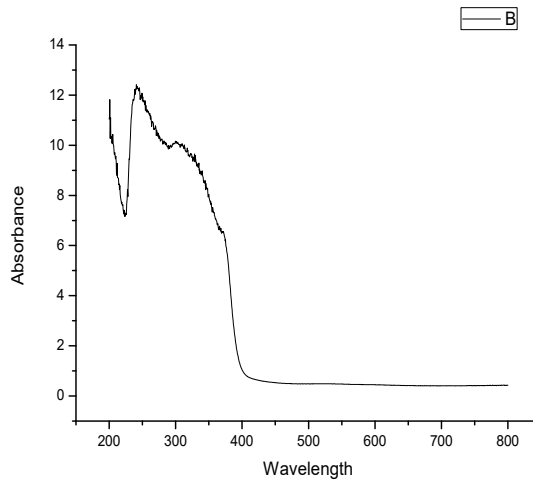
The band gap value is determined with help of following equation

$$(\alpha h\nu) = A(h\nu - E_g)^{1/2} \dots \dots \dots (7)$$

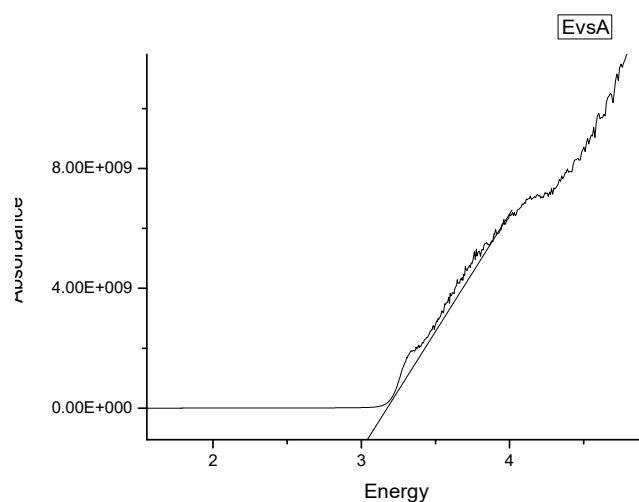
It is observed that 807nm is cut off wave length and its transmittance 36.91. $(\alpha h\nu)^2$ as a function of energy of photons of electromagnetic radiation. Zno thin film on glass substrate is prepared UV-visible spectra of different reaction at different temprature.(9)



Transmittance up to 36.



91% at 807nmv Band graph:-Band gap of zno is 3.2ev



Conclusions

By CBD method thin films were not deposited uniformly. We have deposited thin film successfully by CBD method using microwave oven. The effect of deposition time on the surface of glass substrate. We analyzed thickness measurement of Gravimetric method. When molarity of solution increases then thickness of thin film decreases. From XRD we determined strain and crystal size. For (100) plane strain factor is 1.7949 and for (200) plane strain factor is 0.4144. Also, we found that the Average crystal size 25. From UV Spectroscopy find out the band gap of zinc oxide is 3.2 eV. From UV Data Transmittance up to 36.91%

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INNOVATIVE STABILITY INDICATING METHOD FOR RELATED SUBSTANCE OF DILTIAZEM HYDROCHLORIDE PHARMACEUTICAL DOSAGE FORM (TABLETS)

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Abstract

A innovative gradient, sensitive and specific stability indicating Reverse Phase HPLC method has been developed and validated for quantitative determination of known, unknown and degradant impurities profiling for Diltiazem hydrochloride tablets. Newly developed analytical method found linear, accurate, specific and precise in the established concentration range. Specificity study results indicate the stability indicating nature of the method and resolve all known, unknown impurities and degradants from each other as well as from main drug component (Diltiazem hydrochloride). Analytical method validated in as per ICH Q2 (R1) guidelines “Validation of analytical procedure” and found linear, accurate, specific, robust and precise in the established concentration range.

The linearity of the method has been demonstrated across the concentration range of 0.10 µg/mL to 5.0 µg/mL for EP impurity-F with correlation coefficient R^2 greater than 0.99. Recovery of method was established from LOQ to 150% for known and unknown impurities w.r.t. test concentration and found in between 80% to 120%.

Key word: Diltiazem hydrochloride, Analytical Method Development, Analytical Method Validation, Impurities profiling, stability indicating.

Introduction

Diltiazem hydrochloride is chemical known as 3-(acetyloxy)-5-[2-(dimethylamino) ethyl]-2, 3-dihydro-2-(4-methoxyphenyl)-1, 5-benzothiazepin -4(5H)-one monohydrochloride (Figure-1). Diltiazem hydrochloride is a calcium channel blocking agent; nondihydropyridine derivative^[1]. It is medication used to treat high blood pressure, angina, and certain heart arrhythmias.^[2] It may also be used in hyperthyroidism if beta blockers cannot be used.^[3]

All the major international pharmaceutical regulatory agencies requirement is that the unknown degradants & known impurities profile study of drug substances and drug products testing study to be carried out using a suitable stability indicating validated analytical method.^[4-5]

To develop and prove the stability indicating nature of the analytical method it is essential to conduct a force degradation study on drug substances and drug products, in order to form the degradant impurities and to monitor the increase in known impurities under stress conditions. Environmental factors such as sun light, heat and presence of moisture (hydrolysis) or air (oxidation) can lead to generation of different potential degradants impurities.^[6-7]

However, the comprehensive literature review found that very few methods were reported for the determination of related substances^[8-11] and synthetic reagent^[12] for Diltiazem hydrochloride. The methods that have been reported for related substances by HPLC and HPLC-MS method^[36] discussed about characterization of Impurity-A, B, E and F. By considering all above information the objective of method development and validation is that to prove the specificity for impurities-A, B, C, E and F and validate for the analytical method for EP impurity-F which is specified degradation product as per European pharmacopeia for Diltiazem hydrochloride pharmaceutical dosage form (Tablets). The chemical name of Diltiazem hydrochloride and its impurities are shown in Table-1.

Table-1: Chemical Name of Diltiazem and its impurities

Compound Name	Chemical Name
Diltiazem hydrochloride	3-(acetyloxy)-5-[2-(dimethylamino) ethyl]-2, 3-dihydro-2-(4-methoxyphenyl)-1, 5-benzothiazepin -4(5H)-one monohydrochloride
Impurity-A	(2R,3S)-5-[2-(dimethylamino) ethyl]-2-(4-methoxyphenyl)-4-oxo-2,3,4,5-tetrahydro-1,5-benzothiazepine-3-yl acetate.
Impurity-B	(2S,3S)-2-(4-methoxyphenyl)-4-oxo-2,3,4,5-tetrahydro-1, 5-benzothiazepine-3-yl acetate.
Impurity-C	(2S,3S)-5-[2-(dimethylamino)ethyl]-2-(4-hydroxyphenyl)-4-oxo-2,3,4,5-tetrahydro-1,5-benzothiazepin-3-yl acetate
Impurity-E	(2S,3S)-3-hydroxy-2-(4-methoxyphenyl)-2,3-dihydro-1,5- benzothiazepin-4(5H)-one
Impurity-F	(2S,3S)-5-[2-(dimethylamino)ethyl]-3-hydroxy-2-(4-hydroxyphenyl)-2,3-dihydro-1,5-benzothiazepin-4(5H)-one

Materials and Methods

Reagents and Materials

Marketed samples of Diltiazem hydrochloride tablets were used for Analytical Method development and Analytical Method validation. The related substances (Impurity-A, B, C, E, and F) of Diltiazem hydrochloride were procured from Simson Pharma Limited, Mumbai (India). Sodium dihydrogen phosphate monohydrate, Methanol & acetonitrile was obtained from Merck Limited, HPLC grade water was obtained from Milli-Q purification system. 0.45µm Nylon filter used of Merck, India make.

Instrumentation

HPLC system (Make: Shimadzu) equipped with auto sampler and quaternary gradient pump was used.

Chromatographic conditions

Purosphere STAR RP18 column (150 mm x 4.6mm, 5µm) (Thermo) column was used as stationary phase maintained at 40°C. The mobile phase involved a variable composition of buffer and organic solvents, Mobile phase-A (mixture of 0.05M Potassium dihydrogen phosphate monohydrate Buffer pH 4.0 and methanol in the ratio of 900:100 v/v respectively) and Mobile phase-B is acetonitrile. HPLC gradient programme run mentioned in Table-2.

Diluent: Mixture of 0.05M Potassium dihydrogen phosphate monohydrate Buffer pH 4.0 and Acetonitrile in the ration 60:40 %v/v. used as a diluent.

Table-2: Mobile phase programme for gradient elution.

Time	Flow	Mobile Phase-A (%)	Mobile Phase-B (%)
0	1.0	80	20
10	1.0	80	20
15	1.0	50	50
40	1.0	50	50
45	1.0	80	20
50	1.0	80	20

Solution preparations

Standard solution

Solution containing 2.0µg/mL of Diltiazem hydrochloride standard prepared in diluent.

Sample solution:

Solution containing 1000µg/mL of Diltiazem hydrochloride Sample prepared in diluent.

Results

Method validation

The developed innovative Reverse Phase HPLC analytical method validated in accordance with ICH guidelines. The following experiment was performed i.e. specificity, accuracy, precision (method precision and intermediate precision), linearity, range and robustness.

System suitability

The system suitability of test method was evaluated [13-14] by injecting single injection of Blank (diluent) solution and standard solution in six times. The acceptance criteria define from six replicate injections of standard solution is %RSD of Diltiazem peak area should not be more than 5.0%, USP tailing for Diltiazem peak should not be more than 1.5 and fronting should not be less than 0.80 and USP plate count for Diltiazem peak should not be less than 3000.

Specificity

Peak purity results for the analyte in specificity study were determined with the PDA detector under optimised chromatographic conditions considered homogeneous (purity index > Zero) indicating that no additional peaks were co-eluting with the analyte (Diltiazem & its known impurity) and which indicate the specificity of the method. Resolution was achieved for all known, unknown impurities and degradants.

Stability of drug product in analytical solution

The stability of the Sample and standard solution is assessed by injecting the standard and sample at different time intervals at 10°C temperature and found stable upto 48 hours at 10°C temperature.

Linearity and range

The test concentration for Diltiazem hydrochloride is 1000µg/mL. Considering the impurity limit level 0.5% w.r.t. test concentration of Diltiazem hydrochloride. The graph of peak responses of the analytes relative to their corresponding concentrations were determined. The statistics results of Linearity experimental are shown in Table-3.

Table-3: Regression statistics of Linearity experimental results.

Compound	Concentration µg/mL	Multiple R	Regression equation	F	P-Value
Diltiazem hydrochloride	0.10 to 5.0	0.9923	$y = 53120.06x + 2431.8$	14.8	0.0007
EP Imp.-F	0.10 to 5.0	0.9912	$y = 77189.03x + 167.31$	14.7	0.0006

Determination of Quantification Limit and Detection Limit

The linearity performed as mentioned above. LOQ and LOD are predicted as mentioned below formula.

$$LOQ = 10\sigma / s \quad \text{and} \quad LOD = 3.3\sigma / s$$

Where,

σ = residual standard deviation

S = slope of the calibration curve

The LOQ and LOD results are tabulated in Table-6.

Determination of response factor (RF)

Graph was plotted using the peak areas versus analyte concentrations in the range reported in Table-3. The Response Factor (RF) was determined as the ratio of slope of the main drug component (Diltiazem hydrochloride) to that for impurity and is reported in Table-4.

Compound	LOQ		LOD		RF
	$\mu\text{g/ mL}$	%w/w*	$\mu\text{g/ mL}$	%w/w*	
EP Impurity-F	0.20	0.02	0.066	0.006	0.96
Diltiazem hydrochloride	0.16	0.016	0.053	0.005	1.00

Table-4: Limit of quantification, detection, response factor (LOQ, LOD and RF).

Note:* %w/w calculated w.r.t. sample concentration (1000 $\mu\text{g/mL}$)

Accuracy

The experiment was conducted by adding the known amount of impurity (Impurity-F) in the test sample by considering the tolerance level i.e. 0.5%w/w and Diltiazem hydrochloride in the placebo (excipient) corresponding to four concentration levels at LOQ, 50%, 100% and 150% by considering the limit level i.e. 0.1%w/w with respect to test sample concentration.

Method precision and Intermediate Precision:

Method precision was evaluated by preparing six spike samples by spiking the known impurity (Impurity-F) at 0.5%w/w level with respective of test concentration (1000 $\mu\text{g/mL}$)

Intermediate precision was evaluated by different analyst on different HPLC systems, on different columns on different days. Experiment was conducted same as method precision experiment by spiking the known impurities (Impurity-A) at 0.5%w/w level with respective of test concentration.

Experimental results were calculated for known and total impurities for method precision and intermediate precision experiment. %RSD was calculated for (%w/w) known, unknown and total impurities and found less than 10%. Overall %RSD for (%w/w) known, unknown and total impurities was calculated for method precision and intermediate precision experiment results (n=12 results, six from method precision and six from intermediate precision) and found less than 10.0%

Robustness

The robustness of the method has demonstrated by establishing the system suitability parameter by change in flow rate by $\pm 0.1 \text{ mL/min}$, change in column oven temperature by $\pm 5^\circ\text{C}$, change in organic composition of mobile

phase-A by $\pm 2\%$ absolute and change in wavelength by $\pm 5\text{nm}$. The method found robust by intentionally changes in chromatographic conditions as mentioned above.

Discussion

The objective of the method development is that to separate the all known, unknown impurities and degradants among from each other as well as from main drug substances with short run time of analysis. Different column consist of different stationary phases (RP-C₈ and RP-C₁₈) and different particle size of the column (3 μm and 5 μm) were also tested.

Considering Diltiazem hydrochloride and their known related impurities polar in nature the following mobile phases with gradient elution attempts were done to separate all the impurities which are present and generated during stress studies.

a) Trifluoroacetic acid buffer with methanol, b) Trifluoroacetic acid buffer with acetonitrile, c) Potassium dihydrogen phosphate buffer with methanol, d) Potassium dihydrogen buffer with acetonitrile, e) Sodium dihydrogen phosphate monohydrate buffer with methanol and f) Sodium dihydrogen phosphate monohydrate buffer with acetonitrile.

The pH of the above buffers varies from 3.0 to 7.0 during method development trials.

Selection of stationary phase

The poor resolution between Diltiazem hydrochloride and Diltiazem hydrochloride impurities (Impurity-A, B, C, E and F) as well as broad peak shape for Diltiazem hydrochloride observed, early elution (in void volume) of impurities implies that C₈ stationary phase is not suitable for this application. Hence C₁₈ stationary phase was chosen to improve resolution among the peaks and peak shape for Diltiazem hydrochloride. The peak shape for Diltiazem hydrochloride and resolution among all components improved with Purosphere STAR RP18 column (150 mm x 4.6mm, 5 μm) columns.

Selection of mobile phase

Resolution among the known related impurities and unknown impurities of Diltiazem hydrochloride was found poor using mobile phase with Trifluoroacetic acetic acid buffer, Potassium dihydrogen phosphate buffer. Broad peak shape for Diltiazem hydrochloride and non Gaussian peak shape was observed impurities with use of above buffer. With use of combination of Pottasium dihydrogen phosphate monohydrate buffer pH 4.0 with methanol gives the better resolution among the impurities and Gaussian peak shape for Diltiazem and all impurities.

After an extensive study, the method has been finalized on Purosphere STAR RP18 column (150 mm x 4.6mm, 5 μm) using variable composition of Mobile phase-A (mixture of 0.05M Pottasium dihydrogen phosphate monohydrate buffer pH 4.0 with methanol in the ratio 900:100 v/v respectively) and Mobile phase-B is acetonitrile.

The mobile phase at a flow rate of 1.0 mL/min and column compartment temperature kept at 40 °C. The detector response for all the components found maximum at 240 nm; hence the typical chromatogram was recorded at this wavelength. The typical HPLC chromatograms for Blank, Standard, Placebo and Spike sample represents in Figure-1, Figure-2, Figure-3 and Figure-4 respectively.

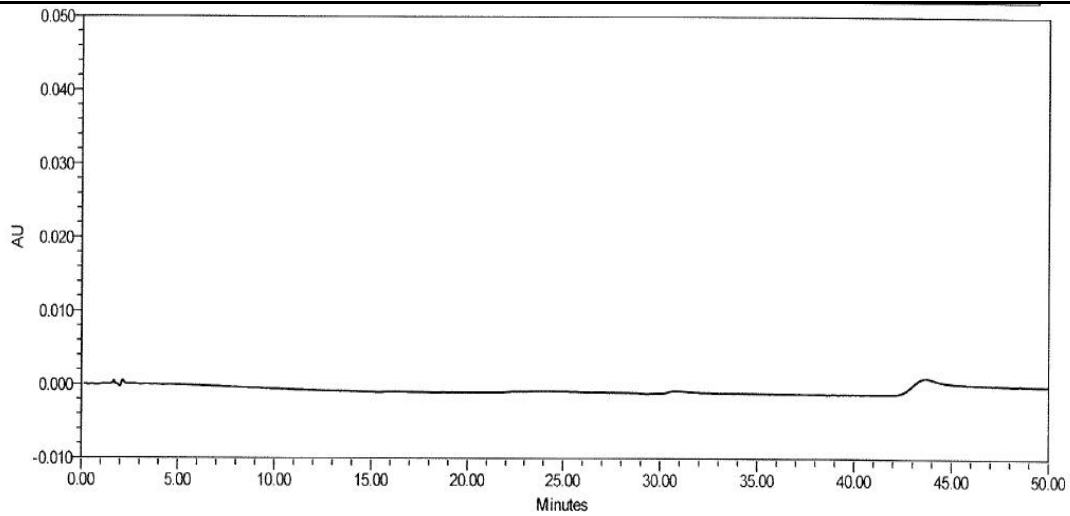


Figure-1: Typical HPLC chromatogram of Blank

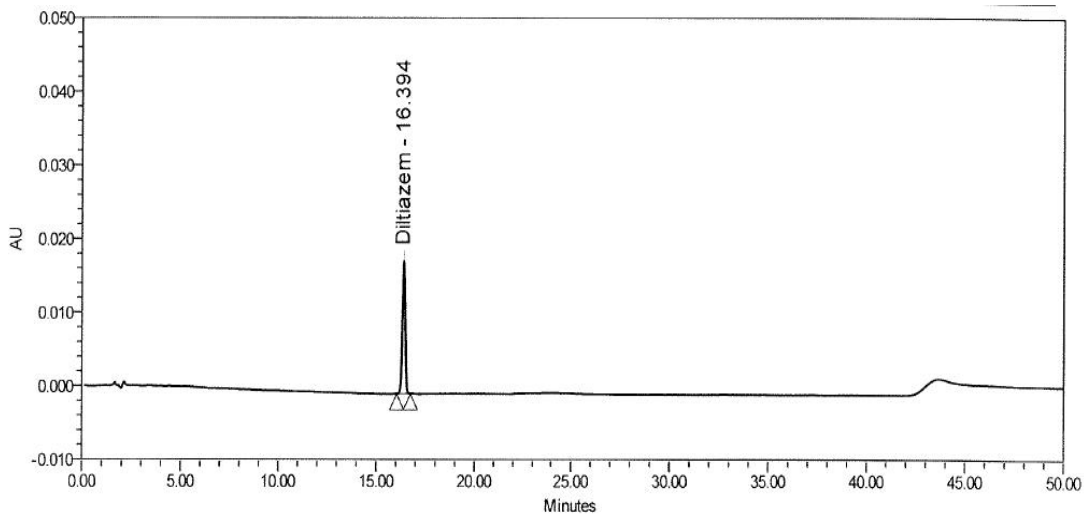


Figure-2: Typical HPLC chromatogram of Standard

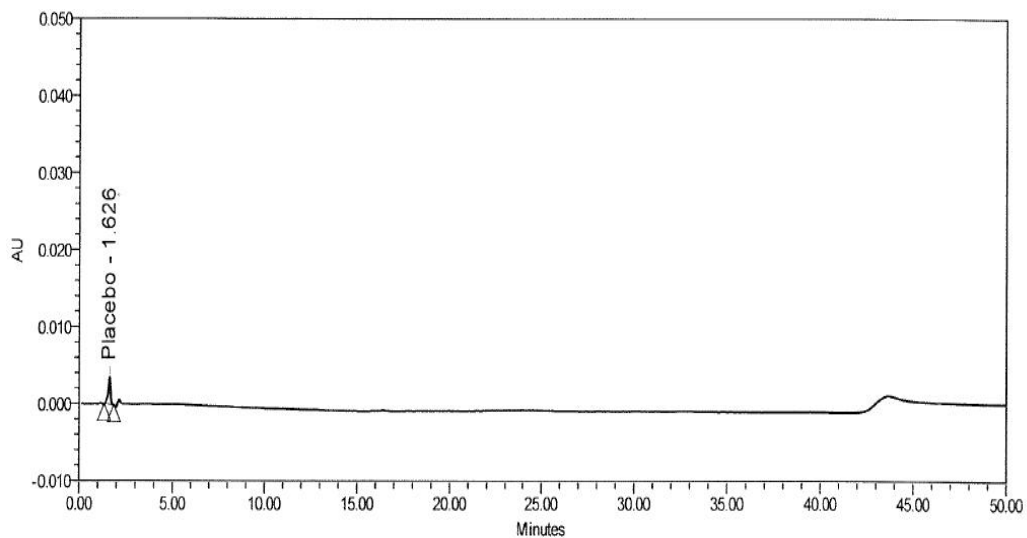


Figure-3: Typical HPLC chromatogram of Placebo solution

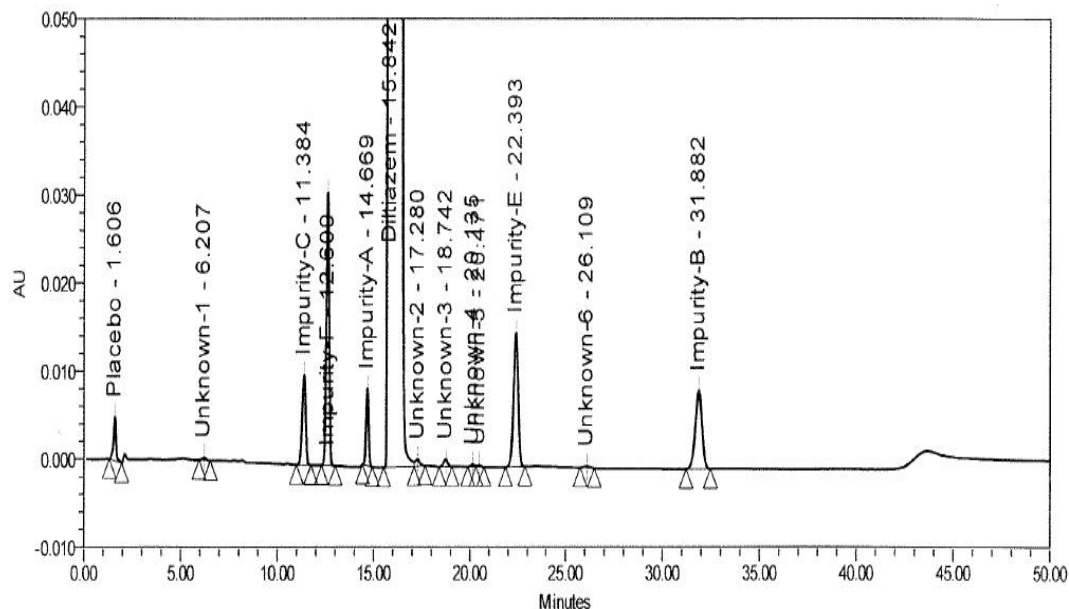


Figure-4: Typical HPLC chromatogram of Spike Sample

Conclusion

Analytical Method Validation experiment results revealed that the newly developed analytical method is linear, accurate, specific and precise in the proposed working range. Specificity study results shows the stability indicating nature of the method and separate all known, unknown impurities and degradants from each other as well as from main drug component (Diltiazem hydrochloride).

The method is robust to change in flow rate, column oven temperature, change in wavelength and change in organic composition of mobile phase. Hence this cost effective analytical method can be used for routine analysis as well as to monitor the known, unknown and degradant profile of novel Diltiazem hydrochloride pharmaceutical dosage form (tablets).

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LOCAL SOLUTION TO GLOBAL PROBLEM: BIODEGRADABLE SOLID WASTE MANAGEMENT AT HOUSEHOLD LEVEL

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Abstract

Over the last few decades, solid waste management has become a global problem. This is a big challenge to rural as well as urban areas. The present study deals with the local solution to this global problem. A role model project has been successfully run for household biodegradable solid waste management. The biodegradable solid wastes were reduced, recycled, and reused to produce greenery in the garden. Thus, decreasing constraints on the municipal solid waste management system. Not only this but it also produces a pleasant green-clean and healthy environment in the house.

Introduction

Nowadays every person is talking about a clean and green environment[1]. However, land pollution caused by the increasing solid waste and its improper disposal has become a big problem for the health of mankind and other living beings. Land pollution also causes water and air pollution indirectly spoiling the green and clean atmosphere. The main cause of land pollution is the nonscientific ways of solid waste management. The amount of solid waste generated by rural and urban areas is continuously increasing every day. As per the detailed project reports and selection of technologies for processing and final disposal of municipal solid waste using the 12th Finance Commission grants, 1.15 lakh metric tons of solid waste was generated in India per day [4]. With the explosion of population in towns and cities the problem of solid waste management has become the major issue for municipalities and other governing bodies.

Definition Of Solid Waste

Solid waste is nothing but discarded material, which has no consumer value to the person throwing over it. World Health Organization (WHO) defined the term solid waste as “solid waste is unwanted and discarded materials from houses, street sweepings, commercial and agricultural operations arising out of mass activities” [6]. In general Solid Waste means non-liquid materials arising from domestic, trade, commercial, agricultural, and industrial activities and public services. Solid waste is produced from housing premises, vegetable markets, street sweepings, and business establishments. The major part of solid waste (30 to 55%) is biodegradable whereas another major part of solid waste comprises inert matter like glass, metal, stones, ashes, cinders, textiles, etc. Plastic and polythene are also becoming another major part of solid waste nowadays. The solid waste may be highly compostable, combustible, biodegradable, or inert depending upon the percentage of the ingredient.

Classification Of Solid Waste

In general, solid waste is classified as organic waste, traditional recyclable waste, hazardous waste, electronic waste, construction and demolition waste, heavy trash (bulky and white goods), inert waste, etc. The classification of solid waste is shown in Fig.1.

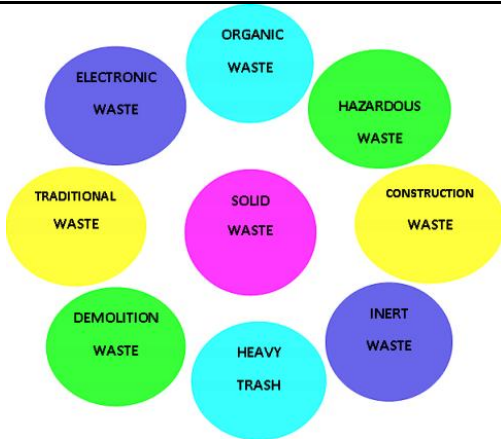


Figure 1 Classification of Solid Waste

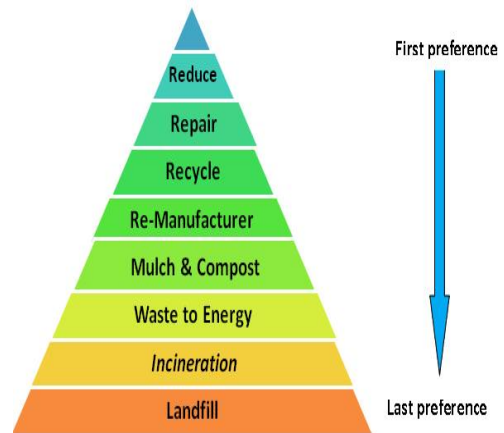


Figure 2 Hierarchy of waste disposal

Most of this waste material is collected by contract method or by different vendors. The priority for disposal methods is as shown in Fig. 2.

Thus, scientifically maximum priority is to repair, reuse, and recycle the waste whereas disposal by various techniques like incineration and landfill is preferred last.

Importance Of Solid Waste Management

Practically, every citizen is now in search of clear air and a pleasant environment. The land pollution delinquent has grown enormously in recent years due to waste dumping. Civics administrators are facing the problem of sanitation disposal of waste. Those calls for separate efforts of not only the civics administration but participation of several responsible public groups and industrialists. As the cities are growing in size and problems are seen as the generation of plastic waste, various municipal waste treatment and disposal methods are now being used to try to resolve these problems. Garbage generation in households can be recycled and reused to prevent the creation of waste at sources and reduce the amount of waste thrown into the community dust bins. Because of this solid waste management is essential [6-8].

Municipal Solid Waste Management Techniques In India

Solid waste management in developing countries comprises the following steps:

- Repair, reuse, and recycle at the household level
- Waste collection, classification, and storage
- Management of community bins
- Secondary collection and transport to the waste disposal sites.
- Waste disposal in landfills.

Problems In The Current Waste Management Systems

- Less awareness about reuse, recycling, and classification of waste among the rural as well as urban localities
- Poor quality of work in the collection, classification, and transportation of waste
- Negligence about maintenance of community dustbins
- Less number of dust bins and Less frequency of emptying causing overflow of community dust bins
- Scattering of overflow solid waste causing the choking of drainage system
- Less effort of both workers and community to separate the biodegradable waste from other types of waste-producing litter and Oder in the environs of the dustbin.
- Less bothering about the rules regarding waste management.

As a result of all these problems in the current system of solid waste management, organic solid waste is usually mixed with other recyclable and inert solid waste. Moreover, in most of the towns and cities, the land filling is

nonscientific. The solid waste is just dumped outside the existing localities. All together causes the anaerobic decomposition of solid waste producing greenhouse gases like methane [10].

Most of the ideal villages winning prizes in different government schemes used to produce manure from organic waste by the vermin-composting method. Many organizations produce biogas from organic waste. However, according to the Department of Natural Resources, earthworms in vermin-composting can stay alive in the temperature range of 16 to 28 degrees Celsius. Intensive care is to be taken for temperature range, ventilation, and moisture condition maintenance. Recently, biogas plants have been developed to have size reduction and other benefits but they require waste on a large scale and hence difficult to maintain by an individual. The most effective method for solid waste management particularly organic solid waste management is a combination of methods.

Up till now the different methods for organic solid waste have been investigated on a large scale. However, there is little discussion on efforts by individuals to reduce, and reuse the organic solid wastes in their homes. In the current investigation, a very simple, economical, and effortless method of organic biodegradable solid waste management at the individual user level is explained.

Methodology

The simple method adopted is named as 3 R method of organic solid waste Management. These 3Rs are

- R - Reduce the bio-waste by drying
- R - Reuse the dried Bio-waste for plantation and
- R - Recycle it in terms of greenery.

The steps adopted while executing this method of biodegradable waste management

- Dry the biodegradable waste from the kitchen and garden in sunlight.
- Mix it properly.
- Do the plantation using three different methods
- Sac method
- Pot method and
- Drum method

The sac method is mainly useful for growing vegetables because the sac has to be replaced periodically. The pot method is useful to grow small florid and gaudy bushes. And drum could be employed to nurture fruit plants like guava, Chikoo, clustered apples, or pomegranate along with ornate shrubbery along drum sides.

Sac and Pot method:

The sac or pot method comprises the coconut cover beds at the bottom to hold the necessary and sufficient water; it has been followed by a few pebbles for air circulation. The soil bed has been covered on this base. The mixture of ten percent soil and ninety percent dried solid waste was then added over this soil bed alongside of sapling. A thin layer of soil is spread on the surface followed by watering.



Figure 3: indigenous method: Pot Method of sapling



Figure 4: indigenous method: Sac Method of sapling

Drum method

In the drum method, three layers of plantation are possible. The same procedure as that of the pot method is followed for the bottom and middle layers. The saplings are to be planted from the four side holes made to the bottom and middle layer of the drum. In the uppermost layers, a fruit plant is to be planted in the center and herbs can be planted alongside holes.



Figure 5: Drum Method

Conclusions

The investigated 3R method of biodegradable waste management was found to be very fruitful in reducing solid waste, producing greenery in gardens, and giving the pleasure of creativity. In this way, approximately a half kilogram of biodegradable solid waste was reduced from municipal solid waste per day. As a result, nearly 180 kg of solid waste is decreased per year per home. Moreover, the effects of this waste are also prevented. Thus, the project created a clean and green environment on the premises of the house. Moreover, the vegetables, shrubs and other plants grown by this method are more hygienic, and healthy, having greater immunities and better yield qualities.

Suggestions

Some of the suggestions from the current study are listed below

- Awareness programs regarding the classification of solid waste must be arranged in schools, colleges, and public programs.
- These programs must effectively inculcate the environmental issues and health issues generated through improper solid waste disposal.
- These programs should inspire the individual to think and act for scientific solid waste management.
- With this awareness one will work for above said simple method of solid waste management and support to decrease the municipal waste management strains.

Problems In The Solid Waste Management

- Individual housewives as well as other family members have an erroneous notion that garbage disposal is entirely the job of civic authorities.
- The communities' welfare associations give a very low priority to solid waste management as compared to security, water, lighting, etc.

- As the rag pickers work in the early hours of the morning they are looked upon with suspicion and any theft or encroachments in colonies are blamed on them.
- After the collection of waste, the segregation is done in the open area, where the recyclables are taken away, leaving the area dirty.
- In industrial areas urban waste systems often co-mingle human, industrial, and food waste, complicating waste management.

Solutions

There are solutions available to the urban waste problem, the framework for this could be adopting the 4-R principles of waste management i.e. Reduce, Reuse, Recycle, and Recover which are mutually supporting and provide a comprehensive and environmentally responsible strategy. Children from the local schools should be trained on the benefits of the wealth from waste. Eco-clubs can be formed at primary, secondary, and college level. Initially, strict implementation and enforcement of environmental laws will pave the way for compliance.

Above all, we have to contribute as responsible citizens living in a community that respects and understands nature and the environment.

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CLIMATE CHANGE AND ITS IMPACT ON PLANTS & CROPS

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Abstract

Now a day's climate change is one of the largest economical, social and also mental problems that the planet faces. Climate change has global repercussions, and climate and disaster risk will also experience the certain vulnerable organisms. The impact of climatic change is most threatened to the lives and also to plants, animals including human beings. Changed climate has great adverse impact on reduction in natural resources that make impossible for sustainable utilization of limiting resources. Drought condition is connected with high temperature; found major abiotic factor caused by climate change. Overall the changed climate has adverse effect on biodiversity, ecosystem and available natural resources.

Keywords: repercussions, vulnerable, sustainable

Introduction:

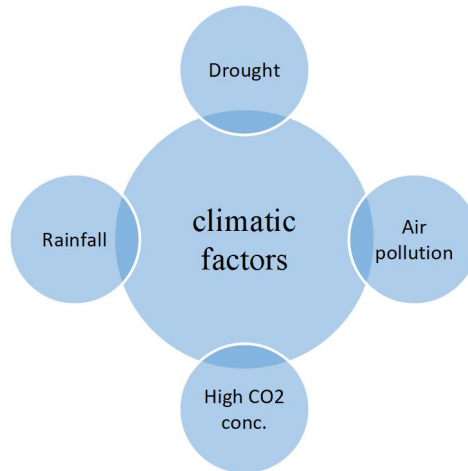
Climate change is nothing but the long term significant changes in the environment particular average weather at a given area is climate change. Average temperature, precipitation and wind patterns may include average weather. Such changes may occur due to different process on earth, external forces like variations in sunlight, intensity and most important human activities. At present climatic condition of our earth is at alarming stage, which significantly affects plants growth, development and productivity. Unbalanced condition of climate caused prolonged drought in some area while in other places there is increased flooding problems.

In the world, climate change caused by different activities. As climate change occurs, suddenly temperature increases dramatically. by the human activities, large amount of CO₂ released along with release of other greenhouse gases into the air.

Earth is only one planet that has sign of life and plants are mainly responsible for constituting life on earth. Only plants considered as autotrophs, as they prepare their own food material from simple inorganic molecules. These plants serve readymade food to the heterotrophic organisms i.e. those which cannot synthesize their own food. The energy gained by plant by the process of photosynthesis is mainly represents life on earth. (Berg, et al., 2005; Alnsour et. al. 2015). Changes in the climate are leaving a great impact on human life today.

(Ahuja, et. al., 2010; Alnsour, et. al., 2015). In 21st century, change in climate causes global food security threat which is one of the most important challenge today. Increased population causes increased stress and strong question that how to supply sufficient food to such a raising population. (Kang, et. al., 2009). changed climate may cause changes in the quality of natural product and also taste and medicinal value of some Arctic plants. (Gore, 2006). Changes in climate may be either positive or negative. for the production of secondary metabolites stressed condition of climate required, it also influenced by some factors like light, soil, humidity, competition between plants etc. (Dean, 2007; Das, 2016).

According to some work published in Journal Nature Climate Change, changed climate results in the world spread loss of plants. According to this study, from collected 50,000 species of plants as well as animals, they concluded that more than half of the plants would be affected till 2080 due to greenhouse effect.

Climatic Factors:

Plants are autotroph that prepares their food with the help of climatic factors such as, light, temperature, carbon dioxide, rainfall, moisture, soil and rainfall. These factors are also important for human nutrition and health. But these climatic factors changed as area changes. The crop that taken always dependent on climatic and environmental factors, that's why crop management is a great challenge today. The growth, development and yield of plants are totally dependent upon the temperature, light, humidity and soil etc. (Hatfield, 2015).

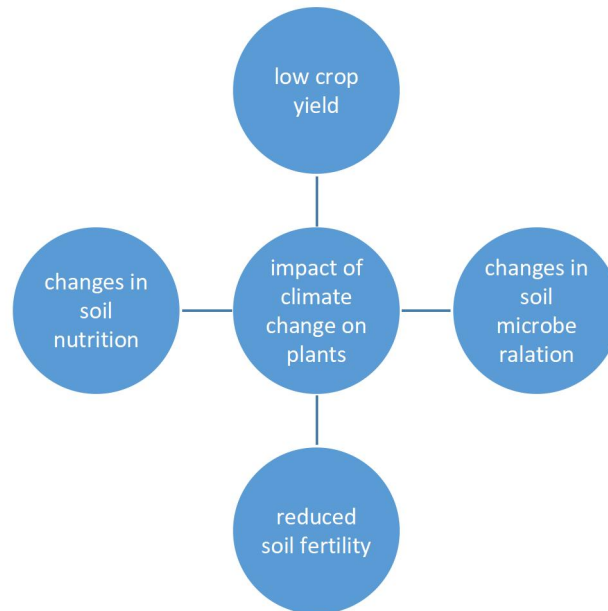
Material & Method:**Study Area:**

For present data, selected study areas were Dudhodi, Savargoan, Anandwadi, Jejla, and Tintraj from Bhoom District Dharashiv. The latitude of Bhoom, Maharashtra, India is 18.458967, and the longitude is 75.661575.

- 1) **Rainfall:** Due to climate change increase in rainfall and snowfall is reported all over the world. Tollefson, (2016)
- 2) **Drought:** Extreme Droughts is related to climate change. Due to more release of green house gases into the air, air temperature is increased. Rise in temperatures increases the rate of evaporation. Dry soil is less capable to absorb water from soil.
- 3) **Air Pollution:** The CO₂ emissions are the main cause of atmospheric pollution, some other air pollutant, also responsible for climate change. These pollutants are known as short-lived climate-forcing pollutants (SLCPs) like black carbon, methane, sulfate aerosols and ground-level ozone. Black carbon and methane are significant contributors after CO₂.
- 4) **High CO₂ concentration:** high CO₂ concentration and change in climate may increases plant pathogens which have virulence effect. It also causes reduced stomatal density, altered leaf chemistry.

Result:

Effect of Climate Change to Field Crops:



Higher CO₂ concentration synthesizes large number of chloroplasts, numbers of large roots, mesophyll cell, high number of lateral root etc. (Qaderi and Reid, 2009). The crop like soybean, peanut, rice etc. like annual C₃ plants respond positive in high concentration of CO₂. At increased CO₂, productivity of grain increases with quality and also increase in growth and development of rice cultivar observed (Uprety, et. al., 2010). While, on the other hand some C₄ plants like maize, increased CO₂ concentration causes reduction in its yield (Alexadrov and Hoogenboom, 2000). The different plant species responses towards higher CO₂ level might be due to difference in soil, water, temperature and nutrient availability (Amedie, 2013).

Mycorrhizal association as influenced by moisture stress:

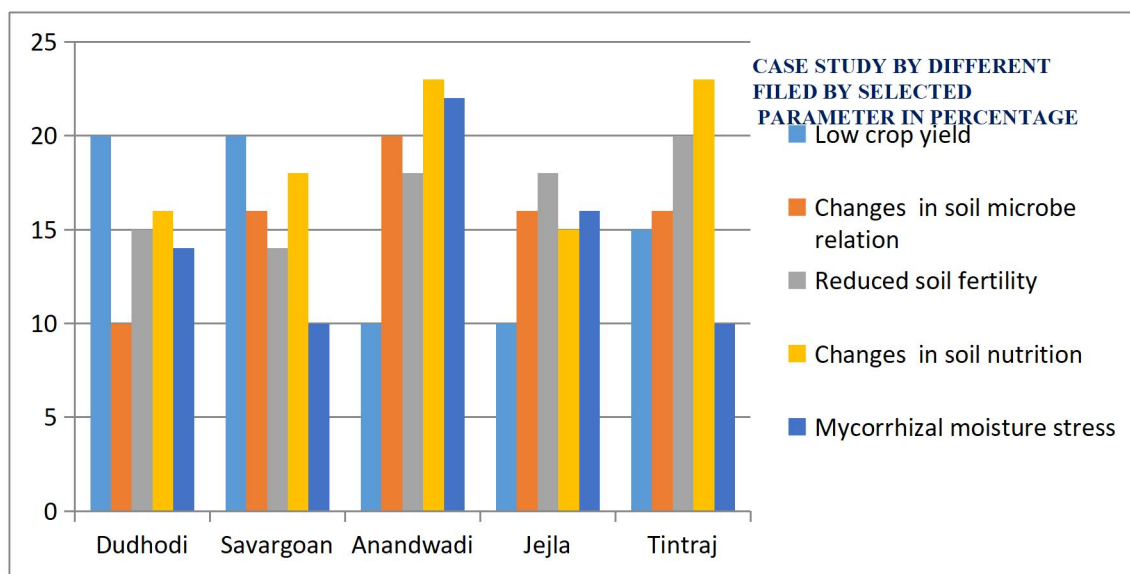
The number of vesicular arbuscular mycorrhizal spore also gets affected by climatic condition. The number of spore present in soil increased after mild and dry winter than cold and wet winter. The amount of optimum water available for growth and development shows highest production of AMF spores, Redhead (1975). climatic change alter the interaction between plants and soil organism in such manner that they will change structure and function of ecosystem.

The other abiotic stress like drought, salt stress, flooding etc. is completely linked and also affects plants and their associated microorganisms. Increased CO₂ will affect symbiotic mycorrhizal tree indirect way by more carbon uptake. However, the adverse effect of climate change are observed on trees, fungi and ecosystem and mycorrhizal fungi can also directly affected by increased soil temperature (Kipfer et.al., 2010).

The arbuscular mycorrhizal root infection and spore distribution is greatly influenced by soil moisture. In waterlogged soil the infection is mainly due to insufficient presence of oxygen (Hayman, 1983). In high moisture content the poor root colonization and spore development observed (Al- Aglely and Reeves, 1995).

Sr No	Collention Material/data	Dudhodi	Savargoan	Anandwadi	Jejla	Tintraj
01	Low crop yield	20	20	10	10	15
02	Changes in soil microbe relation	10	16	20	16	16
03	Reduced soil fertility	15	14	18	18	20
04	Changes in soil nutrition	16	18	23	15	23
05	Mycorrhizal moisture stress	14	10	22	16	10

Table 01: Case study by different filed by selected parameter in percentage



Conclusion:-

There has very little research work done on the impact of climate change on plants and its diseases. However, now a day's some of literature, some assessments are available in few countries, regions, or even areas on adverse effects on climate change. Overall climate change affects the normal growth, development and productivity of crops, influence the quality and quantity of fruit production enhances plant diseases etc. There need to include certain disease resistant varieties and also to include future climate scenarios in all research developing tools.

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COMPREHENSIVE ANALYSIS OF CALOTROPIS PROCERA LEAVES: PHARMACOGNOSTIC, PHYSIOCHEMICAL, PHYTOCHEMICAL, AND ANTIFERTILITY ACTIVITY EVALUATION

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Abstract

Calotropis procera, a prominent medicinal plant belonging to the Asclepiadiaceae family, thrives across diverse regions, encompassing India, China, Pakistan, Nepal, BoocBooc in Somalia, tropical Africa, Cambodia, Indonesia, Malaysia, the Philippines, Thailand, and Sri Lanka. Recognized for its abundance of latex, it is commonly referred to as giant milkweed. This botanical marvel boasts a multitude of pharmacological activities deeply rooted in traditional medicinal practices. Known for its hepatoprotective, pregnancy interceptive, pro-coagulant, analgesic, antimicrobial, antioxidant, anti-pyretic, insecticidal, cytotoxic, wound healing, antivenom, and central nervous system (CNS) activities, *Calotropis procera* stands out as a versatile therapeutic resource. This study presents a comprehensive synthesis of information, integrating ethnobotany, pharmacology, phytochemistry, and pharmacognostic studies focused on *Calotropis procera* leaves. By delving into the plant's botanical, pharmacological, and chemical attributes, this research aims to unveil the full spectrum of its medicinal potential, offering valuable insights for future applications in healthcare and traditional medicine.

Keywords: *Calotropis procera*, Pharmacognostic, Physicochemical, Phytochemical, Glycoside, Flavonoids

Introduction

Herbs, shrubs, and medicinal plants have been integral to traditional medicine worldwide for an extended period. In contemporary times, approximately 75% of the global population relies on traditional medicine for their primary healthcare needs. Originating in India thousands of years ago, Ayurveda, a complex healing system, highlights the profound impact of herbal mixtures and formulations. These formulations leverage the synergistic effects of multiple herbs, mitigating potential side effects associated with individual herbs. Herbs exhibit unique qualities often unattainable through traditional medicine, encompassing anti-viral, immune regulatory and anti-cancer properties.

In the realm of infectious disease treatment, herbs present a compelling alternative to antibiotics, showcasing potent antibacterial, antifungal, and antiviral actions. Many herbal formulations are harnessed for anti-cancer therapies, detoxification, and antioxidant properties. This study aims to explore indigenous plants traditionally used for cognitive dysfunction protection in India.

The focus of this investigation is *Calotropis procera*, known by various names in different languages: Gauri akavana, Aka, Mandara (Hindi); Madar (English); Svetarka (Sanskrit); Vella Erukku (Malayalam). A large shrub, *Calotropis procera*, reaches heights of 4 m (13 ft) and bears waxy, white and lavender flowers. The unique structure of its petals, resembling a crown, has earned it the moniker "crown flower." The plant features oval, faint green leaves and a milky stem. Notably, the latex of *Calotropis procera* contains cardiac glycosides, primarily three types, along with fatty acids and calcium oxalate.

Geographically, *Calotropis procera* is widespread in India, extending up to an altitude of 900m, including the Andaman region. It thrives in dry waste places and is notably found in states such as Rajasthan, Punjab, Kanniya Kumara, West Bengal, and Assam. The plant's chemical constituents encompass α -amyrin, β -amyrin, taraxasterol, taraxasteryl isovalerate, taraxasteryl acetate, gigantol, giganteol, isogiganteol, β -sitosterol, wax, cardiac glycosides, seven oxypregnane-oligoglycosides, calotroposides A to G, akundarin, uscharin (0.45%), calactin (0.15%), calotoxin (0.15%), α β -calotropeol, and β -amyrin. The latex also contains glutathione and proteoclastic enzymes. In 1980, scientists Pal and Sinha isolated crystals and discovered Calotropins D1 and D2 from *Calotropis procera*,

introducing a novel oxypregnane oligoglycoside named Calotropis A and Calotropis B, isolated from the plant's root.

This comprehensive exploration seeks to shed light on the multifaceted properties of *Calotropis procera*, providing valuable insights into its medicinal potential and traditional applications.

Materials and Methods:

Plant Material Collection and Authentication: Leaves of *Calotropis procera* (Family: Asclepiadaceae) were meticulously collected from the local area, Kada. Authentication of the plant material was conducted based on pharmacognostic study and organoleptic characteristics. This authentication process was carried out by the Department of Botany and Research Centre at Shri Amolak Jain Vidya Prasarak Mandal's, Kada, Maharashtra, India.

Chemicals and Reagents: Methanol, Petroleum ether, HCL, Glycerin, Phloroglucinol, Chloroform, 15% methanolic α -naphthol solution, Concentrated sulphuric acid, Benedict's reagent, Fehling's solution A and B, Dragendroff's reagent, Mayer's reagent, Hager's reagent, Wagner's reagent, Tannic acid solution, t-butyl alcohol, Magnesium turnings, Sulphuric acid, 5%FeCl₃ solution, Lead acetate solution, Gelatin solution, Bromine water, Acetic acid solution, Potassium dichromate, Dilute Iodine solution, Toluene, Acetone, Ethyl acetate, Formic acid, Glacial acetic acid, Ferric chloride solution.

These chemicals and reagents were selected for their relevance to the specific analyses and experiments conducted in this research.

Extraction: The drug of *Calotropis procera* was collected. Then the dried leaves material is pulverized in grinder. The coarse powder was used for extraction.

- Method: Maceration
- Solvents: Using solvent Methanol, Hydro-alcoholic, Ethanol



Fig.1. Extraction Process *Calotropis procera* leaves.

The dried leaves were crushed to powder. 50 gm of *Calotropis procera leaves* were extracted with methanol, hydro-alcoholic, ethanol at room temperature, for 7 days, in a 500ml round bottom flask. After 7 days of extraction, the extract were filtered and collected and filtrate evaporated by using water bath at very low temperature.^[5]

Macroscopic Features of Leaves: Pharmacognostic study

a. Macroscopic Characteristic-

The macroscopy of fresh leaves was studied according to standard methods.^[6,7]

b. Microscopic characteristic-

For microscopy hand section of leaf was taken, stained & mounted following usual micro-techniques.^[8]

c. Powder characteristic

A different type of powder characteristics was seen by using a standard method. In which observed the phloem fiber, xylem vessels, trichomes, stomata.^[9]

Physico-chemical Study Ash Values :

Ash values are useful to determine the quality and purity of a crude drug. The main objective of ashing vegetable drugs is to separate traces of organic matter, which may be interfere in an analytical determination. Crude drugs normally leave an ash usually consisting of carbonate, phosphates and silicates of sodium, calcium, potassium, magnesium at the time of incineration. It is used for taken care in preparation. A high limit of acid insoluble ash is exact, in cases where silica may be present and when the calciumoxalate content of the drug is very high.^[10]

Total Ash Value :

Weighed accurately about 2 gm of the powdered drug in a tarred silica crucible. Incinerate at a temperature not more 450°C for 4hours, until free form carbon, cooled and weighed. Calculate the percentage of ash with reference to air dried drug using the following formula,

$$\% \text{ Total ash value} = \frac{\text{Wt. of total ash}}{\text{Wt. of crude drug taken}} \times 100$$

Wt. of crude drug taken

Water Soluble Ash Value :

In 25 ml of water the ash was boiled, then next filtered and collected the insoluble matter on an ashes filter paper. Then it was washed with hot water and ignited in a tarred crucible at a temperature was not exceeding 450 °C for 4 hours. Cooled in desiccators. Finally weighed and subtracted the weight of insoluble matter form the total weight of ash. The observed difference in weight represented weight of water-soluble ash. Calculated the percentage by using the following formula,

$$\% \text{ Water soluble ash value} = \frac{\text{Wt. of total ash} - \text{Wt. of water insoluble ash}}{\text{Wt. of crude drug taken}} \times 100$$

Wt. of crude drug taken

Acid Insoluble Ash Value :

Firstly, boiled the ash for 5 min with in the 25 ml of 2 M HCL and then next filtered and collected the insoluble matter on an ash less filter paper, washed with hot water and ignited in a tarred crucible at a temp. Not more 450° C for 4 hr. cooled in desiccators and weighed. Calculated the percentage of acid insoluble ash by using following formula,

$$\% \text{ Acid insoluble ash value} = \frac{\text{Wt. of acid insoluble ash value}}{\text{Wt. of crude drug taken}} \times 100$$

Wt. of crude drug taken

Extractive Values: The extractive values for various solvents of air-dried sample were evaluated.

1. Methanol soluble extractive value.
2. Aqueous soluble extractive value.

Methanol Soluble Extractive Value:

Weighted 5 gms of air-dried powder of *Calotropis procera* and then it was macerated with 100 ml of methanol in a closed flask, shaking frequently during the first 6 hours and allowed to stand for 18 hours separately after then, it was filtered and taking precaution against loss of methanol. Evaporated 25 ml of filtrate to dryness in a tarred flat bottom shallow dish dried at 105°C and weighed. By using the reference of air-dried drug percentage methanol soluble extractive value was calculated.

Aqueous Soluble Extractive Value:

Weighted 5 gms of air-dried powder of *Calotropis procera* and then it was macerated with 50 ml of water at 80°C in a closed flask, shaking frequently and allowed to stand for 10 min and after cooling it and filtered. The 5 ml of filtrate was transferred into the evaporating dish. In water bath the evaporating procedure was take place and solvent was evaporated dry for 30 minutes. Dried in an oven for 2 hours at 100 °C and residue was weighed. Percentage of water-soluble extractive was calculated with reference to the air-dried drug.^[10]

Loss of Drying :

Loss on drying is the loss of moisture from mass as percent w/w. The water and volatile matter in the crude drug were determined by using loss on drying test. Moisture is an unavoidable component of crude drug, which must be evaporated as possible. Weighed accurately about 5 g of powdered drug was taken in a tarred porcelain dish. The powder was distributed evenly. The porcelain dish kept open in vacuum oven and the sample was dried at temperature 110 °C for 2 hours upto constant weight was observed. Then it was cooled in desiccators at room temperature, weighed and recorded % Loss of drying was calculated using the following formula^[11]

$$\% \text{ Loss of drying} = \frac{\text{Loss in weight of sample}}{\text{Wt. of crude drug taken}} \times 100$$

Wt. of crude drug taken

Preliminary Phytochemical Study: Preliminary phytochemical chemical tests for hydro-alcoholic, methanolic and ethanol leaves extracts were carried out according to the standard procedures described by Kokate and Horborne. In which the test for flavonoids, tannins, proteins, amino acid, volatile oil, saponin, sterols, terpenoids, carbohydrate, alkaloid, etc.^[12, 13]

Pharmacological Study Abortifacient Method: The abortifacient activity of the plant extract will be tasted in pregnant female rats. Female rat will be caged with males of proven fertility in a ratio of 2:1 in the evening and the following day they will be checked for evidence of copulation. Take vaginal smears of rat daily and presence of sperms in smear is day 0 pregnancy. The pregnant rats will be randomly distributed into 5 (A to E) groups of 6 animals each. From day 7 to 14 daily rats in group A (negative control) will be orally administered with distilled water 2ml, rats in group B (Positive control) will be administered with misoprostol (100 mcg/kg) and those in group C to E will be treated exactly like those in the control groups, but with varying doses of the extract (100,200,300 mg/kg) respectively. After 3 days, the animals will be anesthetized (ketamine 90 mg/kg), dissected and observed for the presence of fetus within the uterus. Absent of fetus in uterus shows abortion. The number of rats that aborted per group will be recorded and the percentage number of rats that aborted per group calculated.^[14]

$$\text{Percentage number of rats that aborted} = \frac{\text{Number of rats that aborted}}{\text{Number of rats per group}} \times 100.$$

Species & Strain: Wistar rats

Total numbers of animals required : 45 rats (30F/15M)

Gender : Male/Female

Body weight : 150-250 g

Female Wistar rats will be divided into different groups (n=6) as follows:

Group1 : Vehicle control (Distilled water)

Group2 : Standard (Misoprostol 100 mcg/Kg)

Group3 : a) Methanolic extract 100mg/kg

b) Methanolic extract 200mg/kg

c) Methanolic extract 300mg/kg

Results: 1.Extraction

Sir. No.	Extract	Nature of extract	Color	Weight
1.	Hydro-alcoholic	Semi-solid	Greenish-brown	5.7 g
2.	Methanol	Solid	Greenish-brown	4.3g
3.	Ethanol	Solid	Greenish-brown	4.1 g

2. Pharmacognostic Study :

The plant materials were studied for different parameters as given below; macroscopic features, microscopic and powder characteristics was examined.

a. Macroscopic features

Macroscopy:

Colour : Grayish-Greenish

Odour : Characteristics

Taste : Bitter

Size : Broadly Elliptic

b. Microscopic features:

Lamina: Nature - Dorsiventral nature

Midrib:

Upper epidermis and Lower epidermis:

Upper and lower epidermis shows in transverse section through midrib, epidermis is externally covered by thick, striated cuticle. On the lower and upper surface of epidermis few epidermal cells were present. The parenchymatous cells that were thin-walled and isodiametric to circular. In ground tissue intracellular spaces was present. Lower epidermis and upper epidermis similar to each other.

Collenchyma : Position of collenchyma is below to upper epidermis and above lower epidermis. It containing groups of cellulosic cells. Collenchyma are thick-walled cellulosic cells.

Vascular bundle : The two vascular bundles are arranged in ring and composed of bicollateral. The vascular bundles are open.

Xylem : Xylem is lignified. The xylem consists mostly of vessels and also tracheids.

Phloem : Phloem is Non-lignified.

Stomata : Paracytic stomata are present *Calotropis procera* leaves.

Mesophyll : In mesophyll consist of palisade and spongy tissue and differentiated by both.

Palisade : Palisade is present in below the upper epidermis were three rows of elongated, closely arranged, palisade parenchyma is present.

Spongy Parenchyma: It was mostly very compact in nature, radially elongated, covering only lamina portion. There are 6-8 layers are present.

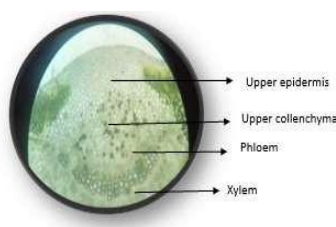


Fig.2. Photomicrograph of *Calotropis procera* leaves

Powder Characteristic :



Fig.3. Phloem fiber



Fig.4. Xylem vessel



Fig.5. Trichomes



Fig.6. Stomata

3. Physiochemical Value :

Parameter	Result (%w/w)
Loss on Drying	11
Total Ash	08
Water soluble ash	3.3
Acid Insoluble ash	1.9
Water soluble extractive	14
Alcohol soluble extractive	16

Phytochemical standards

Sr.no.	Type of Phytoconstituent	Methanol	Hydro-alcoholic	Ethanol
1	Test for flavonoids	+	+	+
2	Test for tannins	+	+	+
3	Test for proteins	-	-	-
4	Test for amino acid	-	-	-
5	Test for volatile oil	-	+	+
6	Test for saponins	+	+	+
7	Test for sterols	+	+	-
8	Test for triterpenoids	+	+	-
9	Test for glycoside	+	+	+
10	Test for carbohydrate	+	+	-
11	Test for alkaloid	+	-	-

Abortifacient Method:



Observation table:

Table.2. Effect of different doses of methanolic extract on wistar rat.

Sr. no.	Parameter	Negative control	Positive Control	Dose of extract 100mg/kg	Dose of extract 200mg/kg	Dose of extract 300mg/kg
1.	Number of rats used	6	6	6	6	6
2.	Number of rats that aborted	0 (0%)	6 (100 %)	3 (50%)	3 (50%)	4 (66.6%)

Calotropis procera, a prolific herb predominantly found in India throughout the year, stands out for its diverse healing properties and economic significance. The plant exhibits several noteworthy features, including adaptability to various soil types and environmental conditions, resilience without the need for cultivation practices, and a perennial shrub status. Its distribution extends up to 900 meters in tropical and subtropical regions.

The research findings underscore the plant's robust extraction potential with methanol, aqueous, and petroleum ether. This robust extraction process likely yielded numerous active constituents, contributing to its various biological actions. The outcomes of this investigation offer valuable insights for the development of traditional medicines and novel therapeutic approaches, particularly in the pursuit of remedies for previously incurable diseases.

Calotropis procera holds immense promise in the medicinal industry, serving as a foundational element for the formulation of herbal medicines. The comprehensive pharmacognostic study, encompassing macroscopy, microscopy, powder characteristics, and various physicochemical and phytochemical parameters, contributes significantly to establishing a comprehensive plant profile. This profile not only aids in understanding the plant's morphology but also lays the groundwork for the potential development of new medicines and the preparation of herbal remedies. The integration of traditional knowledge with scientific analysis provides a holistic approach that can be instrumental in advancing medicinal practices and drug discovery.

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AN OVERVIEW OF THE ROLE OF GREEN APPROACHES SPECIFICALLY IONIC LIQUID CATALYZED IN MITIGATING CLIMATE CHANGE

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Abstract

This study article examines the crucial role of green chemistry in tackling the difficulties posed by climate change. Green chemistry, which involves creating goods and processes that have minimal negative effects on the environment, provides creative solutions for reducing chemical pollution and promoting sustainability. The study consolidates significant discoveries from previous research, highlighting the substantial impact of green chemistry in averting and alleviating climate change.

Keywords: Green chemistry, Climate change, Sustainability, Renewable Resources, Energy Efficiency, Eco-friendly materials.

Introduction

One of the most pressing issues facing the world today is climate change, which is becoming worse and worse and endangering ecosystems, businesses, and people everywhere. Climate change, severe weather, and other environmental problems are direct results of the recent upsurge in emissions of greenhouse gases, as well as deforestation and industrial pollution. With the increasing need to address climate change, there is a crucial requirement for inventive and forward-thinking strategies to reduce its effects. Green chemistry is a viable option that provides a sustainable and forward-thinking method to decrease the environmental effects of different businesses[1].

The Pressing Issue of Climate Change:

The continuous rise in global temperatures, attributed to the accumulation of greenhouse gases like carbon dioxide and methane, contributes to more frequent and severe heat waves. This phenomenon adversely affects ecosystems, agriculture, and human health. Climate change is substantiated by an increase in the occurrence and severity of severe weather phenomena, such as hurricanes, droughts, and floods. These disasters provide significant risks to communities, infrastructure, and natural resources. The process of polar ice caps and glaciers melting leads to an increase in sea levels, posing a threat to coastal areas and island states. This not only poses a threat to human settlements but also results in the depletion of biodiversity and crucial ecosystems. Climate change disrupts ecosystems and accelerates the loss of biodiversity. This has profound consequences for food security, as many communities rely on diverse ecosystems for sustenance[2], [3].

Green Chemistry

Green chemistry, or sustainable chemistry, is a proactive and innovative strategy that focuses on designing and creating products and processes that reduce the usage and production of harmful compounds[4]. The core tenets of green chemistry include:

1. Prevention: Designing processes to prevent the generation of hazardous substances.
2. Atom Economy: Maximizing resource efficiency and minimizing waste.
3. Safer Chemicals: Selecting and designing chemicals that pose fewer hazards to human health and the environment.
4. Energy Efficiency: Implementing energy-efficient methods to reduce overall environmental impact[5], [6].

Benefits of Green Chemistry:

1. **Reduced Environmental Impact:** Green chemistry minimizes the release of toxic substances and pollutants, contributing to a cleaner and healthier environment.
2. **Resource Efficiency:** By optimizing resource use and reducing waste, green chemistry promotes sustainability and conserves valuable natural resources.
3. **Innovation:** Green chemistry fosters innovation by encouraging the development of new, environmentally friendly technologies.
4. **Industry Collaboration:** Serving as an interdisciplinary field, green chemistry encourages collaboration between scientists and industries fostering a united front against environmental challenges[7]–[9].

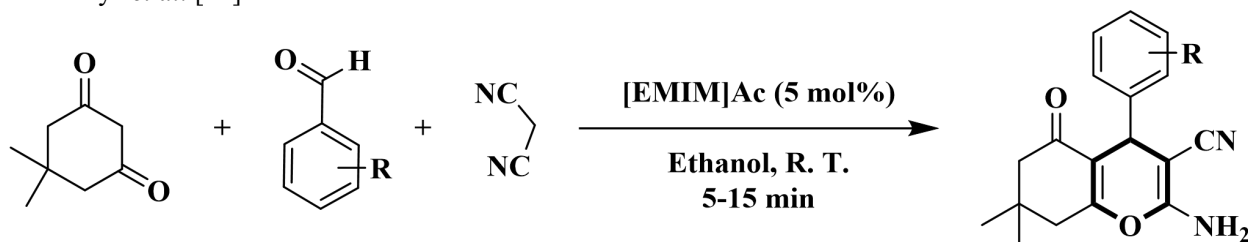
Sustainable Materials and Efficient Processes in Organic Synthesis

Efficient Processes in organic synthesis are designed keeping in mind a few points such as

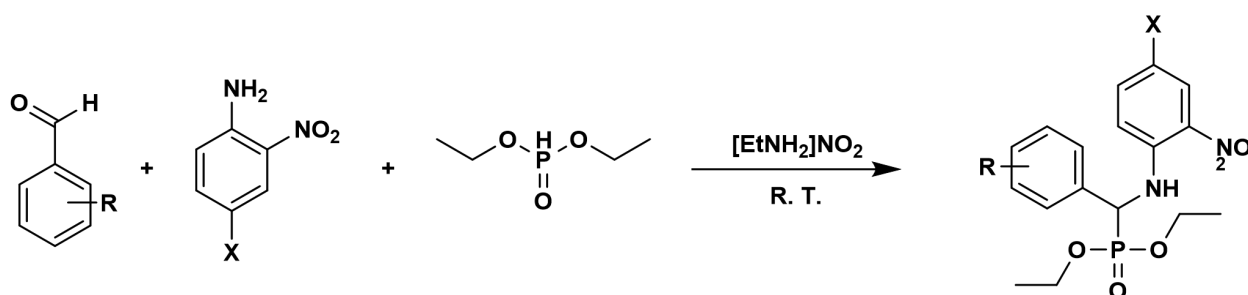
- 1) **Energy Efficiency:** Sustainable practices prioritise the use of energy-efficient industrial processes, hence decreasing the reliance on non-renewable energy sources. This not only reduces the environmental footprint but also promotes long-term energy preservation.
- 2) **Waste Reduction:** The adoption of efficient processes leads to minimized waste generation. By optimizing resource use and production methods, industries can significantly decrease the environmental burden associated with the disposal of waste materials.
- 3) **Recycling:** Sustainable operations often adhere to the concepts of a circular economy, whereby resources are systematically reused, recycled, or repurposed. This method decreases the need for frequent exploitation of natural resources and minimizes the environmental burden caused by the buildup of trash [10].

Some Examples of Green Synthesis with a Focus on Ionic Liquid-Catalyzed Approaches

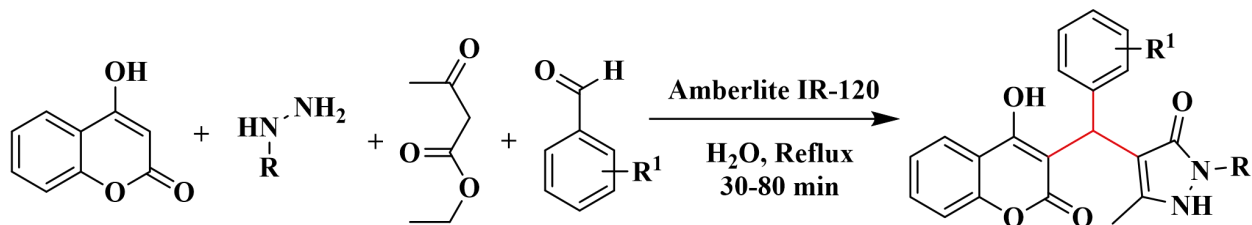
1. Katariya *et al.* [11]



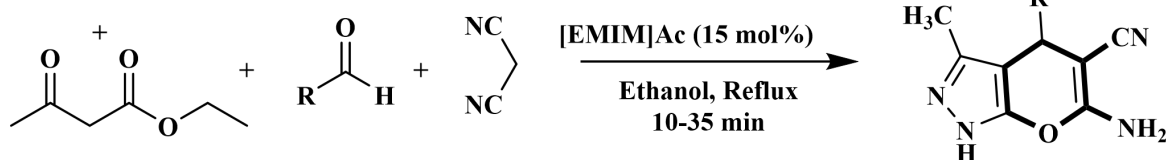
2. Dake *et al.* [12]



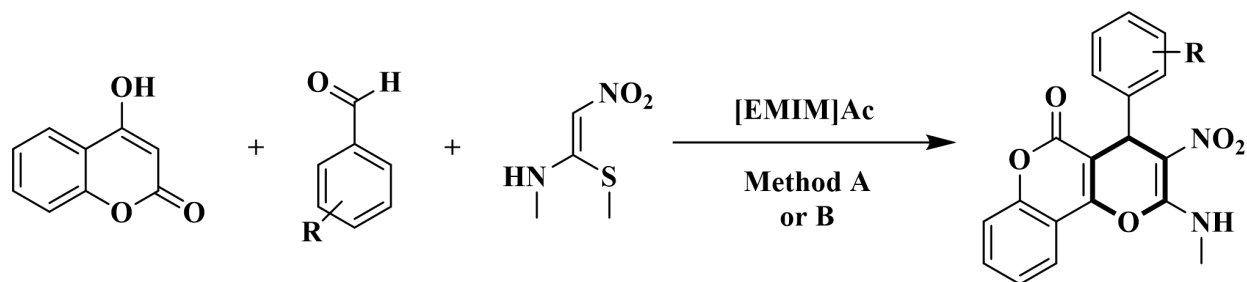
3. Katariya *et al.* [13]



4. Katariya *et al.* [14]



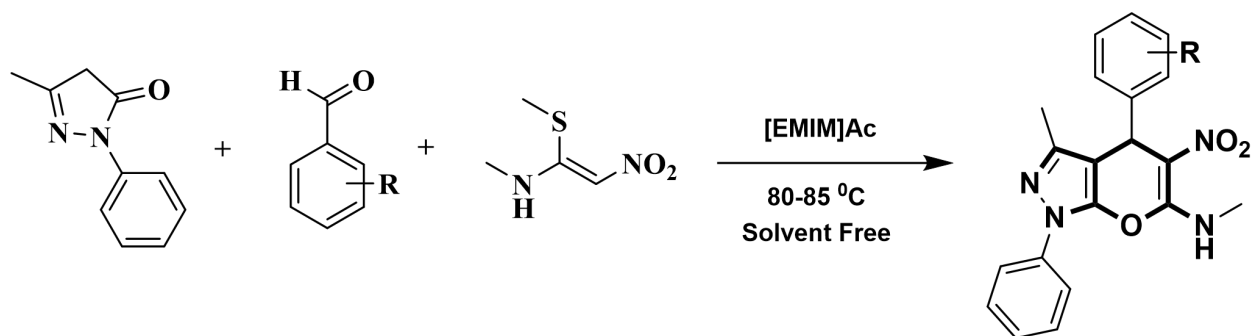
5. Katariya *et al.* [15]

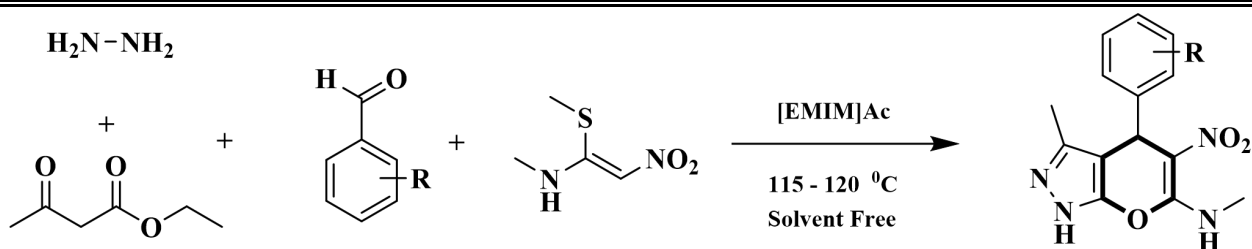


Method A - Reflux in methanol

Method B - Solvent free at 80 to 85 °C

6. Katariya *et al.* [16]





Conclusion:

The development of sustainable materials and the adoption of efficient procedures especially ionic liquid catalyzed are crucial elements in the worldwide endeavour to reduce the impact of climate change. By providing practical alternatives to conventional, ecologically detrimental solutions, these activities not only reduce the immediate environmental effect but also contribute to a more robust and sustainable future. The widespread implementation of these measures by industry is essential to make significant advancements in the fight against climate change.

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A REVIEW OF SYNTHESIS AND BIOLOGICAL ACTIVITIES OF QUINAZOLINE DERIVATIVES

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Abstract

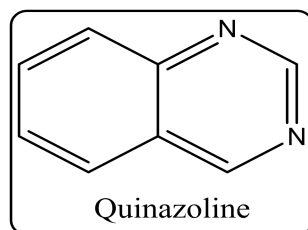
One of the most important heterocyclic molecules with a variety of chemical reactivities and biological uses is quinazoline, a nitrogen-containing heterocyclic compound. In the last several decades, more sophisticated and sophisticated medications with quinazolinone structures have been found. Significant advancements have been made in creating effective methods for creating these scaffolds that are biologically active. This review assessed the recently studied quinazoline derivative synthesis and biological activity. The present review article describes recent developments in simple synthetic processes leading to the synthesis of quinazoline compounds. This information is helpful design and synthesize novel, biologically active quinazoline derivatives as lead molecules.

Keywords: Heterocyclic compound, Biological, Desing, Quinazoline.

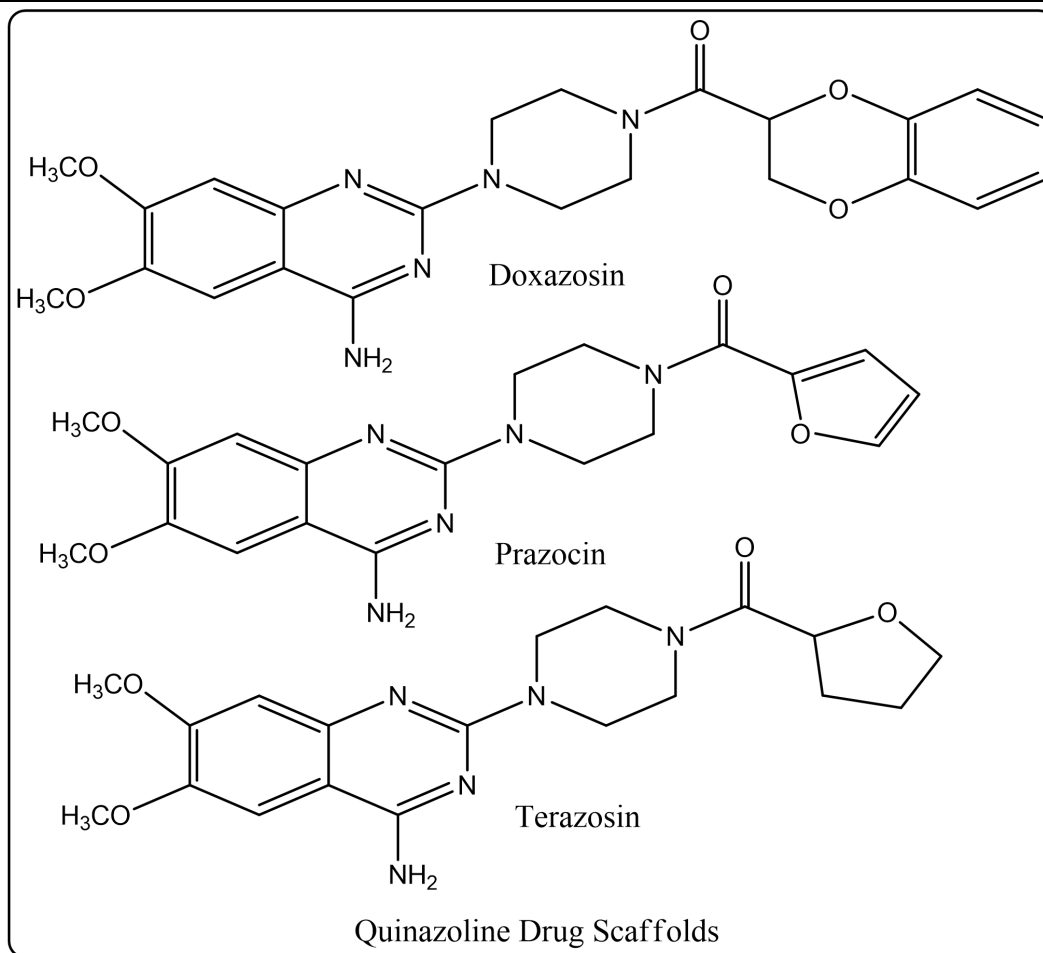
Introduction

Heterocyclic compounds have a large significance in medicinal chemistry because of their diverse biological actions. Quinazolines are a valuable class of nitrogen-containing heterocyclics with a wide range of biological properties such as anti-tuberculosis,¹ anti-fungal,² anti-bacterial,³ antimalarial,⁴ anti-viral,⁵ anti-inflammatory,⁶ anti-psychotic,⁷ anti-diabetic,⁸ Quinazoline derivatives,⁹ showing various e biological activities. Bichler and Lang made the parent quinazoline molecule via decarboxylation of the 2-carboxy quinazoline derivative.¹⁰

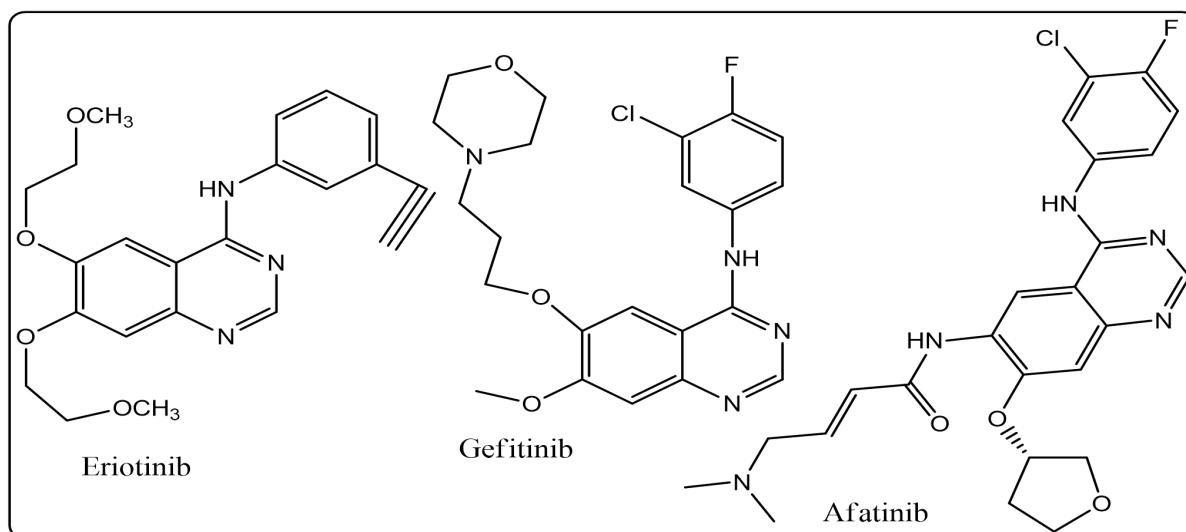
Structure of quinazoline



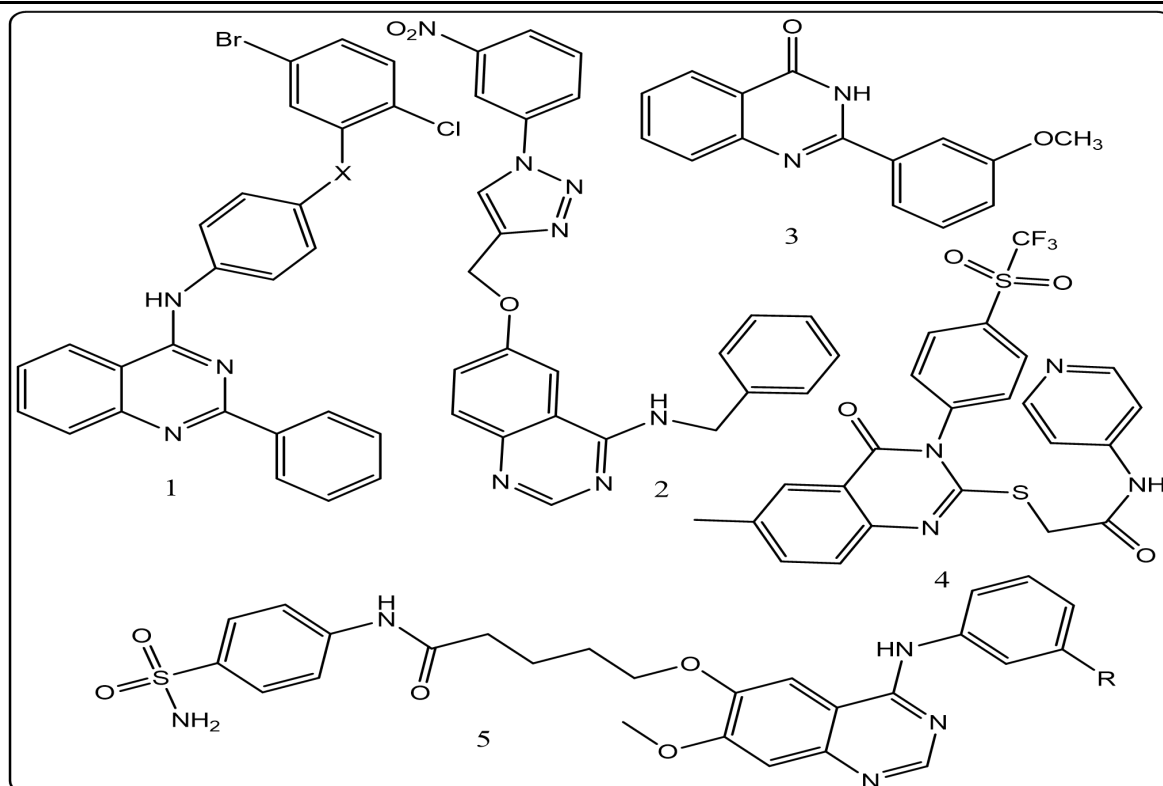
A number of quinazoline derivatives are approved as drugs, such as doxazosin mesylate, prazosin hydrochloride and terazosin hydrochloride.¹¹



Due to the promising therapeutic efficacy against human cancers, various quinazoline derivatives like Erlotinib,¹² Gefitinib,¹³ and Afatinib¹⁴ have been approved for cancer therapy.



Quinazoline derivatives have been evaluated as potent bioactive compounds in recent years. Some of the most effective bioactive compounds are as reported by Malasala et al,¹⁵ Giang et al,¹⁶ Romero et al,¹⁷ Ghorab et al,¹⁸ Zhang et al.¹⁹



Biological active quinazoline

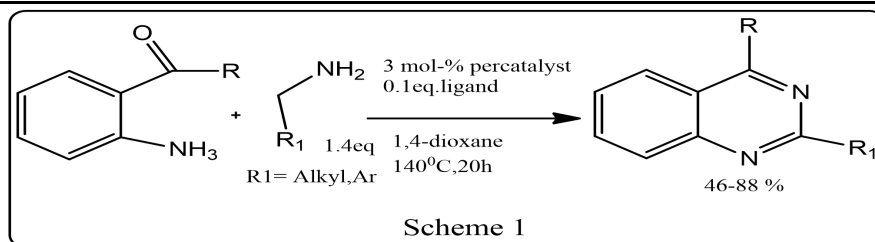
Malasala et al., **1** synthesised 2-arylquinazoline benzamide derivatives and screened against Mycobacterium tuberculosis H37RV strain, the Compound N1-(5-bromo-2-chlorophenyl)-N4-(2-phenylquinazolin-4-yl)benzene-1,4-diamine exhibits selective and potent antimycobacterial activity with MIC value 4 mg/mL. Giang et al., **2** prepared and evaluated the quinazoline-triazole hybrid motifs as acetylcholinesterase inhibitors to treat Alzheimer's disease (AD). The biological assay outcomes revealed that 6-((1-(3-nitrophenyl)-1H-1,2,3-triazol-4-yl)methoxy)-N-benzylquinazolin-4-amine is the most potent with IC₅₀ (AChE) value 2.6±0.19 mM. Romero et al., **3** prepared a series of 2-arylquinazolin-4(3H)-ones as leishmania folate inhibitors. The biological screening result revealed that 2-(3-methoxyphenyl)quinazolin-4(3H)-one is identified as a potent antileishmanial agent with ID₅₀ values 11.04–29.34 μM. Ghorab et al., **4** synthesised a series of iodoquinazolinones with benzenesulfonamide moiety as human carbonic anhydrase (hCA) inhibitors. The screening outcome revealed that 2-(3,4-dihydro-6-iodo-4-oxo-3-(4-(trifluoromethylsulfonyl)phenyl)quinazolin-2-ylthio)-N-(pyridin-4-yl)acetamide is identified as the most potent candidate against hCA IX and hCA XII., on MTT assay, it exhibited potent activity against HepG-2 and MCF-7 cells with IC₅₀ values of 2.53 mM and 4.58 mM. Zhang et al., **5** synthesised a series of quinazoline derivatives containing substituted anilide and sulfamoylphenyl fragments as dual EGFR/CAIX inhibitors.

In the obtained compounds, 5-((7-methoxy-4-((3-(trifluoromethyl)phenyl)amino)quinazolin-6-yl)oxy)-N-(4-sulfamoylphenyl)pentanamide was identified as the most potent with EGFRWT IC₅₀= 27.0 nM, EGFR T790M = 9.2 nM, and CAIX IC₅₀= 115 nM.

Synthesis

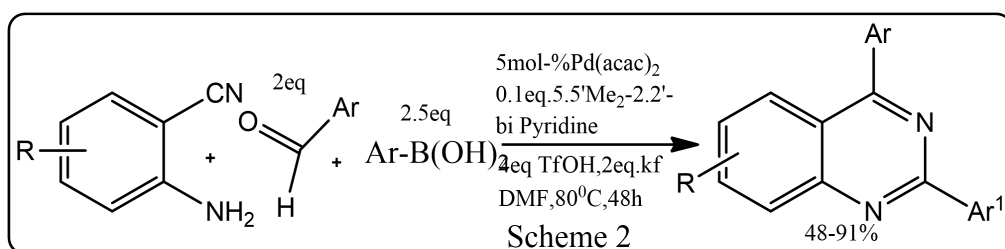
Scheme 1: Cationic ruthenium-hydride catalysed synthesis of quinazoline

Arachchige and Yi, reported Catalytic system from the cationic rutheniumhydride complex [(C₆H₆)-(PCy₃)(CO)RuH]⁺ BF₄⁻ with 4-(1,1-dimethylethyl)-1,2-benzenediol was found to give the highest activity and selectivity for the coupling of 2-(aminophenyl)ethanone with 4-methoxybenzylamine in yielding the quinazoline product (Scheme 1).²⁰

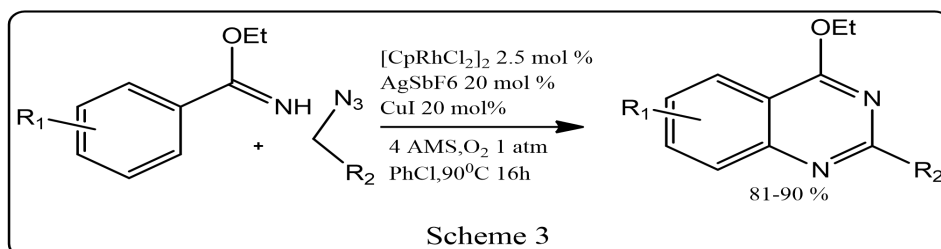


Scheme 2: Palladium-catalysed synthesis of arylquinazoline.

Hu et al. reported an efficient Pd catalysed one-pot three-component tandem reaction of 2-aminobenzonitriles, aldehydes, and arylboronic acids. The reaction proceeds through the cyano group's carbopalladation, generating a wide range of quinazolines (Scheme2).²¹ The significant feature of this protocol is tolerance of bromo and iodo groups.



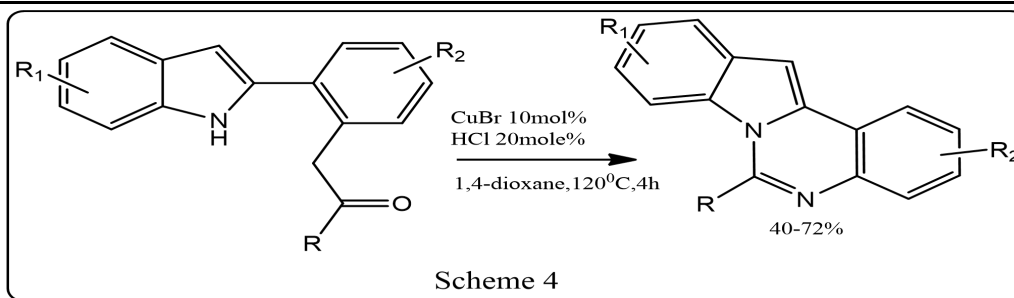
Scheme 3 : Rh-catalysed synthesis of quinazoline



Wang and Jiao documented the synthesis of biologically active quinazolines by reacting imidate derivatives with alkyl azides. The novel [4 + 2] carbon-hydrogen bond activation and annulation was co-catalysed by Cu and Rh. Simple alkyl azide derivatives are usefully used in this aerobic oxidative process to produce N-heterocycles, with water and nitrogen as byproducts.(Scheme 3).²²

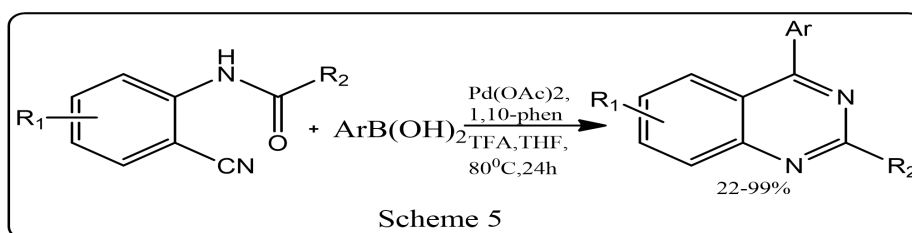
Scheme 4 :Cu catalysed synthesis of quinazoline derivatives

Guo et al. recently described the production of quinazolines in moderate to good isolated yields (40– 72%) using the Cu-catalysed aerobic oxygenation of 2-(2- amidoaryl)-1Hindoles, followed by intramolecular cyclisation under acidic conditions. (Scheme 4).²³



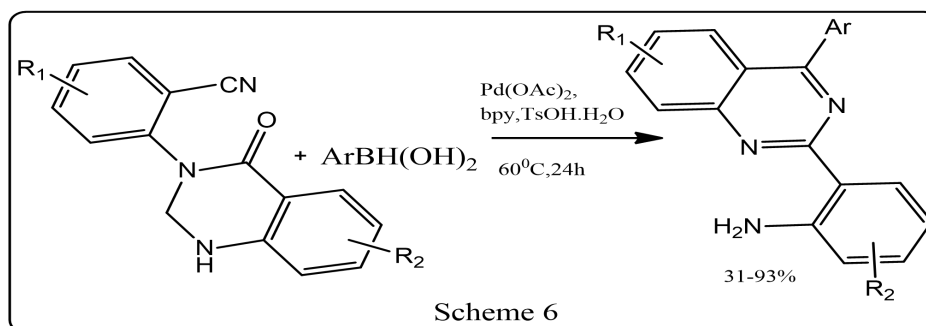
Scheme 5: Pd catalysed synthesis of quinazoline derivatives.

With N-(2-cyanoaryl) benzamides, the reaction showed a wide range of functional group tolerance, encompassing electron-deficient and electron-rich aryl boronic acids. Another interesting study by Zhu et al., describes the synthesis of 2,4-disubstituted quinazoline derivatives using 1,10-phen and trifluoroacetic acid in THF at 80 C in the Pd-catalyzed reaction of aryl boronic acids with N-(2-cyanoaryl)benzamides (Scheme 5)²⁴.



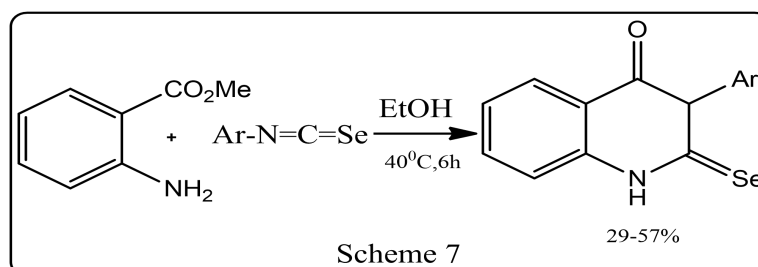
Scheme 6 : Pd catalysed synthesis of quinazoline derivatives

Zhang et al., team reported the reaction of aryl boronic acids with 2-(quinazolinone-3(4H)-yl)benzonitriles, in another approach. This tandem synthesis produced the quinazoline scaffolds in good to exceptional isolated yields (31–93%) through nucleophilic addition, intramolecular cyclisation, and subsequent ring-opening (Scheme 6).²⁵



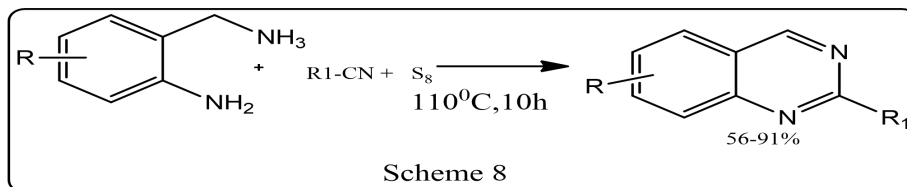
Scheme 7 :Synthesis of 2-selenoxo-1,2,3,4-tetrahydro-4-quinazolinones

Osmanov and group demonstrated an efficient method for the synthesis of 2-selenoxo-1,2, 3,4-tetrahydro-4-quinazolinone via cyclisation reaction between methyl anthranilate and isoselenocyanates (Scheme 7).²⁶



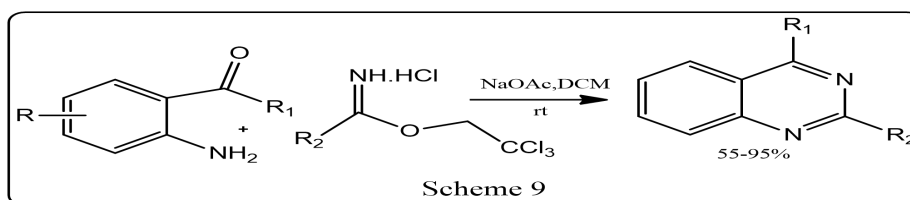
Scheme 8: Synthesis of quinazoline by oxidative condensation

Ding and coauthors reported an efficient metal-/solvent free protocol towards the construction of quinazolines by elemental sulfur-promoted oxidative condensation of 2-(aminomethyl)anilines and nitriles (Scheme 8).²⁷



Scheme 9: Synthesis of quinazoline derivatives.

This protocol afforded several quinazoline derivatives, especially 2-substituted quinazolines, in moderate to high yields. Wu and coauthors reported a mild metal-free protocol towards the construction of quinazolines scaffolds from 2,2,2-trichloroethyl imidates hydrochloride as nitrogen source and 2-aminophenyl ketones in the presence of sodium acetate (Scheme 9)²⁸.



Conclusion

Quinazoline and its derivatives are important components of medicinal chemistry. Highly efficient techniques for the synthesis and biological evaluation of different quinazoline derivatives are still able to be developed. There is a lot of scope for the development of quinazoline molecular hybrids with a variety of therapeutic applications. The different physiologically important properties that quinazoline and quinazolinone molecules display.

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CHALLENGES OF CORPORATE GOVERNANCE AND DISCLOSURE IN INDIA

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Abstract

This paper aims to study the corporate governance in India with the help of amended summarized information from various sources such as Government initiatives. Corporate governance enhances the norms and ethics to tackle the challenges and disclose the verified data for their stakeholders of the company. Government initiatives work on corporate governance by formulating various committees, departments, boards - to balance transparency, accountability, responsibility, fairness, and impartiality between stakeholders of corporate governance. SEBI Clause 49 protecting the shareholders interest and bringing disclosure regime, Companies Act-2013 gives the framework of board of directors, Institute of Secretaries of India (ICSI) – it adheres to ethical standards for effective management. ^[2]Institute of Chartered Accountant of India (ICAI) aims to converge old accounting standards to Ind-As in preparing their financial statements to listed firms. Mere perception of disclosing information is to maintain harmony, maximize interaction and build trust between company and stakeholders. Listed Company has prohibited disclosing the up-dated information on their official portal. Securities Exchange Board of India (SEBI) has recently amended its Listing Obligations and Disclosure Requirements (LODR) regulations to improve the effect of transparency and makes stronger corporate governance and here also up-dated requirements for listed Indian Companies.

Keywords: - Corporate Governance, Disclosure, Companies Act 2013, SEBI's LODR, Challenges.

Introduction:

Corporate governance is the mechanism of setting of roles and regulations for the directing and managing the company's. Corporate governance is all about the creating relation between the board of directors, shareholders, employees and the customer. It broadly focused on the core principles^[8] – Accountability, Fairness, Transparency, Impartiality and the Responsibility.



Fig.1 Principles of Corporate Governance

It reduces the economic frauds, mismanagement or crime arising by during the corporation. Corporate Governance maintains a balance between individual goals and company goals as well as professional – personal life. The objective of corporate governance is to ensure that the all resources are used in effective manner and to maximize the value of shares to the stakeholders of the company. The Companies Act 2013 provides robust framework for

corporate governance. Corporate governance instills ethical standard in the company. It creates an open space incorporating transparency and fair play in strategic operations of the corporate management. The major role of the corporate governance in banking is to elaborate the role of RBI in regulating the good corporate governance practices in banking sector in India. SEBI also plays an important role in corporate governance is to prohibiting fraudulents and Unfair Trade Practices [UTP] in the securities market. SEBI has right and the powers to regulate the proper functioning of securities market intermediaries. In India, Corporate Governance Practices is operated under SEBI’s clause 49^[4] of listing agreement and also under various sections of Companies Act 2013.

This research paper strives to underline the numerous research conducted in recent years in subjected with “Corporate Governance Practices in India”. This research paper is focused on the challenges against Corporate Governance and challenges against Disclosure. SEBI Listing obligations and disclosure requirements (LODR) Regulations 6(1)-2015 requires listed entity to assist qualified company secretary as compliance officer. SEBI has recently amended LODR Regulation to improve the efficiency of transparency and fairness its makes strong corporate governance and contoured disclosure requirement for listed Indian Companies. The amended LODR Regulation came in to force with effect from July14, 2023.

Review of literature:-

1] Tabular^[6] presentation of Review of literature:-

Reference	Methodology	Problem identify
[1]	Comprehensive and reliable analysis of the problem and importance of corporate governance practices in India.	Identify the problems and importance
[2]	Uniqueness of India in dealing with IFRS and the role of corporate governance in this regard.	Effect of corporate governance on compliance Indian accounting standards.
[3]	Issues and difficulties in the method of corporate governance in India.	Issues and challenges
[4]	HRM methodology including the structure of ideal working environments.	Issues and challenges
[5]	Use hand – collected primary data and robust econometric estimation	Impact of corporate governance on performance of SME
[6]	Critical analysis of research methods and topics that include variables that have been discussed.	Impact on corporate governance on Organizational performance in the fourth industrial revolution
[7]	Methods ordinatio de pagani and combinations of keywords in database.	Impact of corporate governance
[8]	OECD Principles	Disclosures address the major concerns of investors and other stakeholders.
[9]	Principles of Governance	Key issues
[10]	Strategy of mergers and acquisitions	Challenges

2] The above tabular presentation of Review of literature identify the problems and overcome those problems by using various Methodology. The corporate governance practices in India using comprehensive and reliable analysis for identify the problems and importance of corporate governance. Human Resource Management (HRM) method use for identifying issue and challenges .

3] The critical analysis of research methods and topics are mostly use for the identifying an impact on corporate governance performance in fourth industrial revolution.

4] OECD principles and strategic of mergers and acquisitions are using for analyzing the issues and challenges of corporate governance. Use of hand collected primary data robust econometric estimation for impact on corporate governance on the performance of SME. The combination of keywords in database also used for analysis the impact of corporate governance.

5] The above review of literature, the aim of this paper to gather information about the “what are the issues and challenges of the factors that impact on the Corporate governance” in order to regulate and implement the governance policies.

Research Methodology:-

Research Design ^[5] - This paper is Illustrative in nature which highlights the actual challenges faced by Corporate Governance and Disclosure. The research will contain a case study it relates to this paper. SME has influence on corporate governance practices and international orientation on the performance of developing countries.

Data Collection- ^[1] It is qualitative analysis of challenges against the Corporate Governance and Disclosure. The study has been carried out based on the collection of the relevant secondary data which has collected from verified online websites, International journals, working papers of various institutes, research paper of the conferences, Industrial reports and specified recent few years processed data, etc.

Corporate Governance:-

^[7]It works to ensure that companies follow the laws and regulations framed by the Government initiatives and other Superior authority. It helps to protect the interest of all stakeholders including customers, employees, suppliers and the environment. It builds the trust between companies and their stakeholders it may results in improving their financial performance and provisional outcomes for their stakeholders. It also helps to ensure that companies are run ethically accord to stated SEBI’s norms - ethics and responsibly with respect to their external environment. It follows very effective management activities viz., directing, controlling, evaluating. It specifies the organizational mission. Developing policies to be properly followed and implementing it by every participator.

Disclosure:-

In Indian, Corporate governance practices according to the Companies act 2013 administrators have the responsibility to provide the verified and adopted disclosures to their stakeholders, shareholders. In this disclosure organization should have to emphasis the financial and non – financial governing report. This type of information disclosing is mandatory and they had the mere purpose of magnetize the foreign investors and winning the trust of stakeholders. With the base of this disclosure new comer will able to recognize easily whether they want to make decision in favor with organization or not.

1] Financial Disclosure:-

Financial disclosure is also known as ‘Financial Reports’. In the organizational financial reports they fill precise, actual, verified and original documented information that presents real financial and non – financial performance of an organization. These disclosures are shared with the government initiatives, with society, stakeholders of the company via. shareholders, investors and an employees.

According to SEBI’s clause 49 – Improving the quality financial disclosures including those relating to related party transactions and governs from public/ rights/ preferential issues, requiring board of directors to adopt the code of conduct, requiring the responsibility for such act of omission which had happened within his knowledge. This clause 49 also explains an obligation for the company i.e., to be transparent with their shareholders by providing

adopted disclosures within specified time duration. Disclosure may be correlate with the company's performance, ethics and norms which help to proper functioning of the company, financial position in the market of company. The primary purpose of Financial Disclosure is to encourage the core managerial corporative principles via. Accountability, Fairness, Transparency, Impartiality and the responsibility. By disclosing this type data.

Major Types of Financial Statements^[11]:-

The diagram below shows that types of financial statements. Corporate governance discloses the financial information of a corporation with the help of three types of financial statements.

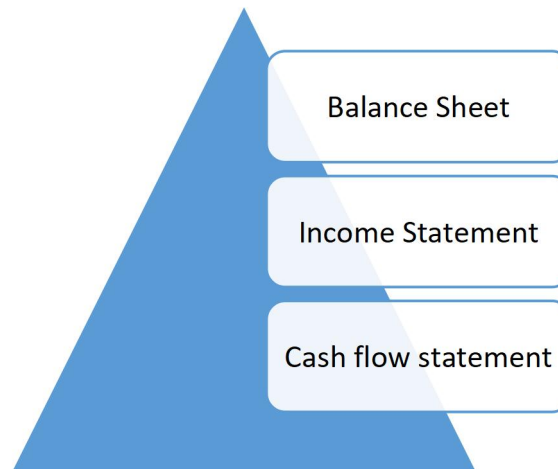


Fig.2 Types of Financial Statements

1. Balance Sheet –

Balance Sheet is a financial statement that contains details of company's assets, liabilities and shareholders equity at a specific period of time.

2. Income Statement -

An income statement that shows you the company's revenue and expenditure.

3. Cash Flow Statement –

Cash flow statement is financial statement that shows how cash entered and exited the company during an accounting period.

2] Non- Financial Disclosure:-

Non – financial disclosure is a form of transparency reporting where businesses formally disclose information not related to their finance, including information on human rights.

1. Corporate governance objectives^[11]:-

The corporate governance is needs to disclose the objectives of the corporate governance. There are two type of object first is commercial objectives such as increasing productivity or identifying sector focus and second is more fundamental and release to governance objectives in non-financial disclosure .

2. Ownership and Shareholder Rights:-

Corporate governance requires disclosure of shareholder investment as well as the extent of shareholder investment. Such as how much investment is owned by which shareholder. Information about the largest shareholder's investment such as changes in its investment is disclosed in the Corporate Governance Non-Financial Disclosure.

3. Corporate social responsibility (CSR) ^[3] :-

Corporate social responsibility is considered to be an important part of the good corporate governance. The information which is disclosed is transparent and access to all. So, whatever the information that the company discloses is should not have the effect to the social entity – people’s mindset. By considering all those parameters corporate governance discloses their actual information. Corporate governance is one of growing sector in India. It focuses on conducting the meetings to fulfill the needs of shareholders by satisfying them, to attract and to retain long-term, low cost capital, while they holds the shareholders dividend value has been avoided. It mainly underlines the agenda of the meeting as – Corporate objectives i.e., Social objectives, Environmental objectives, and an economic objectives as the one of big responsibility as an ideal one.

Corporate Governance Challenges:-

1. Lack of independent directors ^[1]:-

As suggested by the Kumar Mangalam Committee in 1999, the appointment of independent directors was considered a major corporate governance reform. Also as per Companies Act 2013 in Corporate Governance Women Director, Independent Director, Executive Director and Non-executive directors are essential for good corporate governance. But in corporate governance, the law is only on paper and not obeyed, it follows the persuasion of the board member. Lack of independent directors in corporate governance is due to non-compliance with the election process.

2. Biases in Administration:-

The incapable Board of Directors is a major problem of corporate governance. The reason behind this is - in corporate governance the Board of directors, promoters, Shareholders gives priority to their personal life and it creates bias in professional life. This is the reason why corporate governance faces many problems. A large part of this malpractice is their personal relation it forms capable board of directors. We know that the single decision of the corporate director can change the position of the corporation, it can lead to loss and these things make corporate governance equally problematic.

3. Internal conflicts ^[1]:-

In corporate governance, if in the at least two members of the stakeholders does not have a good relation between them, then it is not limited between them, but it also affects the overall corporate governance performance. For example, if the relationship between the executive and the manager is not good and the executive needs field level information and he does not have a good relation with the manager, the Executive can’t collect accurate information through devices. It adversely affects the disclosure of corporate governance.

4. Misuse of powers:-

Shareholders and Promoters have the administrative power in corporate governance. They also have the rights to attend the all meetings which are conducted by that company and they have the right to express their opinion and make the proposals by standing in front all those members. While they are presenting their proposals, majority of the directors will discourage them by making objections and they also had the view of identifying their profitability instead of advantageous view.

Some Independent Directors like discourage or do not support them in the favor of proposer. Hence, Shareholders, promoters misuse their power to remove an independent director. Therefore, to address this issue, SEBI’s International Advisory proposed that to an increase the transparency in the process of appointment and removal of directors.

5. Risk Management^[8]:-

‘Higher the risk, higher the chances of profit’ this is basic technique of risk management. The board of directors needs to comply with this to avoid the risk. They should have to mention in the report of shareholders annually. Board of directors fails to adequate use the appropriate risk metrics. So, nowadays precise risk management is one of the challenges facing in corporate governance.

6. Stakeholders Accountability:-

When company is run on big scale it has responsibility towards their overall administration and also environment at a large space. Stakeholder’s accountability is to maintain transparency towards a company. Company should have to take the acceptance of the responsibility for honest and ethical conduct towards stakeholders. So, remarkably this is one of impactful challenge facing by the corporate governance.

Disclosure Challenges:-

Challenges faced by corporate governance disclose the updated and verified information. They are discussed below-

1. Inefficient Internal Audit ^[9]:-

Internal audit is a major factor that directly affects financial statements, but when records of operations in corporate governance are not examined immediately after completion or when there is time between two audits, internal audit can be ineffective. And this creates future barriers to corporate governance disclosure.

Disadvantage of Internal Audit:-

In this following diagram we mentioned Disadvantages of Internal Audit- They are High Cost, Lack of Expertise, Job Loss, Dependence on Technology, Complexity.

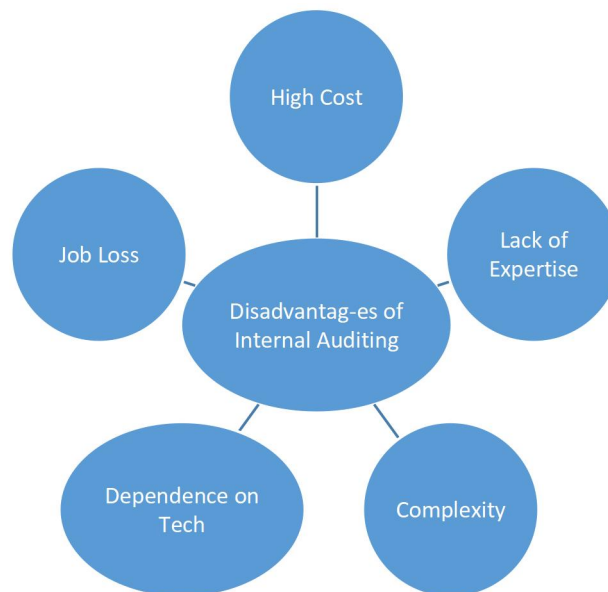


Fig.3 Disadvantages of Internal Audit

2. Illiterate New Stakeholders:-

Illiterate New stakeholder is a problem for corporate governance. A new investor invests in any particular corporate governance only after checking the overall performance of the corporate governance. Corporate governance communicates its information by providing in financial statements such as the balance sheet, income statement and cash flow statement to their stakeholders. The information fill in the financial statement is not easy for illiterate investor to invest in it. In the contrary literate and experienced investor can understood that financial statements easily. Not every stakeholder can be said to be educated. Some uneducated investor has the difficulty to understand those financial statements. Uneducated investors do not make an investment in corporate governance as they do not understand financial statements. So, Illiterate stakeholders are one of the challenge against Disclosure.

3. Neglect of Non-financial disclosure:-

Corporate governance is a growing sector in India that it focuses on meeting the needs of shareholders to attract and retain long-term, low-cost capital, while the emphasis on maximizing shareholder value avoids emphasizing other corporate objectives. Include social, environmental and economic objectives. These things are also important for corporate governance but corporate governance ignores them and it's also help to corporate governance to increase the wealth.

4. Violating Disclosure Rules^[12]:-

In the corporate governance does not disclose updated information to the stakeholders as well as to public. According to the Disclosure under Regulation 46 of SEBI's LODR (Listing Obligations and Disclosure Requirements) corporate governance is restricted to disclose the precise actual updated information after particular time period. If the company is not disclosing the accurate verified information then SEBI's LODR has the power firstly they gave the notice to that company and after that they can take action against that company. SEBI's LODR also have the authority to struck off that company from listed companies index. So, it is one of the huge challenges against corporate governance.

5. Transparency:-

Transparency is difficult to maintain while the company is disclosing information to their stakeholders. Transparency involves clarity with investments firms and funds. Greater Transparency can build the strong relation between corporate governance and investors, customers, employees. Disclosure is based on transparency but it cannot be defined what information is to be disclosed or not. In disclosure – transparency is rewarded by stock performance. In today's cut throat competition can be very dangerous if wrong information may be disclosed. So, transparency is the minor but impactful challenge in disclosure.

6. Data Privacy^[8]:-

In disclosure, the data privacy plays vital role for preventing unauthorized use disclosure personal, sensitive and confidential disclosed data. It also helps to protect individual privacy rights and create way to safeguard the disclosed data of corporate governance. Data privacy ensures that personal information not to be disclosed or misuse without consent.

Case Study: -

^[13]In violation of the Listing Obligations and Disclosure Requirements (LODR) Regulations, the Company has not updated certain information on its websites.

Headline: Shapoorji Pallonji and Company fined Rs. 7 Lakh by SEBI for exceeding disclosure laws.

Consists of: In its ruling, SEBI identified that Shapoorji Pallonji and Company converted its non-convertible debentures (NCD) into a term loan in March 2021 without first obtaining prior approval from the stock market. Shapoorji Pallonji and Company received a penalty of Rs. 7 lakh by capital markets regulator SEBI for breaking disclosure rules.

Additionally, as required by the Listing Obligations and Disclosure Requirements (LODR) Regulations, the company had not updated some information on its website.

A complete copy of the annual report complying with FY 2019–20, information, reports, notices, call letters, circulars, proceedings, concerning NCRPS or NCDs, and all information and reports, including compliance reports filed by the listed entity, are contained in the information provided.

By failing to make these disclosures, the company breached the LODR requirements, and as a result, SEBI penalised Shapoorji Pallonji and Company Pvt. Ltd. a "penalty of Rs. 7 lakh on the notice."

In July 2021, Shapoorji Pallonji and company addressed a letter to the regulator notifying it that on March 31, 2021, it had converted its listed NCDs to term loan in accordance with a One Time Resolution (OTR) plan agreed upon

by the company and its lenders. Following this, SEBI initiated an inquiry to see whether the company was in accordance with LODR regulations.

News came out on Wednesday, September 4, 2023.

What we study from this case—

In this case company was not approved stock exchange for converting non-convertible debentures. It also fails to submit auditor's certificate on utilization of funds, half yearly certificate on maintenance of assets cover an annual report to the debenture trustee. The above studied company does not disclose updated information on its websites as required LODR. That's why SEBI fines RS.7 Lakh on Shapoorji Pallonji and company for violating disclosure rules.

Conclusion

The overall objective of this research is to create a better corporate governance in India in correspond to The Companies Act 2013 and SEBI' clause 49 of listed companies. This paper mentions the various challenges face by the corporate governance in India. These challenges are categorized in two ways-[I] Challenges in corporate governance, [II] challenges in disclosure. Challenges in corporate governance are—lack of independence directors, biases in administration, misuse of powers, internal conflict, and risk management and stakeholder accountability. Challenges in disclosure are—inefficient internal audit, data privacy, transparency, violating disclosure rules, illiterate new stakeholder, and neglect non- financial disclosure. Majority of corporate governance disclosures – they highlights the dividend on their share to their shareholders and ignores the social, environmental, and economical responsibilities towards the society. Hence, corporate governance will not hampered in the future. SEBI has recently changed its Listing Agreement that the Listed Companies need to enter with Stock Market while listing their Securities with new SEBI LODR Regulations 2015.

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NANOTECHNOLOGY COMBAT CLIMATE CHANGE AND GLOBAL WARMING

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Abstract

Nanotechnology is set to play a vital role in cleaning pollution from the environment to establish a sustainable future for the earth. It can provide solution for combating pollution by controlling shape and size of materials at the Nanoscale. Global deterioration of water, soil, and atmosphere by the release of toxic chemicals from the on- going anthropogenic activities is becoming a serious problem throughout the world. This poses numerous issues relevant to ecosystem and human health that intensify the application challenges of conventional treatment technologies. Therefore, this review sheds the light on the recent progresses in nanotechnology and its vital role to encompass the imperative demand to monitor and treat the emerging hazardous wastes with lower cost, less energy, as well as higher efficiency. Essentially, the key aspects of this account are to briefly outline the advantages of nanotechnology over conventional treatment technologies and to relevantly highlight the treatment applications of some nanomaterial.

Keywords: Nanotechnology, Global warming, Pollution

Introduction:

Nanotechnology has the potential to play a significant role in environmental protection and sustainability by enabling new and improved methods for monitoring, cleaning up, and mitigating environmental pollutants. The term “Pollution” has many definitions, one being “the presence of a substance in the environment whose chemical composition or quantity prevents the functioning of natural processes and produces undesirable environmental and health effects”. With growing urbanization and increasing population, pollution has become the biggest environmental challenge. Environmental pollution is undoubtedly one of the main problems that society faces today. New technologies are constantly being explored for the remediation of contaminants of the air, water, and soil [1]. Particulate matter, heavy metals, pesticides, herbicides, fertilizers, oil spills, toxic gases, industrial effluents, sewage, and organic compounds are just a few examples of the many concerning contaminants [2, 3]. Different types of materials can be employed in environmental remediation and therefore a wide variety of approaches can be exploited for this purpose. As the capture and degradation of environmental pollutants can be challenging due to the complexity of the mixture of different compounds, high volatility, and low reactivity; recent studies have focused on the use of nanomaterials for the development of new environmental remediation technologies [4].

Nanomaterials offer the potential to leverage unique surface chemistry as compared to traditional approaches, such that they can be functionalized or grafted with functional groups that can target specific molecules of interest (pollutants) for efficient remediation. Further, the intentional tuning of the physical properties of the nanomaterials can confer additional advantageous characteristics that directly affect the performance of the material for contaminant remediation. The rich surface modification chemistry along with the tuneable physical parameters of the nanomaterial offer significant advantages over conventional methods for addressing environmental contamination.

For instance, adhering nanoparticles to a scaffold can be an alternative way to increase the stability of the material when compared to the use of nanoparticles alone. Functionalizing material with specific chemicals responsible for targeting contaminant molecules of interest can help increase the selectivity and efficiency of the material [5-9]. Here we focuses on three main types of nanomaterials described in the literature: inorganic, carbon-based, and polymer-based materials. Each of these classes and their applications will be discussed in the following sections.

Discussion:**1. Inorganic Nanomaterials:****a) Metal- and Metal Oxide-Based Nanomaterials:**

Different metal-based nanomaterials have been described for the remediation of numerous contaminants, but the vast majority of studies have been dedicated to the removal of heavy metals and chlorinated organic pollutants from water. Metal and metal oxide nanomaterials are highly efficient adsorbents exhibiting advantages such as fast kinetics and high adsorption capacity [10]. Nanoparticles are commonly used for environmental remediation, since they are highly flexible towards both in situ and ex situ applications in aqueous systems [11]. Efficient synthetic methods to obtain shape-controlled, very stable, and monodisperse metal/metal oxide nanomaterials have been extensively investigated during the last decade following both physical and chemical approaches. Among these synthetic protocols, thermal decomposition and/or reduction, co-precipitation, and hydrothermal synthetic protocols are widely used and are easily scalable with high yields.

b) Silica Nanomaterials:

Due to their versatility, mesoporous silica materials have gained attention for various applications, such as adsorption and catalysis. Mesoporous silica materials possess number beneficial features for environmental remediation applications including: high surface area, facile surface modification, large pore volumes, and tunable pore size [12]. Due to their exquisite performance as adsorbents, a variety of studies have reported the use of these materials for contaminant remediation in the gas phase. The hydroxyl groups present on the surface of silica materials are important for further surface modification, gas adsorption, and other surface phenomena such as wetting. Grafting of functional groups onto the pore walls is also a well-known strategy to design new adsorbents and catalysts [13].

2) Carbon-Based Nanomaterials:

The structural composition of elemental carbon and its mutable hybridization states account for the unique physical, chemical, and electronic properties of carbonaceous materials compared to metal-based nanomaterials. In a variety of investigations determining the suitability of carbon nanotubes and graphene for environmental remediation applications, it has been reported that surface treatments, activation, or functionalization of the pristine carbon material is first required. Carbon based nanomaterials are also employed to remediate contaminants through photocatalytic approaches. Under UV irradiation, photons of energy greater than or equal to the band gap of the nanotubes promote the generation of valence band holes (h^+) and conduction band electrons (e^-). The holes are responsible for the formation of hydroxyl radicals that take part in the oxidation of chlorinated organic compounds. The electrons form superoxide radicals that take part in the reduction of heavy metal contaminants. Several studies have been reported that describe the use of graphene to fabricate photocatalytic nanocomposites. Graphene composites containing TiO_2 NPs show increased photocatalytic activity when compared to bare TiO_2 NPs due to an increase in conductivity [14].

3) Polymer-Based Nanomaterials:

Although the large surface area-to-volume ratio of nanomaterials contributes to higher reactivity with concomitant improved performance, the occurrence of aggregation, non-specificity, and low stability can limit the use of these nanotechnologies due to the lack of functionality. An alternative to enhance stability of nanoscale materials is to employ the use of a host material, the purpose of which is to serve as a matrix or support to other types of materials [15]. Polymers are mostly used for the detection and removal of contaminant chemicals, gases, organic pollutants and a wide array of biologics. Polymeric hosts are often employed to enhance stability and overcome some of the limitations of pristine NPs as well as to impart other desirable properties such as enhanced mechanical strength, thermal stability, durability, and recyclability of the material in question. Furthermore, increasing the number of ionic groups on the precursor chain contributed to a reduction in APU particle aggregation in the presence of polyvalent cations. While the application of these materials in the environment could be beneficial for contaminant remediation, there is no report on the biodegradability of such materials, which contributes to concerns regarding

their fate after application.

Conclusions

Nanotechnology contributes significantly to environmental protection by saving raw materials, energy and water. Nanotechnology is a “breakthrough” technology and has the potential to offer several benefits that are not offered by other conventional technologies. The major limitation associated with the commercialization of this technology, is the safety issue associated with the use of nanoparticles. Inorganic, carbonaceous, and polymeric nanomaterials are among the different types of materials that can be successfully employed for a variety of environmental remediation applications. Selecting the best nanomaterial to mitigate a particular pollutant in a specific environmental context requires a full analysis of the type of contaminant to be removed, the accessibility to the remediation site, the amount of material needed to implement efficient remediation, and whether it is advantageous to recover the remediation nanomaterial (recycling). In that each material has its own advantages and issues related to its applicability, we provided here an overall perspective of some nanomaterials that have been utilized in the context of environmental remediation. Also while many studies do demonstrate efficacy in laboratory settings, more research is necessary in order to fully understand how nanotechnology can significantly affect the remediation of environmental contaminants in real case scenarios (e.g., the remediation of contaminated water, soil, and air from industrial processes). Also, while the mechanisms through which the different nanotechnologies are applied are well known, what happens to these materials after they have been applied for contaminant capture or degradation is underexplored. Even though the recyclability of some materials have been described, it appears that at some point the efficacy of these materials declines, which makes them no longer useful. Therefore, research is necessary to elucidate the fate of these materials after introduction to the environment for remediation purposes in order to avoid the possibility of these materials becoming themselves a source of environmental contamination.

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APPLICATION OF FRACTIONAL CALCULUS OPERATORS TO A SUBCLASS OF ANALYTIC AND UNIVALENT FUNCTIONS

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Abstract

The main impact of the research work is the motivation to construct new subclasses of analytic univalent and multivalent functions in the unit disc and study their various geometrical properties. Inclusion and argument properties of a new subclasses of strongly close-to-convex functions defined by an integral operator has discussed. Characterization property exhibited and relation with other fractional calculus operators has given.

Keywords: Subclass, Univalent and multivalent function, fractional calculus operators

Introduction

Univalent function Theory is one of major branch of Complex analysis in which we study one-to-one analytic functions in the unit disc

$D = \{z: |z| < 1\}$ normalized to have Taylor series $f(z) = z + a_2 z^2 + a_3 z^3 + \dots$

A function is said to be normalized if $f(0) = 0$ and $f'(0) = 1$. In normalized function analytic and univalent class are referred as S . The normalized, univalent and analytic function is more popularly referred to as conformal mapping. For various geometrical and analytical properties of function S , quantum of research has done. A celebrated result is the Bieberbach's Conjecture posed in 1916: For any f in S , the Taylor coefficients satisfy $|a_k| \leq k$ where $k = 2, 3, 4, \dots$

Only few of researchers succeeded in partial proof for particular subclasses of S or obtained the proof for some particular values of k . An attempt to solve the conjecture has enriched the Theory of univalent functions in several directions. It was only in 1985 that de Branges came with a complete proof.

Another well-known problem in univalent functions is the Omitted Area Problem which was posed in 1949 by A.W.Goodman: what is the maximum area A^* of the unit disc D that can be omitted by the image of the unit disc under a univalent normalized function? Many researchers have tried to solve this problem and obtain bounds for A^* . The major obstacle in the success of solving the problem lies in the extreme difficulty of manipulating concrete examples.

Development in subject

It has been learnt that Univalent function theory has many applications in engineering and relation with almost all branches of mathematics. Many mathematicians are also using the theory in solving some problems arising in engineering and technology. Understanding of this study is of great interest both from pure and applied point of view.

There are many conjectures in Mathematics which have been solved by the use of Geometric functions theory, for instance the, "Bieberbach Conjecture". This conjecture has been solved for some values of n and for all values of n for certain subclasses of univalent functions, but the full conjecture still remains open.

Open conjectures:

1. If f and g are in S (normalized univalent function in E) then $f.g$ is also in S . If this conjecture were true, then it would be easy to prove (in several different ways) that $|a_n| \leq n$, for every function in S . Unfortunately, conjecture 2 is false, and indeed has been disproved on several different occasions.

2. Goodman conjectured that if f and g are in CV (Let CV be the set of all normalized univalent functions $f(z)$ for which $f(E)$ is a convex region and when $f(z)$ is univalent in E , we say that the domain $D=f(E)$ is a simple domain), then $(f + g)/2$ is at most 2-valent. Styer and Wright produced a pair of functions in CV for which $(f + g)/2$ is 3-valent and they venture the opinion that this sum "may very well be infinite-valent for some f and g in CV".

Proposed Algorithm

During the course of research we study univalent and multivalent functions in detail. The subclasses of these functions like starlike, convex, close to convex, We obtain several properties like coefficient estimates, distortion bounds, radius of starlikeness, convexity and close to convex, extreme points, region of univalence, convex linear combination etc. We discuss different subclasses of univalent, multivalent and meromorphic functions that are holomorphic in nature. We will continue the investigation of several properties of holomorphic and univalent functions and also study some inclusion properties, meromorphic multivalent functions with negative coefficients, Linear operator of a new class of univalent and analytic functions, also generalization of starlike and convexity properties for hypergeometric functions.

- We study different subclasses of starlike and convex functions. A function $f(z)$ is in the class $S(\alpha, \beta, \xi, \gamma)$ if and only if,

$$\left| \frac{\frac{z f'(z)}{f(z)} - 1}{2\xi \left(\frac{z f'(z)}{f(z)} - \alpha \right) - \gamma \left(\frac{z f'(z)}{f(z)} - 1 \right)} \right| < \beta \quad \text{for } |z| < 1$$

where $0 < \beta \leq 1$, $1/2 \leq \xi \leq 1$, $0 \leq \alpha \leq 1/2\xi$, $1/2 < \gamma \leq 1$.

The function $f(z)$ is derived in different subclasses. We study some properties coefficient estimates, growth and distortion theorem, and radius of convexity, closure theorem.

- We study subordination for different subclasses. A function $f \in S$ is said to be in the class $K_s(\lambda, A, B)$ if it satisfies the subordination condition:

$$\frac{z^2 f'(z) + \lambda z^3 f''(z)}{-g(z)g(-z)} \prec \frac{1 + Az}{1 + Bz}, \quad z \in U$$

where $0 \leq \lambda \leq 1$, $-1 \leq B \leq A \leq 1$, and $g \in S^* \left(\frac{1}{2} \right)$.

By noting that, $K_s(0, \alpha, \beta) = K_s(\alpha, \beta)$, so the class $K_s(\lambda, A, B)$ is a generalization of the class $K_s(\alpha, \beta)$. We study some results on coefficient estimates, inclusion relationship, covering theorem, distortion theorem.

- The following operators are also the part of our research:

1. Ruscheweyh differential operator of order n is

$$D^n f(z) = \frac{z(z^{n-1} f(z))^{(n)}}{n!}, n \in \mathbb{N} \quad \text{and } D^0 f(z) = f(z).$$

We note that $D^0 f(z) = f(z)$ and $D^1 f(z) = z f'(z)$.

2. Noor Integral operator $I_n : A \rightarrow A$ analogous to $D^n f$ as follows :

$$\text{Let } f_n(z) = \frac{z}{(1-z)^{n+1}}, n \in \mathbb{N}_0 \text{ and}$$

$$f_n^{(-1)} \text{ be defined such that, } f_n(z) * f_n^{(-1)}(z) = \frac{z}{1-z}.$$

$$\text{Then } I_n f(z) = f_n^{(-1)}(z) * f_n(z) = \left[\frac{z}{(1-z)^{n+1}} \right]^{-1} * f(z)$$

Note that, $I_0 f(z) = z f'(z)$ and $I_1 f(z) = f(z)$. The operator I_n is called the Noor Integral of n^{th} order of f .

3. Salagean has introduced the following operator called the Salagean operator :

$$D^0 f(z) = f(z), D^1 f(z) = Df(z) = z f'(z);$$

$$D^n f(z) = D(D^{n-1} f(z)); n \in \mathbb{N} = \{1, 2, 3, \dots\}$$

$$\text{Note that, } D^n f(z) = z + \sum_{k=2}^{\infty} k^n a_k z^k, \quad n \in \mathbb{N}_0 = \mathbb{N} \cup \{0\}.$$

Conclusion

In our interest to know the applications of Geometric Function Theory, we have come across different methods to bring together the classical theory of univalent functions and some problems of fluid mechanics. Special classes of univalent functions which admit an explicit geometric interpretation to characterize the shape of free interfaces are considered. In recent years important developments in application of complex variable methods to problems in two-dimensional fluid dynamics have taken place.

In problems of planar fluid dynamics interest to special univalent functions of some geometric indication. In particular, starlike functions, functions convex in a direction and convex functions are developed. Univalent functions are used to parameterize phase domains of the shape of sections in the fields of petroleum surrounded by water (in viscid fluid) which occurs in the process of oil recovery through a sink.

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IMPACT OF CLIMATE CHANGE ON MEDICINAL PLANTS

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Abstract

Medicinal plants are traditional medicine for curing different type of diseases. Much of the Asian countries depend on medicinal plants for traditional medicine, economic benefits, and for Employments. But day by day climatic and environmental changes due to the human civilization and interference. Low or high rainfall, drought, flood, CO₂ concentration, soil pH such climatic change also affects on medicinal plant production, secondary metabolite formation, phenology, life cycle, reproductive ability etc. climatic changes also cause plant viability, morphological adaptation, endemic species in certain area, Genetic Drift, season variation extinction. In Different habitat of medicinal plant density change due to climatic fluctuation.

Key word: Medicinal plants, Asian countries, climate change, Impact.

Introduction

Medicinal plants all over the world use as a source of traditional medicine from ancient time. The Asian countries like as China, Nepal, Bangladesh, Pakistan and India used traditional medicine. Indian pharmacy used traditional plant-based system in modern medicine. According to Hamilton, India has approximately 44% of medicinally important plants. India is nothing but “herbarium of world” due to the presence of natural plant diversity (M. Shrivastava 2018) there are 50,000-70,000 plant species are used in traditional and modern medicines all over the world. Still, Most of them unidentified. Their important contribution in health care; It mostly used by tribal and rural people (Harish B. and et al. 2012).

In the World Ethano- medicine system is safe and cheap. Plant based medicine particularly found in India, Arabia, China Egypt and Europe. India is origin of Ayurveda system for preparation of herbal medicine about 8000 plant species used in India, Sri Lanka and Southeast Asia. Pakistan is origin of Unani system based on 5000 plant species. There is total 30000 medicinal plants species in flora of China. out of the 250,000 species Around 35,000 - 70,000 of higher plant has been used for medicinal work. Medicinal plant provides national wealth to the country mean play chief role in economy. It also provides raw material to pharmaceutical industries. depends greatly on medicinal plants wealth. (Roy S. and et al. 2016)

Over the last decade, Earth climate change very rapidly. That's why cause different environmental changes such as prolonged drought, flood, global warming, species extinction. Human activity indirectly responsible for these climatic changes. (Das M. and et al. 2016). The different mankind activities cause extinction of biodiversity that also include Plants, animal and Microbes. Out of this plant is producer of ecosystem, so It is necessary to protect and conserve different plant species that valuable. (Das M. and et al. 2016). 95% Population of south Arica depend on plant based traditional medicine. Because their 100 million of people depend on it for conventional medicine as well as 700,000 medicinal plants harvesting annually. South Africa is one of the third country having poverty and unemployment where these traditional medicines give 270 milion worth per year. (Tshabalala T. and et al. 2022). that's why medicinal plant is valuable.

Rhodiola rosea plants of Canadian Arctic and Tibetan mountains snow lotus (*Saussurea laniceps*) both medicinally important but face problem of climate change. Seasonal timing of many plants also changed that finally convert plant into endangered category of plant species. Such as in Germany and Poland the medicinal plant *Chamomile* (*Matricaria recutita*), Fennel (*Foeniculum vulgare*) and Anise (*Pimpinella anisum*), impact of severe flooding decline their harvesting for their essential oils, that used for medicinal, Aroma, edible purposes. (Das M. and et al. 2016).

Climate change also affect on taste and productiveness of Arctic medicinal plants. this plant commercially important due to their secondary metabolites. It was also observed that 62% all plants in Alpine Himalaya that

examine by global Tibetan team the species richness is decreases by height. a few medicinal alpine species, such as *Artemisia genipi* (Asteraceae) and *Primula glutinosa* (Primulaceae) are limit to the upper alpine zone. Arctic and alpine areas are rapidly change after global warming, number of ecosystems is present in threaten condition such as islands and due to increases in ocean level. and in Rainforest studies have indicated that these regions are likely to become warmer and drier, with a substantial decrease in precipitation over much of the Amazon There is not much, if any, published evidence on MAPs that could be at risk in the rainforest from climate change, and experts are unable to comment on specific MAPs that may be vulnerable to climate change in rainforests. However, the expected loss of general biodiversity in the Amazon, indicates the potential to lose both known and undiscovered MAP species (IPCC report 2007) (Das M. and et al. 2016).

Early blooming is harmful if in specific zone cold weather late in the spring season. then those early buds or fruits froze and production of economically useful plant decreases. In North Carolina 4 year ago Apple orchards and medicinal plant bloodroot (*Sanguinaria canadensis*) suffered severely by above early blooming scheme. (Das M. and et al. 2016).

South Africa is one of the regions having large ecological variation. three medicinal plant species *Aloe ferox*, *Bowiea volubilis* and *Dioscorea elephantipes* having high medicinal value in south Africa medicinal trading market. Much of the habitat of this plants lost by climatic change. That affect on local people because 80% population of such developing country directly depend on medicinal plant for healthcare and economical purpose.so their conservation is necessary. (Tshabalala T. and et al. 2022).

Review of literature

Many medicinal plant researchers and conservationists on based of their research, observations conclude that Climate change affect on medicinal plant all over the world. Their impact on formation of secondary metabolite which is important for economical purpose. According to study prove that temperature stress can affect on production of the secondary metabolites and other plant products for medicinal purpose. diseases, competition between plants, animal grazing, light exposure, soil moisture, etc have an effect on the production of secondary metabolites in plants. (Das M. And et al. 2016).

In South Korea in high precipitation conditon, hot pepper attack by phytophthora diseases that cause severe loss of yield. Extreme climatic conditon such as high temperature, heavy rainfall, and drought in summer are main reason of decrease production of hot pepper. increases in air temperature, CO₂ concentration and precipitation seriously decline growth and reduced yield. Extreme hot summers decrease in the production of hot pepper retarding growth and production of abnormal fruit A study conducted by Sin and Yun (Joo et al., 2010) founded that elevated CO₂ and temperature increased the incidence of hot pepper diseases. High rainfall, anaerobic condition cause poor root penetration, growth and plant photosynthesis. Irrigation also affect on production of size and weight of hot pepper (Dr. Dayal B. and et al. 2021).

Africa like continent also having severe impact of climate change on medicinal plants. In 20th century Sahel region much drought climate. The medicinal plants like hibiscus (*Hibiscus sabdariffa*), myrrh (*Commiphora Africana*), frankincense (*Boswellia spp.*), baobab (*Adansonia digitata*), moringa (*Moringa oleifera*), and various aloes (*Aloe spp.*). These were affected due to severe drought (Held et al. 2005). Future droughts due to climate change could have devastating effects on the region's already suffering ecosystems and harvesting capabilities (Das M. And et al. 2016).

Indian climate is controlled by mansoon, sometime having unpredictable precipitation. Over the last century mansoon rainfall in central India was stable but day by day average rainfall during monsoon remarkably decreases and especially rainfall greatly increases from 1980s. high Rainfall is sign of future Calamities. In recent year frequency and Intensity of flooding increases in India. Agicultural loss caused by hailstorms. In state Gujarat and Rajasthan in three year like 2006, 2007 and 2008 high hailstorms with rain, such condition not happened in last 50 years. Psyllium (*Plantago ovata*), Wheat (*Triticum aestivum*), and cumin (*Cuminum cyminum*) crops damaged by Hailstorm. Which result in Annual yield decreases in 2008. Similarly, In northern India heavy rainfall damaged wild mint (*Mentha arvensis*) in 2008. Hailstorm also affect on menthol crystal availability. Rainy season also show variation by climate change. (Das M. And et al. 2016).

According to Scientist medicinal plant Surely damaged by humans interfere in the environment, mostly in high hilly mountain ecosystem. The change take place in Phytochemical elements (Applequist W. and et al 2019).

Result and Discussion

Medicinal plants in Arid one in special risk. Large climate change seen in Deserts and arid shrublands biomes, that tough in migration of species, such as in recent decades desert steppe wild medicinal plants in Chinese medicine, *Glycyrrhiza uralensis* has degraded by human disturbances. Medicinal plant cultivated in China that why decline wild population cultivated *G. uralensis* root is considerably lower than that of mature wild roots.

China, is late supplier of medicinal plants, which plant threatening the sustainability of wild populations in arid zones of other countries. (Applequist W. and et al 2019). *Aloe ferox* distribution was influenced by precipitation in the driest quarter, *B. volubilis* was largely influenced by the mean annual range. *D. elephantipes* was mostly influenced by the precipitation in the warmest quarter.

In recent study from northern part of South Africa reduced habitat of of *B. volubilis* and *D. elephantipes*, shifting closer to pole because temperature of equator become high. The scientist predicted that their will be rise in 4°C average temperature of south part of south Africa up to 2099. the habitat distribution of *D. elephantipes* influenced by 70%. In Southwestern Australia, 2/3 of the plant species will decreases and 25% of their habitats lost up to 2080 (T. Tshabalala).

The effect of climatic change on medicinal plant are not studied well. Climate changing effect on medicinal plants most important subject for the, producer, people of herbal industry, users. this scenario caused quality disturbances of chemical constituents of medicinal plants. (Roy S. and et al. 2016)

Environmental parameter change the phenotype of living species so variation occur. In large geographic area large diversity present. high competition seen in species by climatic change. India having different season due to high environmental fluctuation. Climatic change affect on secondary metabolite production in plant. *Aloe vera* popular medicinal plant that used from ancient time in therapeutic and cosmetic preparation all over the world. It is vernacular in Arabian Peninsula but available in all over India. In Maharashtra and Tamil Nadu states it presents in wild, as Andhra Pradesh, Gujarat and Rajasthan states it cultivated. This plant having tolerance about drought condition. But humid condition and high rainfall also suitable to it. Environmental temperature varies antioxidant activity and phytochemical production.

Aloe extract of semi-arid zone having high antioxidant potential as compare to tropical zone. there are several factors that can affect the quality and quantity of a particular constituent. *Aloe vera* sensitive to cold environment. In stress condition it show high production of flavonoids, anthocyanins and mucilaginous substances In cool climate unsaturated fatty acids produced in high amount with production of antioxidant for a self-defense system against environmental stress. When temperature is low high the production of phenolics and vice versa. antioxidant activity increases in Samples of colder regions and semi-arid region. under stress more phytochemicals are production take place. phytochemical content changes with environmental variation. temperature and rainfall have influenced the *Aloe vera* plant phytoconstituents and its antioxidant potential. (kumar S and et al. 2017).

In *Asparagus officinalis* very important pharmacological compounds used to make drugs for cure of various diseases. This plant have high population in habitat but due to high use of these resources overtime, deforestation, forest fires, habitat fragmentation and human interference cause risk in future about the production of Asparagus. (Eqbal M. And et al. 2017).

Cymbopogon winterianus plant affected by alkaline water pH. Initially inter-venial and then leaves turn in to complete white. Plant mortality occurs at the severity of chlorosis. *Cymbopogon flexuosus* showed inter-venial chlorosis. Reduction of growth, biomass production and oil yield. *Cymbopogon martinii* Seedlings affected by alkaline irrigation to caused chlorosis. In Tulasi also same symptoms seen by alkaline water irrigation. (Aishwath O. and Lal R. 2016). In 2021, Monsoon was late and low rainfall caused impact on less profit obtained from cultivated lemongrass in Bundelkhand. (Prajapati R. and et al.2023) In Nepal out of 88 endemic species 47 species of threatened plant in Chal area. The forest mostly having Sal tree but adverse climatic condition affect on their morphological characters, life cycle, primary and secondary metabolites formation and effect of soil contents and

pollution. Sal use for medicinal purpose, Resulting high variation in bioactive phytometabolite production yield by climatic change. That's why patient not obtained clear bioactive herbal formulation. finally, climate change affect on quality of medicinal plants.

Worldwide much variation about the impacts of environmental changes such as climate change on the medicinal plants. Such as changes in the timing of seasonal life cycle events, range shift, food web disruption, support to the spread of pathogens, parasites and diseases, habitat destruction and species extinction. Variation take place in active agent of medicinal plants in habitat of high altitude. In India *Rauvolfia serpentina* less growth in higher altitudes but in *Hyoscyamus niger* increases active agents. Climatic change also effect on sporadic works. On Northern hemisphere due to climatic change decreases quality of medicinal plant. Expansion increases lead to extinction in their local habitat. In Nepal decline in yields of eight indigenous medicinal plants and they appear on new sub-tropical species at 3000 m altitude. The prediction of scientist according to climate change in future impact on the distribution of two local species *F. cirrhosa* and *Ban Lasuna*. having medicinal importance

In Africa neem plantations badly damaged by a scale insect (*Aonidiella orientalis*) and In India low. Neem has been cosmopolitan in tropics and subtropics, mostly in bare areas in Asian South-East zone, American Central-South zone, Islands of Pacific Ocean, Caribbean zone and Sahara desert of Africa. Several stresses occur on medicinal plant by climatic change. An Increase temperature trigger the production of secondary metabolites. Climatic stress can change metabolic pathways that introduce different metabolites' by-products. UV-B rays cause changes in the phenylpropanoid pathway. This pathway necessary for essential oil production in *Curcuma sp*, Specifically, *C. longa L.* and *C. cassia*. In the medicinal crop *Cornus officinalis* bioactive compound accumulation strictly depends on weather conditions.

High CO₂ level help to good growth and morphogenesis of *Oscimum basilicum* that totally depend on climatic variation. (Agronomy G. Laxmi). The genus *Ocimum* having 60 to 150 species in herbs and shrubs which wild in the tropical and subtropical regions of the world. In India *Oscimum* is cosmopolitan. The leaves of the plant are considered to be sacred and always part of the Hindu spiritual rituals God worship, blessed food and water. *Ocimum sanctum L.* has two varieties i.e. black (Krishna Tulsi) and green (Rama Tulsi), In both variety constituents are similar and common medicinal properties. The menthol extract obtained by Tulasi. In white Tulasi alkaloid Increases in winter as compare to black Tulasi that concluded in winter season high alkaloid formation than summer. The alkaloid content is influenced by climatic change. (Satish K and et al. 2017).



(a)



(b)



(c)



(d)



(e)



(f)

Picture - Aloe vera in different states a) Himachal Pradesh b) Haryana c) Gujarat d) Madhya Pradesh e) West Bengal f) Goa



Picture- a) Asparagus in wild habitat b) Asparagus in cultivated habitat.



Picture- Some fungal diseases caused by change in climatic factors.

Conclusion:

All the study proves that climatic change such as drought, high rainfall, species population density, soil pH, CO2 level that varies directly or indirectly by human interfere to cause decline growth, chlorosis, stunted growth, morphological changes, Habitat change, Sporadic change, reproductive period change and most important variation in production of secondary metabolite or Phyto active component in medicinal plants.

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A PRELIMINARY STUDY OF HUMAN ACTIVITIES ON ENVIRONMENTAL DEGRADATION

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Abstract

Environmental degradation refers to the depletion of vital resources like soil, water, and air, alongside the disruption of ecosystems, including the disturbance of natural landscapes and biodiversity. Human-induced activities such as extensive fertilizer use and pollution significantly contribute to this phenomenon. Primarily caused by human intervention, environmental degradation stands as a critical issue in the 21st century, impacting habitats and life as a whole. This article underscores the importance of understanding environmental degradation and delves into the contributing factors behind this concerning trend.

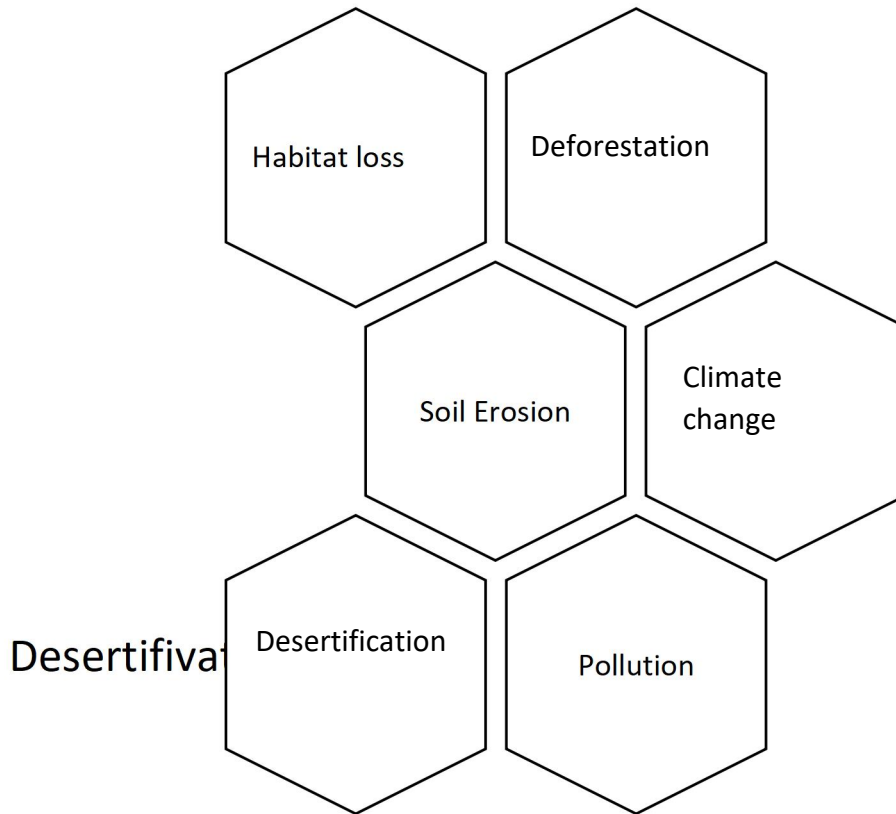
Keywords – Environment, degradation, ecosystem.

Introduction

For an organism's survival, interaction with both living (biotic) and non-living (abiotic) factors within ecosystems is crucial. Environmental degradation refers to the disruption of resources within an area, stemming from either natural or human-induced causes. This disruption leads to significant hazards, such as species extinction, habitat loss, soil erosion, deforestation, and climate change. Additionally, environmental degradation contributes to desertification, increased flooding, and the depletion of natural resources. The primary driver behind this decline in the environment is the escalating human population, which currently stands at an estimated 8 billion globally and continues to grow. As the population increases, there's a corresponding increase in the exploitation of natural resources, resulting in the depletion of resources like freshwater, coral reefs, and fossil fuels, and a decline in overall living standards.

Sr no.	Environmental Degradation Factors	Effect on wildlife
1	Fragmentation	Animal's breeding, predation rate
2	Deforestation	Increase in human wildlife conflict, soil erosion
3	Soil erosion	Loss of biodiversity and affect the productivity of ecosystems.
4	Climate change	Linked food chains etc
5	Desertification	Species migration
6	Pollution	Diseases, mortality etc

Factors responsible for environmental degradation



1. Habitat loss

An organism's habitat represents the distinctive characteristics of a place that are vital for sustaining life. Habitat fragmentation happens when a large area is divided into smaller sections, isolating these patches from each other. Organisms suffer adverse impacts from habitat fragmentation, encompassing both the loss and fragmentation of their habitats. Habitat degradation leads to a decrease in population size.

2. Deforestation

Deforestation results from the disturbance of forest ecosystems due to agricultural practices, grazing of livestock, and excessive industrial growth. It leads to a decrease in forested areas, alterations in forest cover, loss of biodiversity, shifts in the global water cycle, and a rise in the greenhouse effect. Human activities like cutting down trees for construction, soil erosion, water pollution, and habitat destruction are responsible for deforestation, collectively contributing to environmental degradation. Forests harbor a significant portion of the Earth's species, including numerous endangered ones, encompassing about two-thirds of all species on the planet.

3. Soil Erosion

Soil erosion caused by wind or rainfall impacts the productivity of all natural ecosystems. The soil's fertility directly influences food availability and production. Human-induced alterations to the soil have made once fertile soil unproductive.

4. Climate Change

Climate change is a global concern that significantly impacts interconnected food chains, nutrient circulation, and the movement of oceans. Recently, the United Nations and the Conference of Parties have made distinct appeals for action on climate change. This issue doesn't just impact humans and living organisms, but also affects non-living

components like glaciers and temperature variations. Furthermore, climate change influences habitats, leading to habitat depletion and ultimately resulting in species extinction.

5. Abundance of Invasive Species

An invasive species is any organism that has extended its range beyond its usual geographic boundaries and poses a threat to other animals and the environment. The term "invasive" is sometimes used interchangeably with words like alien or non-indigenous species. However, invasive or noxious species specifically denotes an alien species whose introduction could have adverse effects on wildlife and human well-being. This impact often arises from competition with native species for crucial resources such as food, shelter, water, and other necessities for survival. In Indian freshwater systems, the Tilapia fish is identified as an invasive species, exhibiting an increasing presence over time.

6. Rapid Desertification

Desertification refers to the disturbance of an ecosystem due to alterations in soil, vegetation, and climate. This process renders a specific area unproductive and can lead to vast expansions. Anthropogenic activities such as intensive farming, deforestation, insufficient irrigation, and excessive utilization of chemical fertilizers are among the causes contributing to desertification.

7. Increasing Infrastructural development

The gradual rise in infrastructural development adversely affects both land-based and marine ecosystems. Loss of habitat and alterations in climatic conditions are the primary consequences observed following infrastructural development in these respective areas.

8. Air Pollution

Air pollution detrimentally affects wild birds, mammals, and the overall population of wildlife. Various pollutants, including air pollution, have disrupted the distribution of wildlife species. Carbon emissions originating from vehicles and industrial activities stand as significant contributors to this air pollution.

9. Water Contamination

Water contamination primarily stems from agricultural practices and urban development. Aquatic ecosystems consistently receive nutrients like phosphorus, nitrogen, and others as a result of these activities. Chemicals such as fluoride and nitrite are progressively accumulating in water sources. Eutrophication, a consequence of excessive nutrients, renders water unsuitable for various purposes such as drinking, agriculture, manufacturing, and more. Additionally, certain agricultural pesticides and chemical fertilizers contribute to water pollution. Human actions stand as the primary contributors to water contamination.

10. Noise Pollution

Wildlife exposed to noise pollution undergo stress, diminished reproductive outcomes, physiological disruptions, and decreased prospects for long-term survival. The adverse effects of noise pollution significantly impact animal health and their chances of survival. Therefore, it becomes our duty to protect wildlife by minimizing noise pollution in their habitats.

Conclusion

Environmental degradation is a complex consequence arising from diverse physical, chemical, and biological activities. Among these factors, anthropogenic activities stand out as significant contributors to the deterioration of our environment. The equilibrium of our ecosystems heavily relies on natural resources, which serve as invaluable assets on our planet. However, the degradation of the environment poses a serious threat to these resources. Human activities, particularly resource depletion, exert profound negative impacts not only on us but also on other species inhabiting Earth. The misuse and overexploitation of natural resources are primary drivers of environmental decline, resulting in ecological imbalances, challenges for wildlife, and the extinction of certain species. Preserving and restoring the environment is crucial for a sustainable future. By minimizing environmental degradation, we can

mitigate the adverse impacts on ecosystems, protect biodiversity, and ensure a healthier planet for generations to come.

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THE ROLE OF ATMOSPHERIC CHEMISTRY IN CLIMATE CHANGE

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Abstract:

The Earth's climate is determined by a number of complexes connected physical, chemical and biological process occurring in the atmosphere land and ocean. Emission of carbon dioxide, Methane, Nitrous oxide and reactive gases such as sulfur dioxide, nitrogen oxide, carbon monoxide and hydrocarbons, which leads to the formation of secondary pollutants including aerosol particles and tropospheric ozone. The composition of the atmosphere is determined by process such as natural and anthropogenic emission of gases and aerosols transport at variety of scale, chemical and microphysical transformation. These process and more generally the rate of biogeochemical cycling are affected by climate change and involve interaction between and within the different component of the earth system. These interactions are generally nonlinear and may produce negative or positive feedback to the climate system. Climate change can on the other hand, alter tropospheric H₂O concentration, further affecting chemistry impacts on climate. In this paper, we examine the importance of chemical process and the other interaction in determine climate change and future policy options.

Introduction:

The earth's climate is determined by a number of complexes connected physical, chemical and biological process occurring in the atmosphere, land and ocean. The radioactive properties of the atmosphere a major controlling factor of the earth's climate, are strongly affected by the biophysical state of the earth's surface and by the atmospheric abundance of a variety of trace constituents. These constituents including long-lived greenhouse gases such as carbon dioxide (CO₂), Methane (CH₄) and nitrous oxide(N₂O) as well as other radioactively active constituent such as ozone and different type of aerosols particles. The increasing concentration of carbon dioxide (CO₂) largely as a result of fossil, fuel combustion, has received the most attention. Climate model indicates that the doubling of CO₂ a probability within next century. For atmospheric concentration of interest the radioactive forcing from these individual gases are nearly additive with respect to their impact on the surface troposphere climate system. The magnitude of climate change that could result is still highly uncertain. In particular, there are many uncertainties in the climate feedback process that will determine the eventual change. In the temperature and other climatic variables. The extent of future climate change will depend on the complex interaction between atmospheric radioactive, dynamical and chemical process. Finally, the actual atmospheric composition of the greenhouse gases will depend not only on natural and anthropogenic surface emission but also on any atmospheric chemical process affecting their concentration and distribution. Unlike the direct radioactive effects, photochemical process affecting atmospheric composition are generally coupled and nonlinear. Because of this the estimation of net radioactive impact of changes mediated by photo chemistry trends to be specific to the detail scenario assumed for trace gas abundance and emission trends.

The purpose of this report is to describe the role of atmospheric chemical process in determining climate change. This discussion will center around several major topic, namely chemical interaction involving hydroxy (OH) and ozone(O₃) in the Troposphere and involving ozone and water vapors in stratosphere. We will also discuss feedback effects between atmospheric chemistry and climate change.

Atmospheric Chemistry And Climate:

Interaction between climate and atmospheric oxidants including ozone, provide important coupling mechanism in the earth system. The concentration of Tropospheric ozone has increase substantially. since the Industrial era. especially in polluted area of the world and has contributed to radioactive warming emission of chemical ozone Precursor have increased as a result of large use of fossil fuel more frequently biomass burning and more intense agriculture practices. The radioactive forcing cannot be accurately determined and must be estimated from models. Recent change in the growth rate of atmospheric CH₄ and in its apartment lifetime are not well understood but indications on there have been changes in source, Strength, Nitrous oxide continue to increase in the atmosphere. The atmospheric chemical composition that could result from climate change are even less will qualified photo

chemical production of hydroxy radicals at most pair with increase water wafer and protected under future global warming other creamy related processes affected by climate change including frequency of lightning flashes in thunderstorms scrounging mechanism that remove soluble space is from the atmosphere the intensity and frequency of convenient transparent effects the natural emission of chemical components.

The Important of Tropospheric OH:

The hydroxyl radical OH is not itself greenhouse gas with a direct radioactive effect on climate, but it is extremely important as a chemical scavenger of many trace gases in the tropospheric. OH is the primary tropospheric scavenger of CH₄, CO, CH₃CCl₃, CH₃Cl, CH₃Br, H₂S, SO₂, DMS and other hydrocarbons and hydrogen containing halocarbons. CH₄ do have direct radioactive effect on climate. Therefore, a change in global OH concentration can impact the atmospheric spirit lifetimes of this species, and thereby modify abundance and climate. the tropospheric ozone by oxidizing 'NO to NO₂' by removing active forms of NO_x and the lower troposphere, by initiating the oxidation of hydrocarbon.

OH And Climate Change:

The primary removal mechanism for CO and CH₄ by reaction with OH, and this same reaction provides the most important direct conversion reaction for OH to other form of HO_x on a global basis. Any prediction of further changing global average tropospheric OH abundance depend on accounting for the simultaneous action of the many coupled HO_x controlling process outline about significant uncertainties are encountered even in investigation of implied trend of OH abundance in the recent past in studies of the CH₄ abundance.

The connection between average tropospheric OH abundance, CO and CH₄ lifetime which abundance CO and CH₄ lifetime and climate has been mentioned above. likely CO and CH₄ emission continue to increase the average OH abundance could decrease subsequently enhancing the tropospheric concentration of CH₄ beyond that expected from direct increase in emission and leading to a larger climate impact. The increasing methane at the measured 1% could decrease atmospheric OH by much as 0.25 % assuming all other trace gas emission remaining at current levels. Reaction of O₃ with Hox back to OH therefore increase in tropospheric concentration of O₃ would lead to increase in OH as discussed below, tropospheric concentration of O₃ would lead to increase in OH as discussed below, tropospheric O₃ concertation may be increasing as a result of direct emission of NO_x change in stratospheric ozone could also have the impact on tropospheric OH concentration because most of the ozone column residue in the stratosphere and because ozone is responsible for much of the atmospheric opacity below 300 nm.

Another mechanism for climate impact on OH concern the magnitude of the source of OH created by the oxidation of NMHC. The low NO_x concentration, the concentration of OH might be decreased by as much as factor of O₂ in the first 100 nm above ground level as result of biogenic emission of isoprene and terpenes. finally change in tropospheric temperature themselves create important change in reaction rates that are strongly temperature dependent. In particular, the reaction of CH₄ with OH has an activation energy of 1710 k an increase of 5K would increase the reaction rate by 10%. The reaction of OH and NO₂ is sensitive to temperature as are the reaction of OH and HO₂ with O₃.

Change in Tropospheric And Stratospheric Ozone:

Ozone place an important dual role in the affecting climate.it is the major absorber of UV radiation at wavelength greater than 200 nm and because of this O₃ is of primary importance is determining the thermal structure in the stratosphere. ozone is also an important absorber of infrared radiation and is the greenhouse gas. This radiative process that determines the net effect of O₃ on climate. The upper tropospheric and lower stratosphere are most effective in causing a surface temperature change with increased ozone in the region leading to increased surface temperature. Because the greenhouse effect produced by given atmospheric ozone increment is directly proportional to the temperature contrast between the radiation absorbed and the radiation re-emitted.

Ozone And Climate Change:

The concern about potential change to stratospheric ozone has centered on the global emission of CFS and the catalytic effect of the resulting reactive chlorine on upper stratosphere ozone. the interference of NO_x produced

from N₂O with the chlorine catalytic cycle. Positive trends in CO₂, CH₄ or Stratospheric H₂O. The efficiency of the NO_x & and ClO_x catalyzed oxygen loss process.

Change in Stratospheric Water:

The tropospheric water vapour percentage in to the stratosphere. The reason for this is still uncertain, but is generally thought to be related to transport through the cold tropical tropospheric, either as a result of this temperature. the water vapour mixing ratio increase with attitude in the stratosphere. reaching about 6 PPMV in the upper stratosphere. The methane oxidation cycle produces two water molecules for each CH₄ destroyed. Thus, increases in CH₄ increase Stratospheric H₂O, which because of water vapors' importance as a major of IR radiation climate implications.

Sulphur Species And Clima:

The surface emission of Sulphur species are particularly SO₂ has been affected on the environmental related to air quality, visibility and acid deposition. The SO₂, reacts with OH, leading to the formation of sulphuric acid aerosol. The subsequent aerosol interaction with Solar and IR radiations should lead to warning of the stratosphere verified by measurement after cooling troposphere the surface temperature changes with volcanic activity have largely been inconclusive and remain controversial. However, the effect of volcanic eruptions on climate are particular importance in attempt into detect the effect on climate change from CO₂ and the other greenhouse gases. The low volcanic activity COS appears to be dominant Sulphur source for maintaining the lower stratospheric aerosols layer. Because the suspected long tropospheric lifetimes of Cos, future emission from coal combustions and other anthropogenic sources may lead to substantial increase in COs concentration that affecting Stratospheric aerosol loading with resulting climate implications.

Conclusions:

This discussion of the potentially importance role of the atmospheric chemistry in climate change has not been very qualified. only a few limits in scope, some of these interaction between atmospheric chemistry and climate. In any case chemical process in the atmosphere represent and important link between trace gas emission and the composition of the atmosphere. it is essential that this chemical process and the interaction with climate we will understand if we are successfully detected and quantify the role of CO₂ and other gases in determining the climate change signal. Chemical activity gas emission and the radioactively active compositions of the atmosphere has important implication for the determination of possible future policy options.

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MATHEMATICS IN MITIGATING CLIMATE CHANGE: AN OVERVIEW

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Abstract

This study examines the important roles that mathematics plays in mitigating and preventing climate change. Complex environmental systems can be effectively modelled, analyzed, and optimized with the help of mathematics. This study illustrates, using a variety of mathematical methodologies, how the integration of mathematical models and computations can improve our comprehension of climate dynamics and aid in the creation of practical mitigation plans for climate change.

Introduction

The average, long-term change in weather patterns is known as climate change. These days, greenhouse gas emissions especially those of carbon dioxide, methane and nitrous oxides are the main culprit. These gases are emitted by the burning of fossil fuels, raising livestock, deforestation, and other activities. These kinds of activities have increased drastically since the 18th century, when the Industrial Revolution started, and as a result, carbon emissions have reached alarming heights. These gases efficiently absorb infrared light, which has the heat-trapping effect because of their unique quantized energies [2]. As a result, the atmosphere blocks the sun light that Earth radiates back into space, creating an insulating layer that boosts Earth's temperature[3]. To survive, society needs to be ready to put adaptation plans and mitigation techniques into place to lessen the harmful consequences of climate change. First and foremost, this necessitates understanding future climate change projections. As of right now, the only reliable technique for projecting how the climate system would change in response to both natural and man-made disturbances is mathematical modelling. It is significant because for many years, mathematics and related techniques have been essential to the study of climate change. Mathematicians evaluate the effects of global warming using data and modelling. Mathematicians look to the past to forecast future patterns. Climate change poses a critical threat to the planet, necessitating interdisciplinary approaches for effective solutions. This paper aims to elucidate the indispensable role of mathematics in the quest to prevent and mitigate climate change.

Mathematical Ways to Study Climate Change

The greatest problem now facing our world is climate change. No region of our planet is immune to its repercussions, which include extreme weather events, sea level rise, and glacier retreat. "The universe is written in the language of mathematics," as Galileo famously stated [1]. If this is accurate, then maybe the answer to stopping climate change lies in mathematics. Below we have listed some Mathematical ways that helps in tracing the climate change and hence mitigating it having an eye on its adverse effect.

1. Modeling and Simulation:

By simulating climatic systems, mathematical models aid in the understanding of intricate interconnections by scientists. This facilitates the assessment of the effects of actions and the prediction of climatic changes.

2. Optimization:

Allocating resources more efficiently, such as figuring out how to divide renewable energy sources most effectively or reducing emissions in supply chains, is made possible by mathematical optimization approaches. Applying game theory to model interactions between countries and develop cooperative strategies for reducing carbon emissions is another way used to reduce climate change effect globally.

3. Data Analysis:

We may better understand climate changes and promote evidence-based decision-making by using statistical approaches and data analysis to uncover significant patterns from large datasets. We can analyze historical climate data to identify trends and patterns of climate change.

4. Carbon Accounting:

Mathematical tools quantify carbon footprints, enabling businesses and governments to track emissions, set reduction targets, and assess the effectiveness of mitigation strategies.

5. Algorithmic Solutions:

Algorithms are used to optimize energy consumption, manage smart grids, and enhance the efficiency of renewable energy systems.

6. Risk Assessment:

Probability theory and statistics are employed to assess the risks associated with climate change, aiding in the development of strategies to adapt to changing conditions.

7. Game Theory:

Applied in international negotiations, game theory helps model strategic interactions among countries, encouraging cooperative efforts to address global climate issues.

8. Remote Sensing and GIS:

Mathematics is fundamental in processing and analyzing geospatial data, aiding in monitoring deforestation, tracking changes in land use, and assessing the impact of climate policies.

Challenges in studying Climate Change:

World relies on mathematicians to create mathematical models on supercomputers that provide accurate forecasts to establish international policies that are compatible with the agendas of individual countries and that have a high probability of averting catastrophic harm to the environment.

Nevertheless, there are considerable obstacles that mathematicians must overcome in this regard. To begin, the climate is a chaotic system that is characterized by the presence of non-linear feedback links between hundreds of millions of variables. It is a well-known truth that it is impossible to accurately forecast the weather more than one week in advance. Second, it is not feasible to use partial differential equations to describe each and every location in the atmosphere[5,6]. As a result, the atmosphere is divided into tiny grid cells, and the average trends in each of these grid cells are determined.

Conclusion:

When it comes to combating climate change, mathematicians play an extremely essential role in every step of the process. There is an infinite amount of mathematics involved in climate catastrophe, ranging from the creation of climate models and the presentation of results that can be comprehended by the general public to the direction of policymakers in the direction of obtaining the most effective outcome potential. On a globe that is getting smaller, growing more dirty, and becoming more crowded, we cannot continue to focus our attention inwardly on ourselves. Mathematicians will undoubtedly be the world's unsung heroes if we are successful in halting or even reversing the damage that has been caused by climate change.

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STUDIES ON BLACK MOLD DISEASE ON ONION AND IT'S CONTROL MEASURES

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Abstract

Black mold is the most diseases of onion in storage and in field. The present study was carried out to isolate the fungus associated with black mold of onion and to control disease with seven or more different systemic and non-systemic fungicides. On the basis of morphological characteristic' *Aspergillus Niger* Van Tieghem was found to be associated with black mold of onion. It was observed that all the fungicides caused significant reduction in the mycelia growth, lesion diameter, spore germination and onion severity. Amongst systemic fungicides, carbendazim brought about highest reduction followed by mycobutanil, respectively. The higher concentrations (1000 ppm and 2000 ppm) of all the fungicides showed more effective than lower concentrations (125 ppm and 500 ppm). The current study showed effective utilization of the control of black onion caused by *A. niger*.

Keywords: *Aspergillus niger*, black mold, fungicides, onion.

Introduction:-

Onion (*Allium cepa* L.) is important commercial vegetable crop in the world as well as in India. It is growing during kharif and rabbi seasons as a important part of food, while utilized as salad and also cooked as vegetable Though India ranks first in the world in area under onion cultivation and second in its production, but the productivity is low. The production in India spread over an area of about 0.33 million hectares with an average annual production of 4.70 million tones (Agroone news pepper, 2015).

In Marathwada reasons mostly Nasik district is high production of onions are grown extensively as main season crops and have become highly economically creativity for farmers. But, other crops these are attacked by variety of pathogens in the field and as well as in storage, (Agroone news pepper, 2015). The production of onion is limited to specific period and storage of this vegetable is important to make it available to consumers in all seasons of the year. Great storage loss has occurred due to rotting fungal pathogens. In Marathwada reason The fungal pathogen, *Aspergillus niger* is known to cause rotting in storage onion bulbs. This fungus cause a disease known as black mold onions.



However, no detailed studies have been carried out to identify the fungus.

This causes onion bulbs in Marathwada region mostly in Beed district. Application of fungicides is one of the most effective control methods for the management of fungal pathogens. Therefore necessity has risen to study the post-harvest fungicidal treatments on the control of black mold of the storage onion bulbs. Therefore present study enabled, “Studies on black mold disease on onion and its control measured,” was carried out with the main objective of isolating and identifying the fungal pathogen causing black mold of onion in the field as well in storage from different areas or localities in Beed district and to work out the management rules for the control of fungal onion with some fungicides.

Preparation of Media:-

Composition of PDA:-

Potato – 200 gm.

Dextrose – 20 gm.

Agar Agar – 20 gm.

Distilled Water – 1000 ml

Preparation of media:-

Peeled the potato & cut into small pieces & wt. 200gm than add it into beaker along with distilled water in will be whitish than filtrate by muslin cloth added it 20gm dextrose and stir properly than heat it for addition of 20gm agar agar more the volume 1000 ml then sterilized and use for pouring for plate and growth of fungi

Materials and Methods:-

• Onion Collection:-

The diseased affected onion is collected in the fields, markets, and at storage places from different areas of Beed districts.

Isolation Method:-

These collected onion samples are used immediately or stored at 10 °C or room temperature in the laboratory. The aseptically isolated portions from onion bulb were purified and maintained on Potato Dextrose Agar (PDA) medium. The isolated pathogen was identified on the basis of morphological, reproductive and cultural characteristics.

For mode of infection, fungal pathogen was re-inoculated to the healthy onion bulbs by different methods as adopted by. One set of onion bulbs (surface) was sprayed with spore suspension without injury. Another set of onion bulbs was inoculated by introducing the drop of suspension after cutting them with some needles. Un-inoculated worked as control. All the onion bulbs were kept in clean, incubated at 23+ 1°C for ten days. Afterward, disease symptoms were studied and identification of pathogen was determined by comparing with original culture.

Chemical control:-

More fungicides, both systemic and non-systemic, viz. carbendazim, myclobutanil, bitertanol, hexaconazole, mancozeb, captan and zineb were used in different concentrations to control the black mold through food poisoning technique (Falcke, 1907; Grower and Moore, 1962). Appropriate quantity of each fungicide was separately dispensed in molten sterilized PDA medium to make desired concentrations for each fungicide.

The mycelial discs of 5 mm diameter, taken from 10 days old culture of the fungal pathogens were aseptically placed in the center of solidified poisoned PDA. Five replications were maintained for each concentration. The Petri-plates were incubated at 24 ± 2°C and observations on the mycelial growth of test fungus were noted after seven days of incubation. The growth of test fungus on non-poisoned PDA served as a control. The percent inhibition in growth due to various fungicidal treatments at different concentrations was computed.

$$\text{Mycelial growth inhibition (\%)} = [(dc-dt)/ dc] \times 100(\%)$$

Dc = average diameter of fungal colony in control, and

Dt= average diameter of fungal colony in treatment group.

Effect of fungicides on lesion diameter

Fresh samples of onion bulbs were dipped separately in different fungicidal concentrations for 5 minutes before inoculation of the pathogen by pin prick method as above. Onion bulbs were then dried under shade and kept in card board trays and incubated at $24 \pm 2^\circ\text{C}$ for different duration.

The observations were recorded after 4days to 10 days of incubation by measuring the average diameter of the resultant lesion.

Effect of fungicides on onion upper liar severity

Different concentrations of fungicides were estimated for their efficiency on onion upper liar severity under storage conditions. Upper liar of onion severity was recorded as per the grade scale and formula adopted by Mckinney (1923).

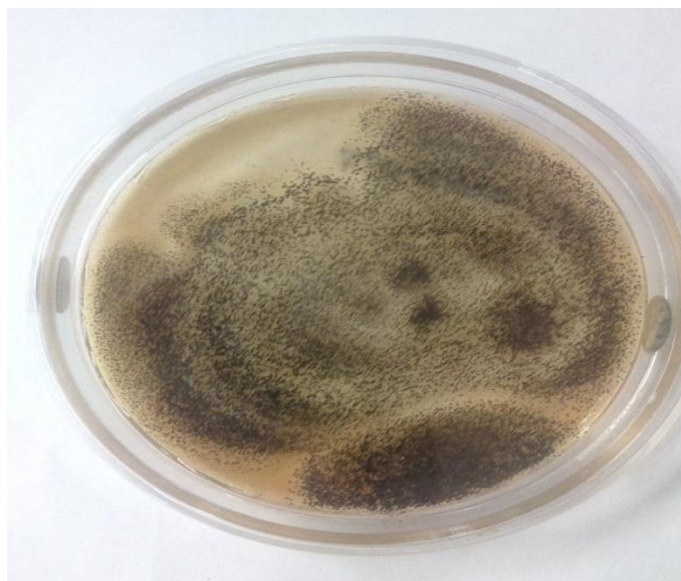
Sum of all Numerical Rotting

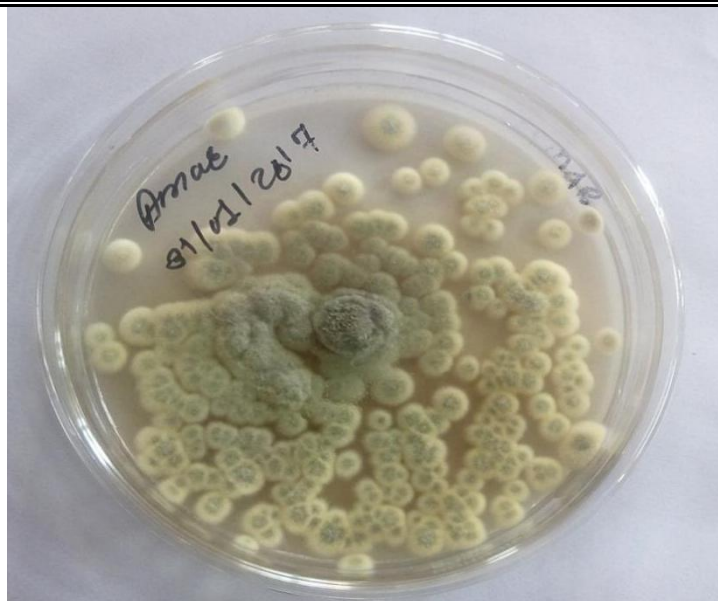
Upper Layer onion Severity = ----- X 100

No. of Vegetable examined X Maximum grade Value

Identification of Isolate:-

The pure culture of the fungal isolated were prepare for microscopic observation and identification. The cultural and morphological characteristic the isolate were observe end noted end form part of criteria used for identification. Detail morphological of the fungi such as hyphae in reproductive strata in chain or single. The types of spore etc. were observed and recorded





Results

A. niger was identified as a causal organism of black mold of onion. The primary symptom was a black discoloration of tissue on onion bulbs. Infected bulbs showed blackening at the neck. In advanced stages, the entire bulb appeared black and become dried-up (Plate A). Colonies on Potato dextrose agar (PDA) at $24 \pm 2^\circ\text{C}$ were initially white, quickly turns black with conidial production. The mycelium was septate and hyaline. Conidiophores arise from the mycelium. Conidiophores is long (400-3000 μm), smooth, and in a globose vesicle (30-75 μm in diameter). Metulae and phialides cover the entire vesicle. Conidia are brown to black, very rough, globose and measure 4-5 μm in diameter.

The different concentrations of systemic and non-systemic fungicides evaluated for their effect on the inhibition of the mycelia growth, lesion diameter and disease severity showed significant reduction in fungal onion particularly at greater concentration. All the systemic fungicides at different concentrations brought about significant inhibition in the spore germination. Spore germination was significantly suppressed due to application of hexaconazole and mancozeb results.

It was observed from the results that the severity of black mold of onion reduced significantly after dip treatment in all the concentration of fungicides for different duration. The maximum reduction in the severity of black mold onion was found at highest concentration (1000 ppm) followed by lower concentrations i.e. 500 ppm and 250 ppm, respectively. Amongst systemic the fungicides, the carbendazim and mancozeb in reducing the severity of onion rot caused by *A. Niger*

Discussion

The fundamental agent of black mold of onion showed similar symptoms as described earlier by different workers on onion bulbs in storage (Dang and Singh, 1982; Quadri *et al.*, 1982; JoonTaek *et al.*, 2001). The results showed that infection occurred on the bulbs of onion as indicated by death of the foliates at maturity. The neck and shoulders of infection bulbs develop black spore and infected scale shrivels. As the disease progress, the fungus may infect the freshly inner scale and whole outer surface may become black and may cause decay.

Pathogenicity test of fungi studied under present investigation showed that the injury past to infection was prerequisite for the diseases. Our results are in conformity with those of Harja and Batra (1978) who considered *Phoma destructiva*, and other species of fungi more virulent on injured than on non-injured tomato fruits. Antifungal activity of seven fungicides acquired in present study is in conformity with several previous results (Singh *et al.*, 1997; Srinivasan and Shanmugam, 2006) on different rot fungi.

Presently, hexaconazole and mancozeb proved effective in reducing the lesion diameter and spore germination. The reduction in the lesion diameter may be due to effect of fungicides on the mycelial growth of fungal pathogens responsible for rotting of these vegetables in storage. Similar findings were observed by Patel *et al.* (2005). Severity of black mold of onion reduced significantly after dip treatment in all the concentration of fungicides for different duration....

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CHECKLIST OF SOME WILD EDIBLE PLANTS FROM THANE DIST, MAHARASHTRA, INDIA.

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Abstract

Indian traditional knowledge about the wild edible plants is most important part for the sustainable development. Peoples are addicted to eat hybrid food. The present research focus on the survey and documentation of wild edible plants, with help of local and tribal peoples. In the present investigation about 66 species of wild edible plants was been noted, belonging to 34 different families. From this all 8 species belongs to the family Amaranthaceae, 6 species belongs to the family Cucurbitaceae, 4 species belongs to Caesalpiniaceae, 3 species each from Apiaceae, Araceae, Chenopodiaceae, Dioscoreaceae, Fabaceae, and Liliaceae. 2 species each from Apocynaceae, Asteraceae, Convolvulaceae, Mimosaceae, and Polygonaceae, One species each from Aizoaceae, Asclepiadaceae, Boraginaceae Basellaceae, Brassicaceae, Commelinaceae, Elaeagnaceae, Euphorbiaceae, Lamiaceae, Moraceae, Moringaceae, Nyctaginaceae Nymphaeaceae, Oxalidaceae, Poaceae, Portulacaceae, Rhamnaceae, Rutaceae, and Solanaceae, Ulmaceae. (Table 1). From this it is seen that Amaranthaceae family is dominant and edible, after that Cucurbitaceae, followed by Caesalpiniaceae. From all these families some are essential for nutrition's purpose and enhancement of health (Bhogaokar *et al.*, 2010). They are used to treat the various diseases like Diabetics, Malaria, Jaundice, Stomach disorder, Cough, Piles, Amebic stool, Gastritis, Arthritis, blood purification, Cyst, Worm, etc. (Sawarkar PU, Kulkarni DK. 2015).

Keywords: Wild Edible Plants, Ethanobotany, Thane, Leafy Vegetables, Wild Fruits

Introduction

Agriculture plays vital role in the Indian financial system. About 70% of the rural population depends upon agriculture. In India there is long growing season, wide variation in climatic conditions, fertile soil and plain areas (Kekane, 2013). It includes crop plants and the wild edible plants. Wild edible plants (WEPs) are the species those are neither cultivated nor domesticated but growing wild and are however edible (Beluhan and Ranogajec, 2010).

Different wild edible plants have played a significant role in all geographical regions of world throughout human history (Sekeroglu *et al.*, 2006). Poor communities through the world are dependent on these wild plants for their food, nutrition, subsistence needs and improving rural livelihoods as well (Sundriyal *et al.*, 2003; Mishra *et al.*, 2008; Tiwari *et al.*, 2010; Badhani *et al.*, 2011). The role of WEPs in ensuring food and nutritional security to the rural or indigenous communities is now widely recognized. According to history we the humans have utilized over 7000 WEPs (Grivetti *et al.*, 2000).

Material and Methodology:

Study Area: Thane District forms a part of North Konkan Region. This lies between the Sahyadri hills in the east and the Arabian Sea in the West. It has coastal line of about 113 Kms. Annual rainfall is more than 25000 mm. This district is a home land of various tribal community followed by different indigenous ethnic groups and subgroups. More than 1.5 million people living here are tribal such as Varali, Kokana, Mahadev Kohli, etc., of which Varali tribe are well known for their paintings throughout the world. Geographically Thane district cover an area 9,33,700 hectares of which 3,30,300 hectare covered with various common and endangered plant species.

Data Collection & Analysis: Since April 2022 till the date survey is being carried out. Initial stage of survey i.e collection of information related to wild edible plants and fruits is been noted from the various sources like local markets, retail fruits-vegetable seller, some local peoples and the tribal peoples living the areas around (i.e.

Ambarnath, Belapur, Ulhasnagar, Kalyan and Shahapur). Various surveys were been carried out with the information noted down and proper entries of plants was done. Identification was completed by Cooke flora (1967), Singh *et al.*, (2001).

Result and Discussion: In the present investigation about 66 species of wild edible plants was been noted, belonging to the 34 different families. From this all 8 species belongs to the family Amaranthaceae, 6 species belongs to the family Cucurbitaceae, 4 species belongs to Caesalpiniaceae, 3 species each from Apiaceae, Araceae, Chenopodiaceae, Dioscoreaceae, Fabaceae, and Liliaceae. 2 species each from Apocynaceae, Asteraceae, Convolvulaceae, Mimosaceae, and Polygonaceae, One species each from Aizoaceae, Asclepiadaceae, Boraginaceae Basellaceae, Brassicaceae, Commelinaceae, Elaeagnaceae, Euphorbiaceae, Lamiaceae, Moraceae, Moringaceae, Nyctaginaceae Nymphaeaceae, Oxalidaceae, Poaceae, Portulacaceae, Rhamnaceae, Rutaceae, and Solanaceae, Ulmaceae. (Table 1). From this it is seen that Amaranthaceae family is dominant and edible, after that Cucurbitaceae, followed by Caesalpiniaceae and rest all. From all these plants some of them are very essential for nutrition's purpose and enhancement of health (Bhogaokar *et al.*, 2010). Among these plants species most of the plants are used for medicine purposes, like, Diabetics, Malaria, Jaundice, Stomach disorder, Cough, Piles, Amebic stool, Gastritis, Arthritis, blood purification, Cyst, Worm, etc. Different dishes prepared by them having medicinal properties (Sawarkar P. U., Kulkarni D. K. 2015).

(Table 1)

Sr. No	Botanical Name & Common Name	Family
	<i>Abrus precatorius</i> [Gunja / Haripatti]	Fabaceae
	<i>Achyranthes aspera</i> [Chirchita/ Aghada]	Amaranthaceae
	<i>Alternanthera sessilis</i> [Gudrisag]	Amaranthaceae
	<i>Amaranthus paniculatus</i> [Lalmath, Rajagira]	Amaranthaceae
	<i>Amaranthus polygamous /viridis</i> [chauli]	Amaranthaceae
	<i>Amaranthus spinosus</i> [Katili, kate math]	Amaranthaceae
	<i>Amaranthus blitum subsp. oleraceus</i> [Tandulja]	Amaranthaceae
	<i>Asparagus racemosus</i> [shatavari]	Liliaceae
	<i>Alocasia indica</i> [shewra]	Araceae
	<i>Amorphophallus campanulatus</i> [Suran]	Araceae
	<i>Anethum sowa</i> (graveolens) [suva/shepu]	Apiaceae [umbeliferae]
	<i>Basella alba</i> [poi /lalbachu,/ indian Spinach]	Basellaceae
	<i>Bauhinia variegata</i> [kachnar]	Caesalpiniaceae
	<i>Boerhavia diffusa</i> [patherchatta]	Nyctaginaceae
	<i>Brassica juncea</i> [Mohari]	Brassicaceae
	<i>Carthamus tinctorius</i> [kardi/safflower]	Asteraceae
	<i>Canavalia gladiate</i> [sword bean]	Fabaceae
	<i>Cassia tora</i> [Takala]	Caesalpiniaceae
	<i>Carissa carandas</i> (Karvanda)	Apocynaceae

	<i>Celosia argentea</i> [kurdu /safedmurga]	Amaranthaceae
	<i>Centella asiatica</i> [brahmi]	Apiaceae/ [umbelliferae]
	<i>Chenopodium album</i> [bathua]	Chenopodiaceae
	<i>Chlorophytum tuberosum</i> [phodshi/kuchela]	Liliaceae
	<i>Coccinia grandis</i> [kundru/Jangalitondli]	Cucurbitaceae
	<i>Colocasia esculenta</i> [alu / Arum/arvi]	Araceae
	<i>Commelina benghalensis</i> [kena / kanchata]	Commelinaceae
	<i>Cordia dichotoma</i> [Bhokar]	Boraginaceae
	<i>Cressa cretica</i> [rudanti/ kharda]	Convolvulaceae
	<i>Dendroclamus strictus</i> [Bamboo]	Poaceae
	<i>Digera muricata</i> [manjarik]	Amaranthaceae
	<i>Dioscorea alata</i> [China Kand]	Dioscoreaceae
	<i>Dioscorea bulbifera</i> [Jaminkand]	Dioscoreaceae
	<i>Dioscorea digitata</i> [Jaminkand]	Dioscoreaceae
	<i>Elaeagnus conferta</i> [Nerle]	Elaeagnaceae
	<i>Ficus racemosa</i> [Umber]	Moraceae
	<i>Holarrhena antidysentrica</i> [Kurchi, kuda]	Apocynaceae
	<i>Holoptelea integrifolia</i> [Papadi]	Ulmaceae
	<i>Ipomoea aquatic</i> [kalmisag/ phopali]	Convolvulaceae
	<i>Lagenaria vulgaris</i> Jangalilauki/ bottlegourd]	Cucurbitaceae
	<i>Launaea procumbens</i> [bhopatri]	Asteraceae
	<i>Luffa acutangulavaramara</i> [Kadawaturi]	Cucurbitaceae
	<i>Luffa cylindrical</i> [ridged gourd/ turi]	Cucurbitaceae
	<i>Mimosa pudica</i> [lajjadu]	Mimosaceae
	<i>Momordica charantia</i> [wild karela]	Cucurbitaceae
	<i>Momordica dioica</i> [phagla/kantole]	Cucurbitaceae
	<i>Moringa oleifera/pterigosperma</i> [shevga/ drum stick]	Moringaceae
	<i>Murraya koenigii</i> [curry leaf]	Rutaceae
	<i>Nelumbo nucifera</i> [lotus]	Nymphaeaceae
	<i>Rumex elongates</i> [chukka bhaji]	Polygonaceae
	<i>Salicornia hebeacea</i> [Jointed glasswort, soda]	Chenopodiaceae

	<i>Oxalis corniculata</i> [tipali/ tinpatiya]	Oxalidaceae
	<i>Parkinsoniaaculeate</i> [ram baval]	Caesalpiniaceae
	<i>Pentatropiscapensis</i> [shingroti]	Asclepiadaceae
	<i>Peucedanumgrande</i> [wild carrot/baphali]	Apiaceae
	<i>Phyllanthus emblica</i> [Jangaliaamla]	Euphorbiaceae
	<i>Physalis minima</i> [sun berry]	Solanaceae
	<i>Pithecellobium dulce</i> [jungle imli]	Mimosaceae
	<i>Polygonum glabrum</i> [jungle chaurai]	Polygonaceae
	<i>Portulaca oleracea</i> [ghol]	Portulacaceae
	<i>Rotheca serrata</i> [Bharangi]	Lamiaceae
	<i>Sesbania grandiflora</i> [Hatga/agasti]	Fabaceae
	<i>Smilex indica</i> (Ghotwel)	Liliaceae
	<i>Suaeda fruticosa</i> [Saloonakbuti]	Chenopodiaceae
	<i>Tamarindus indica</i> [imli]	Caesalpiniaceae
	<i>Trianthema monogyna</i> [Shveta]	Aizoaceae
	<i>Zizyphus mauritiana</i> [Bor]	Rhamnaceae

Conclusion:

We can conclude that exploring and documentation of wild edible plants is more important. With that enhancing the knowledge of tribal is needed. Least use of hybrid varieties, WEPS should be increase and it should be commercialized.

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ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF RANOLAZINE IN BULK AND PHARMACEUTICAL DOSAGE FORM BY RP-HPLC

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Abstract

A simple, economical, specific, accurate, precise and validated reverse-phase high-performance liquid chromatography (RP-HPLC) method has been developed for the study of Ranolazine in the pharmaceutical dosage form (tablet). The chromatographic separation was achieved on C-18 column (250 mm x 4.6 mm, 5 μ particle size) at 25°C (room temperature) using mobile phase of Buffer (6.80 gm potassium dihydrogen ortho-phosphate in 1000 ml water, pH adjusted to 4.0 with Ortho Phosphoric Acid and sonicated for 5 min.): Acetonitrile (ACN) (20:80v/v) at flow rate 0.6 ml/min. Quantification was achieved with a UV detector at 273 nm. The retention time of Ranolazine was found to be 3.01 min. The proposed method was validated according to ICH guidelines for assay study of Ranolazine tablets. The developed method was found to be good for successful separation for the determination of Ranolazine in its bulk and pharmaceutical dosage form.

Keywords: RP-HPLC, UV, Ranolazine, Assay, Chromatography, ICH Guidelines.

Introduction:

Cardiovascular disease is the main reason of death in the western world about more than one million deaths per year.^[1] In the United States, stable angina pectoris affects more than 9 million of population as a part of morbidity correlated with coronary artery disease. The condition is caused due to pathological instability of cardiac oxygen demand and supply. Chronic angina is a condition that reduces quality of life and affects 6.4 million Americans is related with reduced life anticipation.^[2,3] Current treatment that lessen angina frequency and increase the entrance at which myocardial ischemic symptoms become visible includes drugs, exercise conditioning. Several new drugs are being investigated for improvement in the treatment of chronic angina.^[4] The new anti-ischemic drug ranolazine is a specific late sodium current inhibitor which reduces sodium overload and enhances disturbed ion stability. This is related with symptomatic improvement of angina.^[5]

Ranolazine is a piperazine derivative, a well-tolerated drug that specifically inhibits the late sodium current. It is an antianginal class drug.^[6] Moreover, ranolazine has a favorable metabolic effect that does not affect heart rate/blood pressure.^[7,8] Ranolazine was approved on January 2006. Ranolazine is currently accepted as a second-line drug in the treatment of chronic stable angina pectoris. There are several reported beneficial effects of ranolazine, a drug that decreases angina symptoms, with a mechanism of action different from that of currently available therapies.^[9] Additionally, ranolazine shows anti-arrhythmic effects. Contraindications may occur in some cases or may remain unrelieved from anginal discomfort with conventional drug therapy.^[10] Among newer alternatives, ranolazine indirectly reduces the intracellular calcium overload associated with cardiac ischemia. It is known as a valid addition to traditional therapy. Recent reports showed some potential side effects of ranolazine in the arrhythmia therapy.^[11,12]

Monograph of Ranolazine:

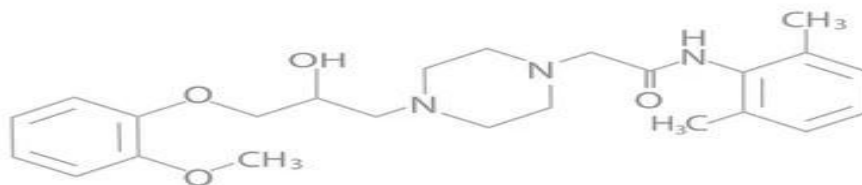


Fig.1: Chemical structure of Ranolazine

Drug Name	Ranolazine
IUPAC name	<i>N</i> -(2,6-dimethylphenyl)-2-[4-[2-hydroxy-3-(2-methoxyphenoxy) propyl] piperazin-1-yl] acetamide
Molecular formula	C ₂₄ H ₃₃ N ₃ O ₄
Molecular weight	427.5 g/mol
Category	Antianginal
Solubility	Soluble in dichloromethane, methanol; Sparingly soluble in tetrahydrofuran, ethanol, acetonitrile, acetone; Slightly soluble in ethyl acetate, isopropanol, toluene, ethyl ether; Very slightly soluble in water
Physical forms	White to off-white solid
Melting point	120-122°C
pKa	2.2

Table-1: Drug profile of Ranolazine Materials And Method:

Instrument and apparatus: A HPLC Instrument (Thermo fisher Scientific) with UV detector, auto injector and Chromquest Version 4.1 Software was used. The chromatographic analysis was performed on C-18 column (150 mm x 4.6 mm, 5 μ particle size). Analytical balance (ESSAE, VIBRA+), digital pH meter (LABINDIA) was used during the analysis.

Chemicals and Reagents: Working standard drug of Ranolazine was obtained from Yarrow Chem Products, Mumbai. HPLC grade Acetonitrile, Ortho-phosphoric acid and Potassium dihydrogen ortho phosphate were used for analysis. Water was purified with Milli-Q Millipore system. All the solvents and solutions were filtered through a filter paper to get clear solution. The commercial fixed dose product tablet was obtained from the local market.

Experimental Work:

Preparation of Buffer: Weigh accurately about 6.80 gm potassium dihydrogen ortho phosphate in 1000 ml water, sonicate to dissolve. pH was adjusted to 4.0 with Ortho Phosphoric Acid and mix well. The prepared solution was filtered through a filter paper to get clear solution.

Preparation of Mobile Phase: Prepare mixture of Buffer: Acetonitrile in ratio of 20:80 % v/v and filter the mixture.

Preparation of Solutions:

Preparation of standard solution: Weigh accurately and transfer about 100 mg of Ranolazine working standard to a 100 ml volumetric flask. The drug was dissolved and diluted to make volume with mobile phase.

Preparation of sample solution: 5 ml solution from the prepared stock solution was removed and transferred to a 100 ml volumetric flask. It was dissolved and diluted and make up volume with mobile phase solution.

Method Development:

Sr. No.	Parameter	Applied Conditions
1	Column	C18, 150 cm x4.6 mm, 5µm
2	Mobile phase	Buffer: Acetonitrile (20:80)
3	Wavelength	273 nm
4	Flow rate	0.6 ml/min
5	Injection volume	10µl
6	Runtime	5 minutes

Table-2: Chromatographic conditions

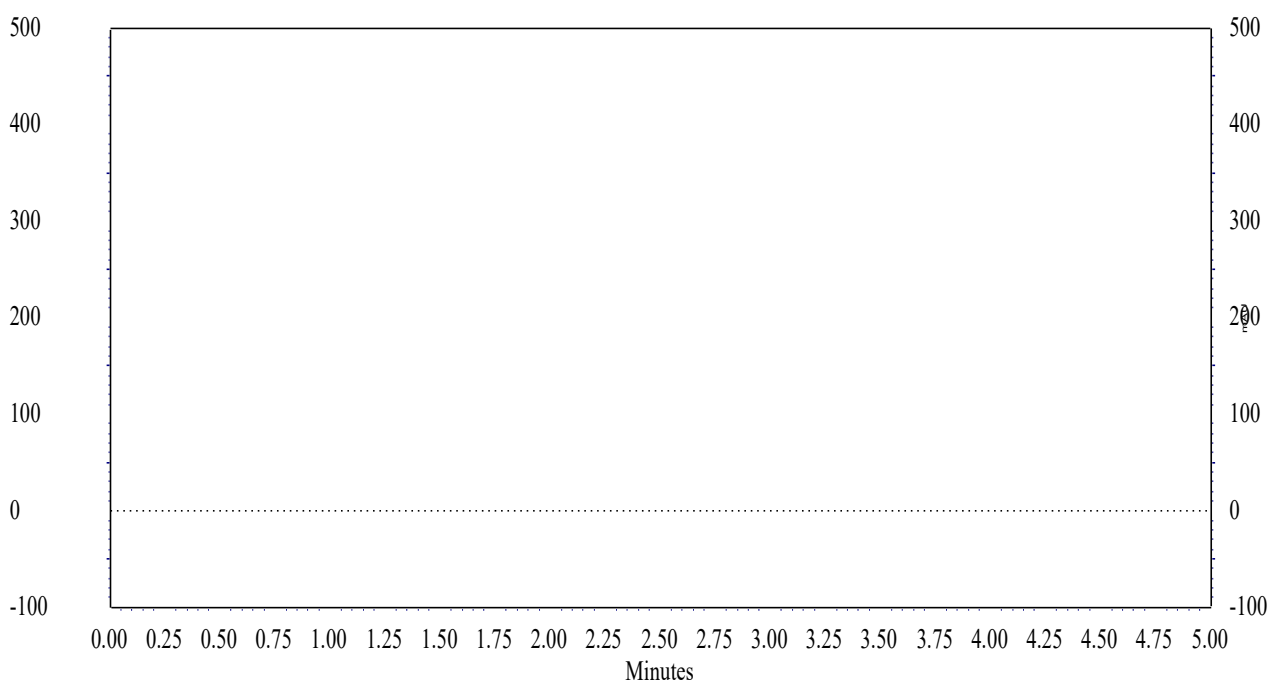


Fig.-2: Chromatogram of blank injection of Ranolazine

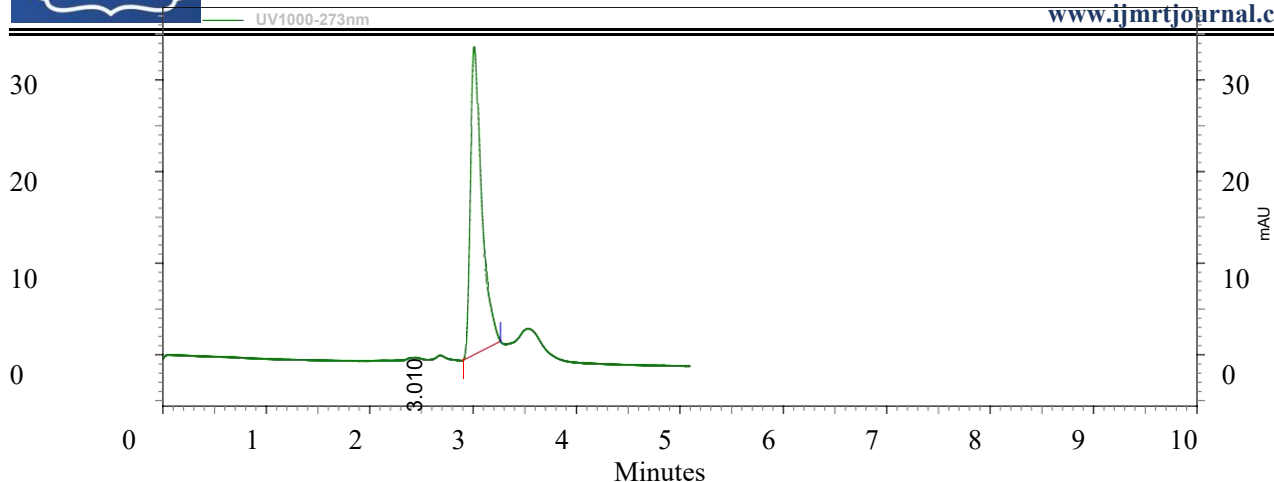


Fig.-3: Chromatogram of standard injection of Ranolazine

Method Validation Parameters:

Linearity

The method developed for estimation of Ranolazine has been validated as per ICH guidelines. Working standard solutions of Ranolazine in the concentration range 30ppm to 130ppm was injected into chromatographic system. The chromatograms were developed and the peak area for each concentration was obtained. Calibration curve of Ranolazine was obtained by plotting peak area v/s applied conc. of Ranolazine. The linear correlation coefficient was found to be 0.9987.

Sr. No.	Conc. (ppm)	Area
1	30	150720
2	50	259366
3	70	382090
4	90	479917
5	110	584623
6	130	713977

Table-3: Linearity of Ranolazine

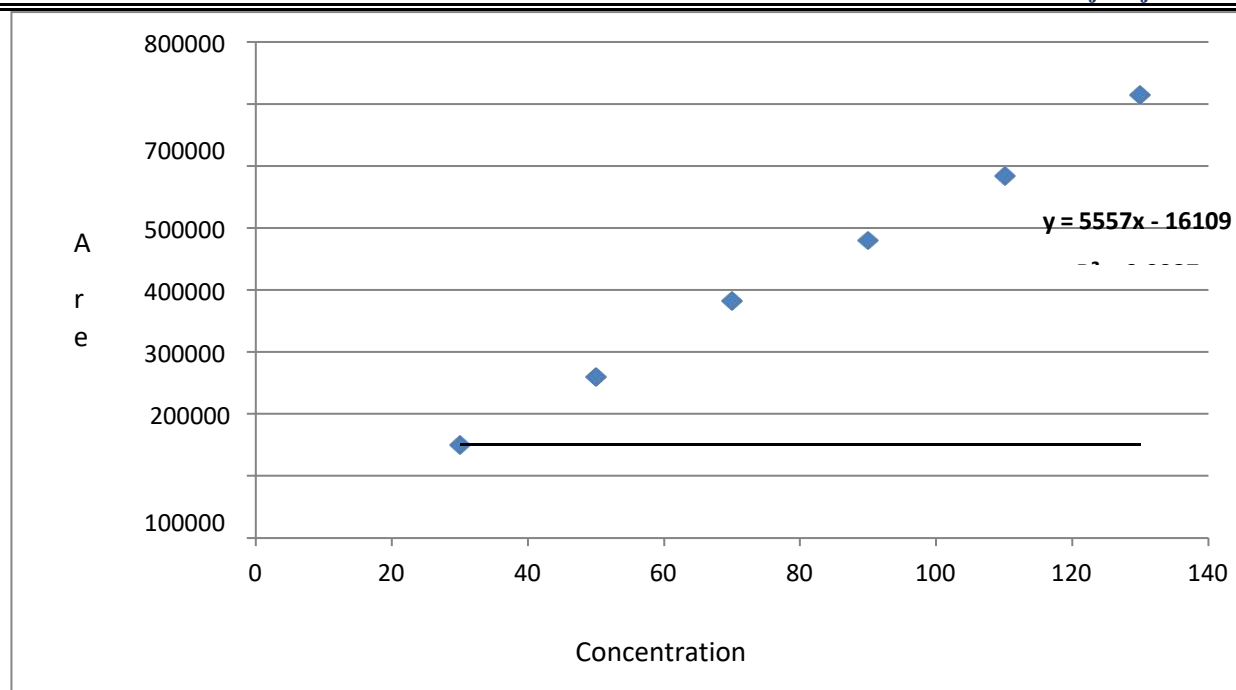


Fig.-4: Calibration curve of Ranolazine

Accuracy

The accuracy (% recovery) of the method was determined by calculating recovery of Ranolazine. Known amount of Ranolazine (80ppm, 100ppm, 120ppm) was added to a pre quantified sample solution and the amount of Ranolazine was estimated by measuring the peak area ratios and by plotting these values to the straight-line equation of calibration curve. From the obtained data percentage recovery and standard deviation of percentage recovery were calculated. The results are given in table no.3.

PARAMETER	Sample solution Area	Standard solution Area	Conc.Of sample	Recoveryin ppm	% Recovery
Level 1	477695	479917	90	89.58	99.54%
Level 2	519902	518752	100	100.22	100.22%
Level 3	580138	584623	110	109.16	99.23%

Table-4: Recovery studies of Ranolazine

Precision:

Precision was calculated by absorbance of solution repeatedly. The results are calculated in terms of ‘relative standard deviation’ (RSD). The inter-day and intra-day precision study of Ranolazine was carried out by estimating the corresponding absorbance 3 times on the same day and on 3 different days.

Sr. No.	Conc.	Morning	Afternoon	Evening
1	25	140640	140283	140090
2	75	414547	414085	412148
3	100	539678	539947	535093

Table-5: Intra-day Precision

Sr. No.	Conc.	Day 1	Day 2	Day 3
1	25	140862	142248	140640
2	75	412062	411482	414547
3	100	539141	539266	539678

Table-6: Inter-day Precision

LOD and LOQ

Limit of detection (LOD) and limit of quantification (LOQ) were calculated for sensitivity of the method. LOD is lowest detectable concentration of the solution by the method and LOQ is the minimum identified concentration. LOD and LOQ are calculated as per ICH guidelines.

Conc.(ppm)	Area	LOD	LOQ
25	477695	0.67	2.05
25	479917		
25	478364		

Table No-7: LOD and LOQ

Robustness:

To determine the robustness of the developed method, 2 parameters from the optimized conditions were varied. Robustness was carried out by change in flow rate and wavelength.

Sr. No.	Flow rate	Area
1	0.5 ml/min	236859
2	0.7 ml/min	230999

Table-8: Change in flow rate (± 1 ml/min)

Sr. No.	Wavelength	Area
1	271	232444
2	275	237048

Table-9: Change in wavelength (± 2 nm)

Assay:

10 tablets of marketed formulation of Ranolazine weighed and crushed. Powder equivalent to 500mg weighed and added to 50ml of mobile phase, dissolved and sonicated. Volume is made upto 100 ml with mobile phase. Solution is filtered and 1 ml of solution is transferred to a volumetric flask and diluted to 100ml.

Sr. No.	Solution	Area	Assay
1	Standard solution	259376	99.41 %
2	Sample	257837	

Table-10: Assay of Ranolazine

Results:

Linearity- Linear concentration of Ranolazine was found in range of 30-130 ppm. Correlation coefficient of the calibration curve was found to be 0.9987.

Accuracy- Three concentrations of drug as 80%, 100%, 120% was analyzed. The % recovery of Ranolazine was found to be 99.54%, 100.22%, 99.23% respectively.

Precision-

Inter-day precision of drug was found in range 0.05- 0.62%. Intra-day precision of drug was found in range 0.20- 0.51%.

LOD and LOQ-The limit of detection (LOD) and limit of quantification (LOQ) were found to be 0.67 and 2.05 respectively.

Robustness- Small changes in method like flow rate and wavelength are made and there were no recognized change in results and are within range as per ICH guidelines.

Assay- Standard and sample solutions were analyzed for determination of assay of Ranolazine. The % assay of drug Ranolazine was found to be 99.41%

Summary:

A sensitive rapid, precise simple and accurate RP-HPLC method was developed and validated for the estimation of Ranolazine in bulk and tablet dosage form. The mobile phase was used as Buffer: Acetonitrile in 20:80 concentrations with flow rate of 0.6 ml/min. Detection was carried out at 273 nm. The retention time of ranolazine was found to be 3.01 min. The correlation coefficient was found ≤ 0.999 . The accuracy was performed by % recovery of ranolazine. The % recovery and other validation parameters were found in limit.

Conclusion:

The proposed method of development and validation of was simple, sensitive, accurate and precise for the estimation of Ranolazine in dosage form was passed the criteria of standard. A HPLC method for Ranolazine was developed and validated in tablet dosage form as per ICH guidelines. The results are found to be complying with the acceptance criteria for each of the parameter. The peak of Ranolazine was found well separated at 2-4 min. The developed method was validated for various parameters as per ICH guidelines like system suitability, accuracy, precision, linearity and robustness. The correlation coefficient and percentage recovery was obtained in acceptable

range.

Hence it is concluded that the assay method is found to be valid in terms of reliability, accuracy and precision and hence it is suitable for routine use for the assay of Ranolazine in tablet dosage form.

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Conflict Of Interest:

The authors declare no conflicts of interest to publish this manuscript.

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MATHEMATICS ANXIETY – ROLE OF TEACHER

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Abstract

The article seeks to investigate the disposition of mathematics anxiety. It studies about the fright of mathematics, its symptoms, causes and ways to overcome regarding the school level and under graduate students. Out of the root causes of mathematics fright, curriculum structure, schools facilities, instructional techniques, teacher's teaching performance, use of tools and technology and evaluation system are the main. In the same way, lack of proper incentives for mathematics teachers and the negative perception of the students and teachers about mathematics are also the important causes. The study has revealed that mathematics anxiety exists among students, which are characterized into negative perception of the students towards mathematics and others too. The main causes of mathematics fright include test and examination, individuals, teachers, parents, peers and the nature of mathematics. The only ways to overcome mathematics anxiety is the intensive efforts made by all the stakeholders.

Keywords: Mathematics, fright, anxiety.

Introduction

Mathematics anxiety is defined as “ A feeling of tension, apprehension, or fear that interferes with mathematics performance”. It is a phenomenon that is often considered when examining student's problems in mathematics. This anxiety is often linked to testing anxiety. It can cause distress and likely causes a dislike and avoidance of all mathematics related tasks. Mathematics anxiety proves to be a widespread problem, impacting adolescents and adults worldwide.

The endemic adult innumeracy that is so deeply embedded in modern Western societies is inextricably linked with the spectrum of mathematics anxiety, negative mathematics attitudes and disgust to the learning of mathematics so often encountered by practitioners among adult learners. These aversive affective behaviours are typically founded on negative early mathematics learning experiences in the latter years of primary education, during the transition from instruction in concrete procedures to increasingly sophisticated and abstract concepts. Pupils' difficulties during that period can be compounded, if not caused, by the guidance they receive from teachers who may themselves be mathematically averse and even covertly innumerate in an integrative sense. Indeed, among undergraduate cohorts pre-service primary teachers who may be characterised by such negative attributes have been found to be disproportionately over-represented.

Significance of Mathematics

Mathematics is very interesting and fun provoking subject for those learners who can really enjoy their learning. On the contrary, mathematics can also be a frustrating subject for many children who have problems with computation and application. This shows that, many people have mixed feelings about mathematics. Thus, many students feel mathematics as a boring and subject and they hate mathematics, and try to avoid it by the cause of mathematics anxiety. Even teachers and parents have negative attitudes towards mathematics; it is expressed as a hard subject that is uninteresting, and it is not for cool and engaging people. Of all the most important cause of poor performance in mathematics at school level may be the phobia in mathematics. Thus the study can help the concerned teachers and the educational administrators to run and support the students who are suffering due to the lack of support and other resources, and the perceived barriers that impact on classroom instruction and supports.

Symptoms

The mathematics teacher must know the symptoms of mathematics anxiety. Mathematics anxiety can be manifested in many different ways. A student may believe he or she is incapable of doing mathematics problems before attempting the problem or even before the teacher explains the problem. Mathematics anxious students may dread

even going to mathematics class. There is a greater fear of answering a teacher's question incorrectly in mathematics class than other classes. In mathematics classes Students with math anxiety may also feel embarrassed, irritated, frustrated, and fearful. Not all of these symptoms are external, so the teacher should try to know his students as best he can so he can tell if any of the students have these negative feelings about mathematics. The teacher does this by being aware of the students' facial expressions and body language, among other indicators. Students may experience mathematics anxiety because they have never experienced success in their mathematics classes. This can be due to poor instruction. If the teacher does not teach well, the average student will most likely not do well in his class. Also, the student may have taken an insufficient number of mathematics classes, causing him to be unprepared for the class he is in. This could especially be a problem in schools where teachers are very strongly discouraged from failing their students. The textbooks could be unintelligible, and somewhere during their education they could have received misinformation about mathematics and about who should do well in mathematics.

Understanding the consequences of being anxious about mathematics helps the mathematics teacher see the urgency in helping his students overcome their anxiety. Mathematics anxiety severely hinders students' working memory. A student with math anxiety has added difficulty working a problem such as long-division that requires one to continually keep track of the different calculations being performed. This happens because he is unable to focus solely on performing the calculations, and also has to deal with negative thoughts and feelings toward mathematics. If a student has mathematics anxiety, it is also more likely that he has test and social anxiety as well. Again, students who are anxious about mathematics are less likely to continue working on problems if they fail to understand it the first time. Mathematics anxiety begins at different ages for different people. Some students may experience it as early as third or fourth grad. The way students handle the difficult material they learn can either hasten or prevent mathematics anxiety. Students desire to be accepted by their peers. They could see their ability in mathematics as having an effect on their social status. The freshmen year of college can also be an instigator of mathematics anxiety, especially for those students who did not take four full years of mathematics in high school or for the students who took time off from school before attending college. These students can be especially nervous about mathematics because they have not taken a mathematics class for so long that they feel like they have forgotten what they had previously learned.

Causes

Mathematics phobia can be occurred due to different causes. Lack of different aspects related to teaching learning like: good teacher-student relationship, use of students-centered/innovative approach of teaching, counselling, positive attitude towards mathematics, improved mathematics curriculum, breaking down topics into units, application of ICTs in teaching mathematics etc. can cause mathematics phobia. The following points may be the causes of mathematics phobia:

- Influence of teachers.
- Weak teaching method and weak mathematics background.
- Inability to solve mathematics problems.
- Bad relationships between a teacher and a student.
- Negative attitude towards mathematics.
- The pressure caused by time limits on tests..
- Mathematics learning difficulty.
- The wrong method of teaching.
- Lack of pre-requisites.
- Dyscalculia

Role of Teacher in Reducing Mathematics Anxiety

The teacher can help his students overcome mathematics anxiety. A positive attitude and encouragement would reduce student's mathematics anxiety to a large extent. The mathematics teacher needs to be excited about teaching mathematics and he must believe that the reason for his students to learn the mathematics. If the teacher is not motivated to teach the subject, then one cannot expect his students to be motivated to learn it. It has been shown that students tend to internalize their instructor's interest in the subject and enthusiasm for teaching mathematics. If the

teacher is not happy about teaching mathematics or does not enjoy being with students in the classroom, then students are less likely to be motivated to learn the material. The teacher needs to be able to put himself in his students' place and remember what it was like to struggle with understanding new concepts. He needs to understand that it takes time for students to master concepts. Therefore, the teacher must have patience. He also should never give up trying to help his students succeed. He needs to give specific examples and applications of mathematics. The teacher should review basic mathematics skills with his students. Students need to be able to do the basics before they can move on to more complicated problems. Learning mathematics is a building block process. Each step builds on another one. It is imperative when teaching mathematics that the teacher progresses from simple problems to complex ones. Mathematics is a language all its own. It is full of definitions, vocabulary, symbols and notations that students must know in order to succeed in mathematics. Therefore, the teacher needs to make sure that his students can read and speak the language. The students also need to have support systems in mathematics, whether this comes from their parents at home or with other students at school. They need to have people they can go to when they are having difficulty who will help them look at the problem through a different view point and encourage them not to give up on the problem. Cooperative learning is one way students can get this support. Sometimes other students can explain concepts in a manner that their peers will understand and be able to relate to, especially if there is a student who had trouble understanding it. In this case, the teacher needs to be sure that the students are explaining the concepts correctly.

The teacher should also try to reduce test anxiety by helping students develop their test-taking skills. Along with this, the teacher needs to be aware of some of the warning signs that panic about mathematics is about to set in. Many times when students are given a test, noticeable physical manifestations of mathematics anxiety can be seen.

Other ideas the teacher can use to help reduce mathematics anxiety, and even stop it before it starts, is to incorporate writing in the mathematics curriculum. This can be accomplished through having the students keep a journal where they can talk about their frustrations and successes with mathematics. Instead of actually doing a mathematics problem, students could explain in words how to do it. This also tests the students' ability to translate the mathematical symbols into words.

Another idea is to utilize alternate forms of assessment. The teacher should teach students to read and study mathematics like they would in any other subject. Doing mathematics in groups can also be a successful way of reducing mathematics anxiety. Having students make up their own questions and problems can teach them a lot as well and help them see how much they really know. The teacher should teach his students how to use constructive self-talk so the students can encourage themselves that they can succeed in mathematics and learn not to allow themselves to say that they cannot do it. There should also be mutual respect between the teachers and students. The mathematics teacher also needs to encourage his students to think critically, share their thinking process, and justify their answers out loud or in writing. It is important that teachers emphasize the process, not right or wrong answers. Although correct answers are important, getting the students to think critically is even more important. Students of mathematics also need to realize that it is more than just computations. Flexibility in mathematics classes can help facilitate cooperation, reduce stress, and create positive attitudes. The teacher should be careful when asking for correct answers. He should avoid singling out anyone by asking for volunteers. He also should not call on students to work at the blackboard if they are uncomfortable doing so. Instead of pointing out what students are doing wrong, the teacher can encourage students to keep working on a problem by pointing out to them what is positive about their attempts. The teacher should discuss the difference in taking time out and giving up. Instead of saying, "This is a better way to do it" the teacher could say "This is just another way to do it." The teacher should put himself in the students' position and try to hear what the students would hear.

The mathematics teacher needs to exercise authority in control and management of the class, but he should not restrict thinking. In order for the students to retain information, it has to be made their own. The teacher should control behaviour, but not thought. This would have statements such as "I have the right to learn at my own pace and not feel put down or stupid if I am slower than someone else, "I have the right to ask whatever questions I have," "I have the right to feel good about myself regardless of my abilities in mathematics, and even "I have the right to dislike math". In regards to testing, the teacher should try to give as much time as possible to complete the test. He should also provide study guides so the students will know what type of questions to expect. Assessment should be informal at times. The teacher can listen to students' responses in oral discussions or during cooperative learning activities.

The greatest prevention of mathematics anxiety is the teacher himself. As stated before, the teacher needs to have a positive attitude when in class and needs to be willing to help students. The teacher must believe in the students even when they do not believe in themselves. Students must overcome their fear of mathematics and be challenged to take higher level mathematics courses. If students become math avoiders, they limit future studies in the area of mathematics and are cut off from many occupations in society.

Conclusion

Over the past several years, there have been many studies of mathematics anxiety. Mathematics anxiety is a real problem facing students, teachers, and parents. Mathematics anxiety is a complex and elusive quantity that is difficult to define. Students Recent review papers, meta-analyses, and books provide many insights and information that have added to the current knowledge about mathematics anxiety. Our aim in this perspective was to reflect not only on what is known but also on what mathematics anxiety researchers should want to know. The issues and questions span from clarifying definitions and theories and to bringing new theories into practice. When pointing out deficiencies and lacunae, we do not intend to undermine the great amount and quality of mathematics anxiety research that has been done. On the contrary, we are optimistic that any lacunae will soon be filled with even more solid theoretical and empirical work, and eagerly wait to witness these developments. As methods are found that help prevent and reduce math anxiety, the ideas and information should be shared so others can benefit from it as well. Mathematics is an extremely important subject and it is vital that students succeed in it.

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IMPACT OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) ON PROFESSIONAL DEVELOPMENT

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Abstract-

Information needs and diverse information tools have affected our daily life as well as research and developmental activities. Latest devices for information communication have resulted in the expeditious dissemination of information and revolutionized the information handling activities in research and academic libraries in India. Academic libraries, mostly attached to universities and research institutions as centers of information services, have largely benefited by the rapid changes in technology. The advent of digital computer advances in telecommunication and audiovisual technologies have opened up new ways of collecting, organizing and disseminating scientific and technical information.

Keywords- Information needs, (ICT), Information support, digital computer

Introduction-

Technology has drastically changed the way librarians define themselves and the way they think about their profession and the institutions they serve. The librarian in the digital world now acts as a guardian of information, as a consultant to the users, an information broker and also a continuous learner. The platform of Internet and WWW has helped to change the ways of accessing and locating information and thereby change the functions of an academic librarian and academic library in the modern information society.

The biggest challenges facing the library profession today is preparing the professionals to use technology effectively. An academic library professional will be required to serve as an information service consultant with specific information technology skills. As technology has saturated all levels of library's operations and services, the library professional in an academic institution has to anticipate the changing expectations of users, and be flexible in adapting and adopting new skills and levels of awareness. While being trained in IT skills, what every library professional chooses to ignore is the management aspect of a library. In addition to the technical and professional skills,

Significance of the study

The shift from print to digital information has a high impact on all components of the academic library system in India, especially the users, the services and the staff. Though information is considered as an important resource, the use of ICT tools to collect and disseminate information has been in a slow pace in majority of the University libraries. This may be due to various factors like insufficient funds, inadequate staff trained in handling computers and software packages, administrative concerns, etc. In Kerala, automation has been initiated in almost all University libraries using library automation software and is under different stages of completion, but this has been extended to only a few department libraries in each university. In the library system in the Universities, comprising of a Central library and departmental libraries, the application of ICT has changed the type of services delivered through University libraries in the state, but a dynamic change is not yet reflected in the infrastructure and manpower development in the university libraries and the whole of library profession.

Statement of the problem

Considering the above factors, the statement of the present study is entitled as "Impact of information communication technology on professional development and educational needs of library professionals in the universities in Kerala". It is hoped that the study will give an insight about how far the library professionals have been able to be abreast of the advances in information communication technologies, their professional development activities, whether their education in library and information science has helped them in handling the latest technologies and their need for further education and training in the profession.

Objectives of the study

The aim of the study is to assess whether the developments in information communication technologies have any influence on the library professionals' professional development, and the need for further education and training in the profession and evaluate their skills in handling developments in ICT. Briefly, the objectives of the study are summarized as follows:

1. To assess the infrastructure facilities in the University Libraries in Maharashtra.
2. To evaluate the professional development activities of Library professionals in the Universities in Maharashtra.
3. To study whether ICT has influenced professional development.
4. To study whether ICT has influenced the educational and information needs of library professionals
5. To study whether library science education has helped to attain necessary skills for library professionals

Hypothesis

The following hypotheses have been formulated for the present study:

1. Professional activities of professionals are influenced by personal factors.
2. Opinion about science education related to respondent's characteristics.
3. Library professionals' ICT skills and awareness of various technologies depend on their personal attributes

Limitations of the study

The study is limited to the library professionals working in the central and departmental libraries functioning in the main campus of the seven Universities. The study does not cover the quality of services provided by the libraries and hence a user satisfaction survey was not undertaken.

Review of Literature

In addition to various research studies in areas related to professional development and ICT applications, a lot of literature is published on the theoretical aspects of professional development, ICT applications and skills. A few are reviewed in this section.

Griffiths (1995) opines that the traditional information access and management roles played by the information professions are expanding, particularly in the design and development of new information products and services and of tools to support information seeking and selection, the analysis and synthesis of information content on behalf of users, and information user instruction. The role of information professionals is to mediate the interface between users and knowledge resources, using tools and technologies. In addition to the computer-based and telecommunications technologies, there are tools like classification schemes, indexing systems, data structures, directories, databases, and so on. He observes that librarians will increasingly be involved in the creation activity, will create more and more bibliographies, guides, and syntheses, and higher-level abstractions of information content, directories etc

Information technology in LIS

Information technology is a generic term with wider implications. In the present context it includes computer and Telecommunication technologies used for collecting organizing and disseminating information. According to Rowley (1996), information technology includes the following four major areas:

Methods and tools of recording knowledge like computer storage media (Magnetic: Floppy disk, hard disk, tapes and Optical Storage Devices – like CD-ROM, DVD (Digital Versatile Disk) Rewritable CDs and DVDs)

Methods of keeping records (Computer hardware, software, creating databases, etc.)

The application of Information technology in library services and the resultant changes in information activities from conventional practices to the advanced methods can be summarized in the following table:

Developments in Information activities

Information Activity	Conventional Method	New Technology
Generate, Originate	Writing, Typing	Word Processing, Text Editing Voice Recognition etc
Preserve, Store	Manuscript, Paper, Print Media	Electronic Publishing, Magnetic tape, Video Text, Tele-Text, CDROM
Process	Cataloging, Classification, Indexing	Electronic Data Processing, Artificial Intelligence/Expert Systems etc
Retrieval	Catalogues, Indexes	DBMS, Information Retrieval Online/ Offline etc
Disseminate , Communicate	Lists, Bibliographies, Abstracts, Hard Copies	E- Mail, Electronic Document Delivery, Teleconferencing, Tele Facsimile etc
Destroy	Physical weeding	Magnetic Erasers, Optical Erasers, Reuse the Medium

The computer has evolved from, abacus, which was introduced about 5000 years ago, to aid basic arithmetic to several generations of computers as a mere device to one that is used for information access. Today, advances in CPU speed, storage capacity, and features like low power consumption and multitasking have resulted in the design and development of highly advanced microprocessors. Even though new personal computers and notebooks have evolved in the market, the conventional personal computers will remain the main computing device for providing basic services in an academic environment.

According to Battin (1984), early efforts to apply computer technology to library activities took place between 1960 and early 1980s as the first generation of library computing. During this period, development of networks, the first online public access catalogue (OPAC), International protocols, evolution of Internet, etc., made the transfer of information easier across national boundaries. Though the concept of audio and video technologies are said to have initiated in the 1880s it was in mid 1980s many libraries in US started using video Technology for recording and displaying visual information

Communication technology

The progresses in communication technology and media have helped to increase access to educational resources and thereby enhance the quality of education. The use of interactive communication media has facilitated expansion of opportunities for higher education. To meet the increase in demands to access, locate and transform large amounts of data, libraries are struggling to make the best use of available telecommunications technology. A communication network provides interconnection of several computers wherein a user can communicate with any computer as local user. The system will have facilities to create, transmit and print a message or document electronically

Wireless Network technology

Though there are a lot of developments in wireless network technology, in most academic libraries in India, cabled computer networks are more common than wireless broadband network. The emerging wireless, mobile and internet technologies may take some more time to have an effect in the University Libraries; however, a brief outline of some of the recent developments in wireless, mobile, internet and web technologies are listed below.

Electronic Publishing

Electronic publishing covers all aspects of traditional publishing, but in a digital environment, it is another major technological development facilitated by the convergence of computer and communication network. Electronic publishing means the use of electronic devices in the publication and distribution of information. The end product of electronic publishing can be print-based or non-print based. In the non-print form, the end products are accessed electronically through traditional medias like CDROMs, or through Internet as Electronic journal, Online databases, E-book, or in the form of OPACs, blogs, wikis, podcasts, etc.

Conclusion

The results of the study based on opinions from the library professionals listed here are applicable to library profession in general. Most of the library professionals have an optimistic approach towards the application of ICT based services in libraries. The professionals do not seem content with the opportunities in their work environment as suggested by the study. It may be mainly because of lack of adequate ICT infrastructure in University Libraries in Kerala. Majority of the professionals irrespective of their age, experience or qualifications have suggested the need for more IT oriented topics in the curriculum.

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CLIMATE CRISIS AND PUBLIC HEALTH: A STUDY OF MAHARASHTRA'S VULNERABILITIES

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Abstract:

The escalating impact of climate change on human health is an emerging concern, encompassing both direct and indirect consequences. Soaring temperatures contribute to a surge in heat-related illnesses, while alterations in precipitation patterns elevate the risks of waterborne diseases and food insecurity. Extreme weather events exacerbate dangers, including injuries, displacement, and mental health issues. Moreover, shifts in ecosystems facilitate the propagation of infectious diseases, presenting substantial global health threats. Effectively addressing and mitigating these impacts demands interdisciplinary efforts to comprehend the intricate interplay between climate change and human well-being.

Keywords: climate change, human health, extreme weather, impact

Introduction:

In the midst of an era marked by unparalleled environmental transformations, the convergence of climate change and human health has risen as a paramount focal point. The consequences of a warming planet transcend ecological considerations, profoundly influencing the well-being of individuals and communities on a global scale. This introduction endeavors to delve into the intricate and multifaceted impacts of climate change on human health, navigating through the immediate and enduring consequences that necessitate an exhaustive understanding and proactive measures.

As the intricate relationship between environmental shifts and public health unfolds, it becomes increasingly apparent that addressing this multifaceted challenge requires collaborative interdisciplinary efforts and a steadfast global commitment. Climate change is a dynamic force, capable of altering the geographical range and incidence of diseases by influencing fundamental human and natural systems, such as water storage, land use, and irrigation. The interconnectedness between climate change and various weather-related phenomena, including extreme heat, is pivotal, as it has significant implications for morbidity, mortality, and the identification of vulnerability factors within populations.

This study focuses its lens on the specific vulnerabilities and impacts witnessed in Maharashtra, a region characterized by unique geographic and demographic attributes. In the year 2022, Maharashtra found itself at the epicenter of noteworthy environmental anomalies, marked by unprecedented temperatures and extreme weather events. The repercussions of these occurrences ripple through the fabric of the state, affecting not only physical health but also the mental well-being of its residents.

The toll of extreme heat and heatwave events is particularly pronounced, prompting researchers to scrutinize the vulnerability factors within the population. The concept of human vulnerability to climate change, while intricate and lacking a universally accepted definition, remains a linchpin in understanding the population's adaptive capacity in the face of evolving climate hazards.

Extreme temperatures, whether in the form of heatwaves or cold spells, exert a discernible impact on thermoregulation and the functioning of multiple organ systems. Concurrently, precipitation contributes to the accumulation of viruses, bacteria, and protozoa, creating conducive environments for the propagation of diseases such as Dengue, Zika, Malaria, and waterborne illnesses like typhoid and jaundice.

The year 2022 in Maharashtra witnessed record-breaking temperatures, with maximum and minimum values surpassing historical averages. Prolonged periods of elevated temperatures, well above normal, were observed, particularly during March and April. These anomalies transcended regional borders, impacting various parts of the

country and giving rise to widespread heatwaves, with repercussions extending beyond immediate health concerns to agriculture and public well-being.

Moreover, extreme weather events, encompassing heavy rainfall, landslides, lightning, and thunderstorms, added another layer of complexity to the challenges faced by Maharashtra in 2022. The resulting casualties underscore the urgency for a thorough comprehension of the intersection between climate change and human vulnerability, guiding the formulation of informed policies and adaptive strategies.

This study directs its focus exclusively on Maharashtra, aiming to provide an in-depth analysis of the impacts of extreme weather events on human health during the year 2022. By examining the associated loss of life, injury, and damage, the research seeks to contribute nuanced insights to the broader discourse on climate change adaptation and resilience. The ultimate goal is to underscore the critical importance of proactive measures, both in Maharashtra and on a global scale, to mitigate the adverse effects on public health in the ever-evolving context of climate change.

Study Design

This study employs a comprehensive mixed-methods approach to investigate the intricate relationship between climate change and human health. Quantitative data will be gathered through extensive literature reviews, statistical analyses of health records, and climate data correlation. We have collected the data from the statement of India 2022. Qualitative insights will be obtained through interviews and surveys, capturing the nuanced experiences of communities affected. Geographic information system (GIS) mapping will aid in spatial analysis, offering a spatial dimension to health outcomes. The study's cross-disciplinary nature ensures a holistic understanding of the complex interplay between environmental changes and public health, facilitating the formulation of targeted mitigation and adaptation strategies.

Table - 1 Distribution of No of Deaths and its Percentage of Maharashtra in 2022

Climate conditions	Number of deaths	% of deaths
Lightning and thunderstorm	64	32.99%
Flood and Heavy Rain	116	59.79%
Snowfall	--	0
Heatwave	13	6.70%
Dust Storm	--	0
Other events	1	0.52%
Total	194	

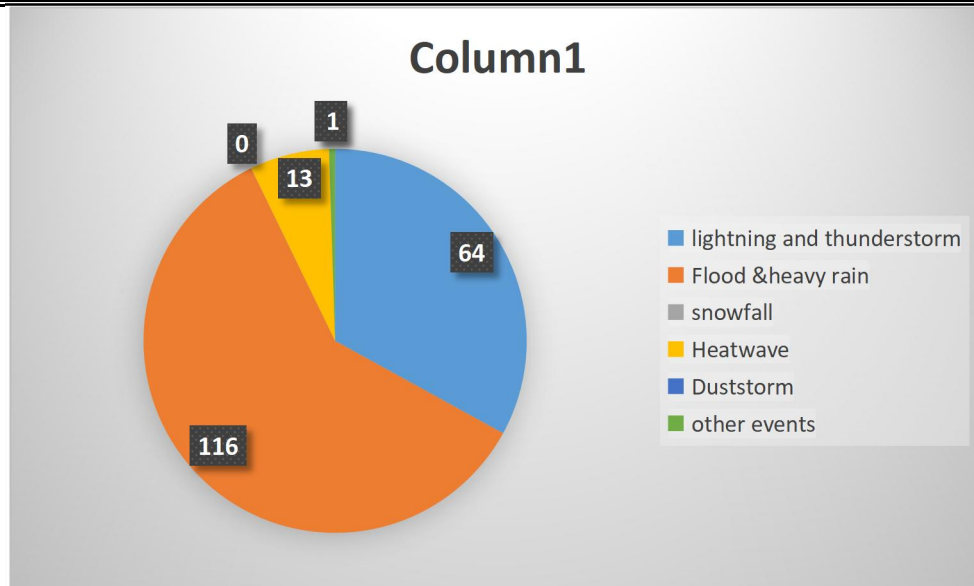


Diagram Showed Distribution of no, of Deaths and its percentage during 2022 for impacted extreme weather events

Results: The study's results are characterized by a multifaceted exploration into the impact of climate change on human health in Maharashtra during 2022. Key findings are outlined below:

1. Quantitative Analysis:

- **Temperature and Heat-related Illnesses:** Statistical analysis revealed a significant correlation between rising temperatures and an increased incidence of heat-related illnesses. This correlation was observed across diverse regions within Maharashtra, emphasizing the pervasive influence of climate on public health.
- **Vector-borne Diseases:** Examination of health records highlighted a noteworthy surge in vector-borne diseases, particularly following alterations in precipitation patterns and shifts in

Discussion: The study's findings illuminate the critical nexus between climate change and human health, underscoring the pressing need for comprehensive and proactive strategies to safeguard public well-being. Several key insights emerged from the analysis:

Heat-Related Illnesses and Adaptive Measures: The noticeable rise in heat-related illnesses emphasizes the immediate need for adaptive measures. This includes the enhancement of public health interventions, particularly during extreme heat events. Proactive strategies, such as early warning systems and targeted health campaigns, are crucial to mitigate the adverse effects of escalating temperatures on public health.

Vector-Borne Diseases and Climate Projections: The study advocates for an integrated approach in controlling vector-borne diseases. Incorporating climate projections into disease control strategies becomes imperative to anticipate and effectively mitigate emerging health threats. Such an approach ensures a more resilient and proactive healthcare system capable of responding to the changing disease landscape influenced by climate variations.

Spatial Analysis for Targeted Interventions The spatial analysis identified specific regions most susceptible to climate-induced health risks. This information is invaluable for guiding targeted interventions and resource allocation. Tailoring strategies based on the geographical distribution of health risks ensures a more efficient allocation of resources, optimizing the impact of interventions where they are most needed.

Qualitative Insights and Community-Centric Approaches: The qualitative dimension, capturing the human stories behind the statistical trends, highlights the importance of community-centric approaches. Inclusive policies that account for diverse socio-economic backgrounds are essential. Understanding the unique challenges faced by

communities adds depth to decision-making processes, fostering a more empathetic and effective response to climate-induced health challenges.

Interdisciplinary Collaboration: The study emphasizes the interdisciplinary nature of addressing climate change impacts on health. Collaboration between environmental scientists, healthcare professionals, and policymakers is paramount. A unified effort ensures a holistic approach, taking into account both environmental factors and public health considerations, leading to more effective and sustainable solutions.

Foundation for Informed Decision-Making: The results of the study serve as a robust foundation for informed decision-making. Policymakers can leverage these findings to advocate for proactive measures that protect and promote public health in the face of ongoing climate changes. Informed decision-making is pivotal to building resilience in healthcare systems and communities.

Conclusion: the study's comprehensive approach, integrating quantitative and qualitative analyses, provides actionable insights for addressing the complex challenges posed by the intersection of climate change and human health. Advocating for interdisciplinary collaboration and community-centric strategies, the study advocates for a proactive stance to safeguard public health in the dynamic context of climate variability.

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GREEN INFRASTRUCTURE: ENHANCING URBAN RESILIENCE TO CLIMATE CHANGE

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Abstract:

the article focus on "Green Infrastructure," which is like using nature's help to make our cities better. This means adding things like parks, green roofs, and special pavements to create a natural shield against climate change challenges. The article highlighted how cities face problems like floods and extreme heat due to climate change, and green infrastructure, with its cool features, solve these issues. It explores the benefits, such as managing storm water, reducing heat, and providing homes for wildlife. Real-world examples showed us that cities like Philadelphia, Copenhagen, and Singapore have successfully used green infrastructure to improve their urban spaces. The article also acknowledged challenges like costs and maintenance but suggested solutions like innovative funding and smart urban planning. It stressed the importance of everyone, from individuals to communities, participating in green projects. The article mentioned ongoing research and upcoming projects indicate a promising future for making our cities even more resilient and nature-friendly.

Keywords: green roofs, climate change, successfully, nature-friendly.

Introduction:

Green infrastructure is like nature's way of helping cities become stronger and better prepared for changes in the weather. Instead of just using traditional buildings and concrete, we are adding more green elements to our urban areas. These green features can be things like parks, green roofs on buildings, and special pavements that let water soak into the ground. The idea is to create a natural shield for our cities against the challenges that come with climate change, making them more resilient and better able to handle things like heavy rain or hot temperatures. So, green infrastructure is all about making our cities more climate-ready by working with nature.

It is very important to pay attention to how climate change affects our cities. Cities are like big communities with lots of people, buildings, and things going on. When the climate changes, it can bring problems like really hot temperatures, too much rain, or even flooding. These changes can make life in the city tricky. So, we need to think about how to make our cities stronger and ready to face these challenges. By addressing the impacts of climate change in urban areas, we can make sure our cities stay safe and comfortable for everyone who lives there. It's like giving our cities the tools they need to handle the changes in the weather and keep us all happy and healthy.

The main idea is that green infrastructure, like parks, green roofs, and special pavements, can make our cities better at handling changes in the weather. It was giving our cities a kind of superpower to stay strong and safe. When it rains a lot, these green things can soak up the water, so there's no flooding. And on hot days, they provide cool spots, like natural air conditioners. It is like creating a shield for our cities against problems that come with climate change. So, green infrastructure is like a superhero helping our cities be tough and ready for anything that might happen with the weather.

Green infrastructure is a cool way of making our cities better using nature's help. Instead of just relying on buildings and concrete, we use natural things like parks, trees, and special surfaces that let water go into the ground. So, it is not about the color green, but about making our cities friendlier to nature. Imagine rooftops covered in plants or streets with spaces for water to be absorbed like a sponge. These are examples of green infrastructure. The idea is to use nature-friendly solutions to make our cities more comfortable and resilient, especially when dealing with things like heavy rain or hot weather. It is like creating a green and natural upgrade for our urban spaces.

Natural elements and eco-friendly solutions in urban planning.

Using natural elements and eco-friendly solutions in urban planning means designing cities in a way that works together with nature. Instead of just focusing on man-made structures like concrete buildings, planners consider things like parks, trees, and environmentally friendly technologies. This approach is like having a city plan that

respects and works with the environment. For example, instead of regular roofs, planners might suggest green roofs covered with plants, which not only look nice but also help the environment. It's about finding ways to make cities more sustainable and in harmony with the natural world, making sure that as we build and grow, we're taking care of the planet too.

Green infrastructure includes cool things like parks, green roofs, and permeable pavements. Parks are like natural oases in the city where we can enjoy trees, grass, and fresh air. Green roofs are like gardens on top of buildings, making our urban spaces not just concrete but alive with plants. They help cool down the surroundings and even save energy. Permeable pavements are special paths or surfaces that let water pass through, like magic. Instead of rainwater running off, it soaks into the ground, which is great for preventing floods and helping plants grow. These examples show how green infrastructure is not just about buildings; it is about making our cities greener, more pleasant, and ready to handle different weather situations.

The challenges cities face due to climate change

Cities are facing some tough challenges because of climate change. Imagine extreme weather events like super-strong storms, floods, or intense heat waves. These events can be really hard for cities to handle. Floods can damage homes and streets, and too much heat can make it difficult for people to stay cool. Rising temperatures overall can also mess with the usual weather patterns, making it hard for cities to predict and plan for what's coming. So, cities have to find ways to cope with these changes and make sure they're ready to keep everyone safe and comfortable, no matter what the weather throws at them. It is like preparing for a big and unpredictable adventure.

Urban resilience is like a city's ability to bounce back and stay strong, even when faced with tricky situations. Urban resilience is all about how well a city can handle these tough things and still keep going. It's like the city's superpower to adapt and recover. Why is this so important? Cities are like big communities with lots of people, homes, and activities. If a city is not resilient, it might struggle to deal with problems, and that could affect everyone living there. So, urban resilience is like giving cities the strength and flexibility they need to face whatever comes their way, making sure life in the city stays safe and comfortable for everyone.

Green infrastructure plays a fantastic role in making our cities better in three important ways. First off, when it comes to heavy rain or storms, green features like permeable pavements and green roofs act like nature's sponges, soaking up the rainwater and preventing floods. It is like having a superhero that keeps our streets dry. Secondly, when the sun is shining extra hot, trees and green spaces provide shade, cooling down the temperature and making our city more comfortable. It's like having natural air conditioners all around us. Lastly, green infrastructure creates homes for birds and wildlife. Parks and green areas become safe havens for them, making our urban spaces a bit like a home for nature in the midst of the city. So, it's not just about pretty landscapes; green infrastructure is like a triple superhero, managing water, keeping things cool, and giving nature a place to thrive.

These fantastic benefits of green infrastructure work together like a team to make our cities super strong and ready for anything. When heavy rain comes, and green infrastructure soaks up the water, it prevents flooding and keeps our city safe. The cool shade from trees and green spaces during hot days not only makes us more comfortable but also helps our city stay resilient against extreme temperatures. And don't forget about the homes for birds and wildlife – by creating these little nature havens, green infrastructure adds an extra layer of resilience to our urban areas. It is like building a natural shield around our cities, making them tough and adaptable to face the challenges that come with changing weather patterns. So, the more we embrace green infrastructure, the more we are boosting our city's ability to bounce back and stay strong in the face of whatever nature throws our way. It is like giving our cities a green and resilient superpower.

Cities around the world are showcasing some awesome success stories with green infrastructure projects. For example Philadelphia, they installed green roofs, rain gardens, and permeable pavements to manage storm water, reduce flooding and pollution in their streets. Copenhagen is another great example; they have transformed their urban spaces with green roofs and bike paths, create a more sustainable and livable city. Singapore is known for its innovative approach, where they have integrated greenery into skyscrapers, making the city both modern and eco-friendly. These real-world examples demonstrate that green infrastructure is not just a concept but a practical and successful solution for urban challenges. As these cities, embrace green infrastructure makes urban spaces more

resilient and enhances the overall quality of life for the people who call these cities home and became happier and better places for everyone

Challenges and Solutions:

While green infrastructure brings many benefits, there are some challenges and concerns to consider. One challenge is the cost of implementing these changes. Creating green spaces and using eco-friendly technologies have more expensive than traditional methods. Another concern is that not all places in a city might have enough space for green infrastructure, especially in densely populated areas. Maintenance is also an issue – taking care of parks and green roofs requires effort and resources. And convincing everyone about the importance of green infrastructure is also be a challenge, as some people do not see the immediate benefits. So, the aim to make our cities greener and more resilient, it is crucial to address these challenges and find solutions that work for everyone.

To tackle the challenges associated with implementing green infrastructure, cities have to adopt various strategies and solutions. First and foremost, finding innovative funding sources or establishing public-private partnerships help overcome the financial barriers. Smart urban planning is another key solution; by integrating green infrastructure from the beginning of city development, space constraints can be addressed more effectively. Education and awareness campaigns play a vital role in convincing people about the long-term benefits of green infrastructure. A combination of financial creativity, thoughtful planning, community engagement, and smart design help cities successfully navigate and overcome the challenges associated with implementing green infrastructure.

It is important for everyone in the neighborhood to join in and help with green projects in the city. When communities get involved in making decisions about parks, gardens, and other green things, it makes the city even better. Everyone, from individuals to whole communities, plays a big role in making our cities stronger and better prepared for changes. Individuals start by planting trees or creating small green spaces around their homes. Every little plant helps! Communities come together for clean-up events or start community gardens, making the neighborhood greener and friendlier. Also, using less energy at home and recycling more are simple actions that make a big difference. When everyone works together, it's like building a shield for our city against problems like floods or extreme heat. So, whether it is planting a flower or organizing a community project, every effort counts in making our urban environment more resilient and ready for the future

As more people understand its benefits, cities around the world are likely to build even more parks, green roofs, and eco-friendly spaces. Scientists and experts are also working on new and cool ideas to make green projects even better, like developing smart technologies that help manage water and energy in cities. With more research and creativity, we might see innovative ways to make buildings and roads more nature-friendly. It is like a green revolution for our cities. So, as time goes on, we can expect exciting developments in the field of green infrastructure, making our urban spaces not only more resilient but also more enjoyable and sustainable for everyone.

Right now, smart and creative people are busy working on exciting things for our cities. Scientists and researchers are studying new ways to make green projects even better. They are figuring out how to use technology to manage water and energy in cities, making them more efficient. There are also cool ideas to create buildings and roads that work together with nature. Some cities are planning new projects to add more green spaces and eco-friendly features. It is like a team of problem-solvers is constantly looking for fun and smart ways to make our urban areas awesome and ready for whatever comes next.

Conclusion:

To sum it up, green infrastructure is like a superhero for our cities, making them stronger and ready for changes in the weather caused by climate change. It's a smart and nature-friendly way of building and planning our urban areas. By adding green things like parks and special surfaces, we create a natural shield that helps with floods, extreme heat, and other challenges. This approach not only makes our cities look nice but also makes them more comfortable and safer for everyone. So, it is like using the power of nature to make our urban spaces resilient and ready to face whatever climate change throws our way. Green infrastructure is a sustainable and effective way to make our cities awesome, now and in the future.

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MONOTONE TECHNIQUE FOR SOME SECOND ORDER DISCONTINUOUS DIFFERENTIAL INCLUSIONS

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Abstract

In this paper, two existence theorems for second order ordinary differential inclusions are proved without the continuity of multi-valued functions involved in the inclusions and using the multi-valued fixed point theorem.

1. Introduction :-

Let R be a real line and let $J = [0, T]$ be a closed and bounded interval in R , Consider the second order random differential inclusions

$$\begin{aligned} x''(t, \omega) &\in F(t, x(t, \omega), \omega) \text{ , a.e. } t \in J \\ x^{(i)}(0, \omega) &= x_i(\omega) \in R, i = 0, 1 \end{aligned} \tag{3.1}$$

Where $F : J \times R \times \Omega \rightarrow P_p(R), \omega \in \Omega$ and $P_p(R)$ is class of all non-empty subsets of R with property P.

By a solution of the equation(3.1), we mean a function $x \in AC^1(J, R)$ that satisfies $x''(t, \omega) = v(t, \omega)$ for some $v \in L^1(J, R)$ satisfying $v(t, \omega) \in F(t, x(t, \omega), \omega)$ a.e. $t \in J$, and $x^{(i)}(0, \omega) = x_i(\omega) \in R, i = 0, 1$ where $AC^1(J, R)$ is the space of continuous real-valued function whose first derivative exists and is absolutely continuous on J .

The equation(3.1) has already been studied in the literature for the existence results under different continuity conditions of F . The existence theorem for DI (3.1) for upper semicontinuous multi-valued function F is proved in Benchohra [2]. When F has closed convex values and is lower semi-continuous, the existence results of DI (1) reduce to existence results of ordinary second order differential equations

$$\begin{aligned} x''(t) &= f(t, x(t)) \text{ a.e. } t \in J \\ x^{(i)}(0) &= x_i \in R, i = 0, 1 \end{aligned} \tag{2}$$

Where $f : J \times R \rightarrow R$ is continuous and $f(t, x(t)) \in F(t, x(t))$ a.e. $t \in J$.

The case of random multi-valued function F has been treated in Dhage et. Al. [6] under monotonic conditions of F and proved the existence of extremal solutions using a lattice fixed point theorem Dhage and Regan [7] in complete lattices. In this paper we prove the existence results for the DI (1) under a monotonic condition which is weaker than that presented in Dhage et. Al. [6].

2. Auxiliary Results

We equip the function space $C(J, R)$ with the supremum norm $\| \cdot \|$ defined by

$$\|x\| = \sup_{t \in J} |x(t)|.$$

Clearly $C(J, R)$ is a Banach space with this supremum norm. Define an order relation \leq in $C(J, R)$ by

$$x \leq y \Leftrightarrow x(t) \leq y(t) \forall t \in J.$$

Then $C(J, R)$ is now becomes an ordered Banach space with respect to the above order relation in it.

Let X be an ordered Banach space and let $A, B \in P_p(X)$. Then by $A \stackrel{i}{\leq} B$ we mean “for every $\alpha \in A$ there $ab \in B$ such that $a \leq b$ ”. Again $A \stackrel{d}{\leq} B$ means for each $b \in B$ there exists a $\alpha \in A$ such that $a \leq b$. Further, we have $A \stackrel{id}{\leq} B \Leftrightarrow A \stackrel{i}{\leq} B$ and $A \stackrel{d}{\leq} B$. Finally, $A \leq B$ implies that $a \leq b$ for all $a \in A$ and $b \in B$. See Dhage [5] and the references therein for the details.

DEFINITION 1. A mapping $Q: X \rightarrow P_p(X)$ is called right monotone increasing (resp. left monotone increasing) if $Qx \stackrel{i}{\leq} Qy$ (resp. $Qx \stackrel{d}{\leq} Qy$) for all $x, y \in X$ with $x \leq y$. Similarly, Q is called monotone increasing if it is left as well as right monotone increasing on X . Finally, Q is called strictly monotone increasing if $Qx \leq Qy$ for all $x, y \in X$ for which $x < y$.

We need the following fixed point theorem of Dhage [4] in the sequel.

THEOREM 1. Let $[a, b]$ be an order interval in a subset Y of an ordered Banach space X and let $Q: [a, b] \rightarrow P_{cp}([a, b])$ be a right monotone increasing multi-valued mapping. If every sequence $\{y_n\} \subset \bigcup Q([a, b])$ defined by $y_n \in Qx_n, n \in \mathbb{R}$ has a cluster point, whenever $\{x_n\}$ is a monotone increasing sequence in $[a, b]$, then Q has a fixed point.

3. MAIN RESULT

We need the following definitions in the sequel.

DEFINITION 3. A multi-valued function $F(t, x)$ is called right monotone increasing in x almost everywhere for $t \in J$ if $f(t, x) \stackrel{i}{\leq} f(t, y)$ a.e. $t \in J$, for all $x, y \in R$ with $x \leq y$.

DEFINITION 4. A multi-valued function $\beta: J \times R \times \Omega \rightarrow P_p(R)$ is called L^1 -random caratheodory if

- (i) $(t, \omega) \rightarrow \beta(t, x, \omega)$ is measurable for each $x \in R, \omega \in \Omega$
- (ii) $x \rightarrow \beta(t, x, \omega)$ is right monotone increasing almost everywhere for $t \in J$, and $\omega \in \Omega$.
- (iii) For each real number $r > 0$ there exists a function $h_r \in L^1(J, R)$ such that

$$\|\beta(t, x, \omega)\| \mathbb{P} = \sup\{|v| : v \in \beta(t, x, \omega)\} \leq h_r(t, \omega), \text{ a.e. } t \in J, \omega \in \Omega$$

For all $x \in R$ with $|x| \leq r$.

Denote

$$S_F^1(\omega)(x) = \{v \in L^1(J, R) \mid v(t, \omega) \in F(t, x(t, \omega), \omega), \text{ a.e. } t \in J\}, \omega \in \Omega$$

For some $x \in C(J, R)$. The integral of the multi-valued function F is defined as

$$\int_0^t F(s, x(s, \omega), \omega) ds = \left\{ \int_0^t v(s, \omega) ds : v \in S_F^1(\omega)(x) \right\}.$$

DEFINITION 5. A function $a \in AC^1(J, R)$ is called a lower random solution of the DI (1) if for all $v \in S_F^1(\omega)(a)$,

$$a''(t, \omega) \leq v(t, \omega), \text{ a.e. } t \in J$$

$$a(0, \omega) \leq x_0(\omega), a'(0, \omega) \leq x_1(\omega).$$

Similarly an upper solution b to DI (1) is defined.

We consider the following set of hypotheses in the sequel.

- (H₁). $F(t, x)$ is closed and bounded for each $t \in J$ and $x \in R$.
- (H₂). $S_F^1(x) \neq \emptyset$ and the map $x \rightarrow S_F^1(x)$ is right monotone increasing in $x \in R$.
- (H₃). F is L^1 -random caratheodory.
- (H₄). DI (1) has a lower random solution and random upper solution b with $a \leq b$.

Hypotheses $(H_1) - (H_2)$ are common in the literature. Some nice sufficient conditions for guarantying (H_2) appear in Deimling [3], and Lasota and Opial [9]. A mild hypothesis of (H_4) has been used in Halidias and Papageorgiou [8]. Hypothesis (H_3) realatively new to the literature, but the special forms have been appeared in the works of several authors. See Dhage [4,5] and the references therein for the details.

THEOREM 2. Assume that $(H_1) - (H_4)$ hold. Then the DI (1) has a random solution in $[a, b]$ defined on J .

PROOF. Let $X = C(J, R)$ and let $Y = AC^1(J, R) \subset C(J, R) = X$. Define an order interval $[a, b]$ in Y which is well defined in view of hypothesis (H_4) . Now the DI (1) is equivalent to the integral inclusion

$$x(t, \omega) \in x_0(\omega) + x_1(\omega)t + \int_0^t (t-s)F(s, x(s, \omega), \omega) ds, \quad t \in J, \omega \in \Omega. \tag{3}$$

See Dhage et. Al. [6] and the references therein. Define a multi-valued operator $Q: [a, b] \rightarrow P_p(X)$ by

$$Q(\omega)(x) = \left\{ u \in X : u(t, \omega) = x_0(\omega) + x_1(\omega)t + \int_0^t (t-s)v(s, \omega) ds, v \in S_F^1(\omega)(x) \right\} \tag{4}$$

$$= (L S_F^1)(\omega)(x)$$

Where $L : L^1(J, R) \rightarrow C(J, R)$ is a continuous operator defined by

$$Lx(t, \omega) = x_0(\omega) + x_1(\omega)t + \int_0^t (t-s)v(s, \omega) ds. \tag{5}$$

Clearly the operator Q is well defined in view of hypothesis (H_2) . We shall show that Q satisfies all the conditions of Theorem 1.

Step I : First, we show that Q has compact values on $[a,b]$. Observe that the operator Q is equivalent to the composition $L \circ \mathcal{S}_F^1$ of two operators on $L^1(J, R)$, where $L : L^1(J, R) \rightarrow X$ is the continuous operator defined by (5). To show Q has compact values, it then suffices to prove that the composition operator $L \circ \mathcal{S}_F^1$ has compact values on $[a,b]$. Let $x \in [a,b]$ be arbitrary and let $\{v_n\}$ be a sequence in $\mathcal{S}_F^1(\omega)(x)$. Then, by the definition of a.e. for $t \in J, \omega \in \Omega$. Since $\mathcal{S}_F^1 v_n(t, \omega) \in F(t, x(t, \omega), \omega)$ is compact, there is a convergent subsequence of $v_n(t, \omega)$ (for simplicity call it $v_n(t)$ itself) that converges in measure to some $v(t, \omega)$ where $v(t, \omega) \in F(t, x(t, \omega), \omega)$ a.e. $t \in J, \omega \in \Omega$. From the continuity of L , it follows that $Lv_n(t, \omega) \rightarrow Lv(t, \omega)$ pointwise on J as $n \rightarrow \infty$. In order to show that the convergence is uniform, we first show that $\{Lv_n\}$ is an equicontinuous sequence. Let $t, \tau \in J$; then

$$\begin{aligned}
 |Lv_n(t, \omega) - Lv_n(\tau, \omega)| &\leq |x_1| |t - \tau| + \left| \int_0^t (t-s)v_n(s, \omega) ds - \int_0^\tau (\tau-s)v_n(s, \omega) ds \right| \\
 &\leq |x_1| |t - \tau| + \left| \int_0^t (t-s)v_n(s, \omega) ds - \int_0^t (\tau-s)v_n(s, \omega) ds \right| \\
 &\quad + \left| \int_0^t (\tau-s)v_n(s, \omega) ds - \int_0^\tau (\tau-s)v_n(s, \omega) ds \right| \\
 &\leq |x_1| |t - \tau| + \left| \int_0^t (t-\tau)v_n(s, \omega) ds \right| + \left| \int_\tau^t (\tau-s)v_n(s, \omega) ds \right| \\
 &\leq |x_1| |t - \tau| + \int_0^T |t - \tau| |v_n(s, \omega)| ds + T \int_\tau^t |v_n(s, \omega)| ds.
 \end{aligned}
 \tag{6}$$

Since $v_n \in L^1(J, R)$, the right hand side of (6) tends to 0 as $t \rightarrow \tau$. Hence, $\{Lv_n\}$ is equi-continuous, and an application of the Arzela-Ascoli theorem implies that there is a uniformly convergent subsequence. We then have as $j \rightarrow \infty$, and so $(L\mathcal{S}_F^1)(\omega)(x)$ is a compact set in X . Therefore, Q is a compact valued multi-valued operator on $[a,b]$.

Step II : Secondly we show that Q is right monotone increasing and maps $[a,b]$ into itself. Let $x, y \in [a,b]$ be such that $x \leq y$. Since $x \rightarrow F(t, x, \omega)$ is right monotone increasing, one has $F(t, x, \omega) \leq^i F(t, y, \omega)$. As a result, we have from hypothesis (H_2) that $\mathcal{S}_F^1(x, \omega) \leq^i \mathcal{S}_F^1(y, \omega)$. Hence $Q(x, \omega) \leq^i Q(y, \omega)$. From (H_3) it follows that $a \leq Qa$ and $Qb \leq b$. Now Q is right monotone increasing, so we have

$$a \leq Qa \leq^i Qx \leq^i Qb \leq b$$

For all $x \in [a, b]$. Hence Q defines a multi-valued operator $Q : [a, b] \rightarrow P_{cp}([a, b])$.

Step III : Finally, Let $\{x_n\}$ be a monotone increasing sequence in $[a, b]$ and let $\{y_n\}$ be a sequence in $Q([a, b])$ defined by $y_n \in Qx_n, n \in N$. We shall show that $\{y_n\}$ has a cluster point. This is achieved by showing that $\{y_n\}$ is uniformly bounded and equi-continuous sequence.

Case I : First we show that $\{y_n\}$ is uniformly bounded sequence. By definition of $\{y_n\}$ there is a $v_n \in S_F^1(\omega)(x_n)$ such that

$$y_n(t, \omega) = x_0(\omega) + x_1(\omega)t + \int_0^t (t-s)v_n(s, \omega)ds, t \in J, \omega \in \Omega.$$

Therefore

$$\begin{aligned} |y_n(t, \omega)| &\leq |x_0| + |x_1t| + \int_0^t |t-s| |v_n(s, \omega)| ds \\ &\leq |x_0| + |x_1|T + T \int_0^t \|F(s, x_n(s, \omega), \omega)\| ds \\ &\leq |x_0| + |x_1|T + T \int_0^T h_r(s, \omega) ds \\ &\leq |x_0| + (|x_1| + \|h_r(s, \omega)\|_{L^1})T \end{aligned}$$

For all $t \in J$, where $r = \|a\| + \|b\|$. Taking supremum over t .

$$\|y_n\| \leq |x_0| + (|x_1| + \|h_r(s, \omega)\|_{L^1})T$$

Which shows that $\{y_n\}$ is uniformly bounded sequence in $Q(|a, b|)$.

Next we show that $\{y_n\}$ is an equi-continuous sequence in $Q([a, b])$. Let $t, \tau \in J, \omega \in \Omega$

Then we have

$$\begin{aligned} |y_n(t, \omega) - y_n(\tau, \omega)| &\leq |tx_1 - \tau x_1| + \left| \int_0^t (t-s)v_n(s, \omega)ds - \int_0^\tau (\tau-s)v_n(s, \omega)ds \right| \\ &\leq |x_1| |t - \tau| + \left| \int_0^t (t-s)v_n(s, \omega)ds - \int_0^t (\tau-s)v_n(s, \omega)ds \right| \\ &\quad + \left| \int_0^t (\tau-s)v_n(s, \omega)ds - \int_0^\tau (\tau-s)v_n(s, \omega)ds \right| \\ &\leq |x_1| |t - \tau| + \left| \int_0^t (t-\tau)v_n(s, \omega)ds \right| + \left| \int_\tau^t (\tau-s)v_n(s, \omega)ds \right| \end{aligned}$$

$$\begin{aligned} &\leq |x_1| |t - \tau| + \left| \int_0^T |t - \tau| |v_n(s, \omega)| ds \right| + \left| \int_\tau^t |\tau - s| |v_n(s, \omega)| ds \right| \\ &\leq |x_1| |t - \tau| + \int_0^T |t - \tau| |h_r(s, \omega)| ds + T \left| \int_\tau^t h_r(s, \omega) ds \right| \\ &\leq (|x_1| + \|h_r\|_{L^1}) |t - \tau| + |p(t, \omega) - p(\tau, \omega)|, \end{aligned}$$

Where $p(t, \omega) = T \int_0^t h_r(s, \omega) ds$. From the above inequality it follows that

$$|y_n(t, \omega) - y_n(\tau, \omega)| \rightarrow 0 \text{ as } t \rightarrow \tau.$$

This shows that $\{y_n\}$ is an equi-continuous sequence in $Q([a, b])$. Now $\{y_n\}$ is uniformly bounded and equi-continuous, so it has a cluster point in view of Arzela-Ascoli theorem. Now the desired conclusion follows by an application of Theorem 1.

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ALGAL SPECIES DIVERSITY AT TERNA WATER RESERVOIR IN OSMANABAD DISTRICT OF MAHARASHTRA

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ABSTRACT

The current communication focuses with algal members at the Terna Dam in Maharashtra's Osmanabad district. The research of the diversity of algae was conducted at four separate locations of a water reservoir. During the current inquiry, a total of eight genera and thirteen species were collected from the water body, with *Pediastrum* represented by five species, *Oocystis* by two, *Trentepohila*, *Gonium*, *Chlorococcum*, *Treubaria*, *Sorastrum* and *Tetraedron* by one species.

KEY WORDS: Algae, Species, Diversity, Terna

INTRODUCTION:

Terna Water Project was built in 1970 on the Terna River near the village Ter in Maharashtra's Osmanabad district. It has a big capacity for water storage, and the project's catchment area is very large. The water body also has a huge amount of algae and other aquatic plants. As a result, research into aquatic flora in the Terna water reservoir is critical.

MATERIALS AND METHODS:

Algal samples were collected once in a month from water body. The Sample collection was carried out in morning between 7.00 am to 10.00 am. The algal samples were collected in 100 ml plastic bottles and then brought to the laboratory. These samples were preserved in 35 ml capacity plastic bottles in 4% formalin for further studies. In the laboratory, they were preserved in 1000 ml capacity wide mouth glass bottles. The planktonic members were collected by using Plankton net, as per the method adopted by Narkhede (2006). The morphological studies of specimens were done by using Research Microscope and the photographs were taken using digital camera. The algal taxa were described along with their location of occurrence. The identification was done with the help of available literature such as floras, monographs and research articles. [Narkhede (2006), Prasad and Misra (1992), Celekli et al. (2007), Satpati et al.(2013), Jena and Adhkari (2007), Prescott (1951), Phiipose (1967), Tppawan Prasertsn and Yowadee Peerapornpsal (2012), Jena and Adhikari (2007), Rai and Misra (2012), Dhande (2013), Philipose (1967), Misra et al. (2002)]

RESULTS AND DISCUSSION

During present investigation eight genera and thirteen different species of algae were observed which are described as under.

1) *Trentepohila torulosa* Wildeman

Prasad and Misra, 1992, p 65, pl 10, f 2,7

Epilithic, stratum thin, flexus, consisting of small compact tufts, or spreading in the form of soft cushion, yellowish green to dark orange when dry, vegetative filaments torulose and branched, distinctly constricted at cross walls; cells ellipsoid or sub-spherical in center of filament, 15 μ m broad, 22.5 μ m long; cell wall thin and smooth; sporangia spherical to obovoid, usually lateral or terminal, rarely intercalary, 20 μ m broad, 25 μ m long.

Locality : Terna Station 01; Terna Station 3; Terna Station 04

Coll.No.and Date: TS-196 (28/09/14); TS-305 (15/02/15); TS-384 (11/10/15)

2) *Gonium pectoral* Muller

Celekli et al., 2007, p 58, f 6b

Coenobia 75 μ m wide, consists of 16 cells, 12 cells arranged peripherally, others at the centre of the coenobium, pear-shaped cells 12.5 μ m wide, 15 μ m long, chloroplast cup-shaped.

Locality : Terna Station 01; Terna Station 02; Terna Station 03;
Terna Station 04

Coll.No. and Date: TS- 134 (23/02/14); TS- 55 (10/11/13); TS- 144 (09/03/14);
TS- 127 (16/02/14)

3) *Chlorococcum infusioenum* (Schrank) Menegh

Satpati et al., 2013, p 29, pl 1, f 2

Free living, unicellular, green, cells are solitary or sometimes in colonial form; striking variation in size shows between various cells, young cells are thin walled and spherical or somewhat compressed, old cells have thick walls that are often irregular in outline, chloroplasts of young cells are parietal massive cups, completely filling the cell except for a small hyaline region at one side, they contain one pyrenoid, the chloroplast usually becomes diffuse and contains several pyrenoids, young cells are 55 μ m in diameter and mature cells are 122 μ m in diameter.

Locality : Terna Station 01; Terna Station 02; Terna Station 03;
Terna Station 04

Coll.No. and Date: TS- 610 (01/01/17); TS- 512 (20/03/16); TS- 230 (16/11/14);
TS- 82 (22/12/13)

4) *Treubaria setigera* (Archer) G.M.Smith

Jena and Adhkari, 2007, p 171, pl 1, f 2

Cells solitary, free floating, triangular, sides equal in length, and deeply concave, angles of cells broadly rounded; cell membrane thick and smooth; chloroplast single discoid form without pyrenoid; cells up to 25 μ m in diameter.

Locality : Terna Station 02; Terna Station 03; Terna Station 04

Coll.No. and Date: TS- 293 (01/02/15); TS- 38 (13/10/13); TS- 195 (28/09/14)

5) *Sorastrum americanum* (Bohlin) Schmidle var. *undulatum* G.M.Smith

Prescott, 1951, p 228, pl 50, f 10

Cells with outer free walls emarginate and furnished at each of 4 angles with a long stout, outwardly directed spine; cells narrowed towards base and attached to centre of the colony. Cells 15 μ m in diameter, 12.5 μ m long, and spines 10 μ m long.

Locality : Terna Station 01; Terna Station 02; Terna Station 03;
Terna Station 04

Coll.No. and Date: TS- 90 (29/12/13); TS- 117 (02/02/14); TS- 146 (09/03/14);
TS- 171 (13/04/14)

6) *Pediastrum angulusum* (Ehr.) Meneghini var. *laevigatum* Raciborski

Phiiipose, 1967, p 117, f 39

Colony 32 celled and compact without perforations. Interior cells transversally elongated, irregularly hexagonal. Marginal cells also transversally elongated, wider above, truncate at the base; outer side deeply emarginate and with

slightly converging lobes having obtuse or rounded ends. Cell membrane hyaline and smooth. Cells 30 μ and colony 120 μ in diameter.

Locality : Terna Station 01; Terna Station 02; Terna Station 04

Coll.No. and Date: TS- 177 (07/09/14); TS- 160 (30/03/14); TS- 253 (14/12/14)

7) *Pedistrum duplex* var. *asperum* A.Braun

Tppawan Prasertsan and Yowadee Peerapornpsal, 2012, p 34, f (h)

Coenobia are circular in outline. Perforations in coenobia are always smaller than the cell diameter. Coenobia are composed of 16 cells. Cell wall ultrastructure is irregularly net-like sculpture. Diameter of coenobia is 90 μ m, cells 15 μ m wide, 18.5 μ m long.

Locality : Terna Station 02; Terna Station 03; Terna Station 04

Coll.No. and Date: TS- 630 (05/02/17); TS- 397 (25/10/15); TS- 381 (04/10/15)

8) *Pediastrum duplex* Mey. var. *duplex* Sulek

Jena and Adhikari, 2007, p 171, pl 1, f 5

Coenobia 16 celled, 65 μ m in diameter, intercellular spaces large and oval in between the inner cells; cells more or less H-shaped with marginal sides, cells nearly parallel; chloroplast single and parietal with a distinct pyrenoid; cells 15 μ m in diameter.

Locality : Terna Station 01; Terna Station 02; Terna Station 04

Coll.No. and Date: TS- 413 (15/11/15); TS- 375 (27/09/15); TS- 171 (13/04/14)

9) *Pediastrum simplex* Mey. var. *pseudoglabrum* Parra.

Jena and Adhikari, 2007, p 172, pl 1, f 10

Coenobia 16 celled, cells arranged in a ring round a central space with one or more interior cells and a number of marginal cells, perforate; central cell convex, cell wall smooth; chloroplast single parietal with a large pyrenoid; cells 15 μ m broad and 35 μ m long.

Locality : Terna Station 01; Terna Station 3; Terna Station 04

Coll.No. and Date: TS-196 (28/09/14); TS-305 (15/02/15); TS-384 (11/10/15)

10) *Pediastrum tetras* var. *tetraodon* (Corda) Hansgirg

Rai and Misra, 2012, p 173, f 4

Colonies 8 celled; incision of cells deep with the lobes adjacent to the incision of the marginal cell; colonies 30 μ m in diameter; marginal cells 10 μ m long, 10 μ m broad; inner cells 8.5 μ m long, 10 μ m broad.

Locality : Terna Station 02; Terna Station 03; Terna Station 04

Coll.No. and Date: TS- 55 (10/11/13); TS- 144 (09/03/14); TS- 127 (16/02/14)

11) *Tetraedron trigonum* (Naegeli) Hansgirg

Dhande, 2013, p 135, f 2

Cells triangular, flat with slightly concave or straight sides and rounded corners each ending with a stout spine, cells 15 μ m in diameter, spines 5 μ m long.

Locality : Terna Station 02; Terna Station 03; Terna Station 04

Coll.No. and Date: TS- 512 (20/03/16); TS- 230 (16/11/14); TS- 82 (22/12/13)

12) *Oocystis eliptica* W.West

Philipose, 1967, p 186, f 100a

Colony 4 celled with envelope narrow and rarely solitary. Cells elongate-ellipsoid with broadly rounded ends which are not thickened. Chloroplast numerous and in the form of parietal discs without pyrenoid. Cells 12.5 μ broad, 20 μ long.

Locality : Terna Station 02; Terna Station 03; Terna Station 04

Coll.No. and Date: TS- 293 (01/02/15); TS- 38 (13/10/13); TS- 195 (28/09/14)

13) *Oocystis gigas* Archer

Misra et al., 2002, p 63, pl 2, f 1

Colonies of 4 cells, cells broadly ellipsoid with rounded ends, poles not thickened, chloroplast parietal, discoid. Length 25 μ m, lateral cell 15 μ m.

Locality : Terna Station 01; Terna Station 02; Terna Station 04

Coll.No. and Date: TS- 413 (15/11/15); TS- 375 (27/09/15); TS- 171 (13/04/14)

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SYNTHESIS, CHARACTERIZATION & APPLICATIONS OF SUPERCAPACITOR: A REVIEW

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Abstract

Energy storage is the need of future.as current energy sources such as fossil fuels are diminishing day by day, there is a need of storage of energy. Non- conventional energy sources are used as alternative to fossil fuels but they have many limitations such as availability, low energy density etc. Use of fossil fuels creates environmental problems such as air pollution, water pollution. Also, use of many fossils fuel result in global warming, greenhouse effect etc. Energy storage devices such as batteries, fuel cells, capacitor and supercapacitor are used to storage energy in the form of charges. As compare to other energy storage devices, supercapacitors are good options because of their life cycle, fast charging/discharging, high storage capacity etc. there are various materials used to make supercapacitor but recently nanotechnology have been used to make the supercapacitor in very efficient way. This paper reviews about use of nanomaterial in supercapacitor applications.

Keywords- Supercapacitor, Electrochemical study, EDLCs, Batteries

Introduction

Modern industrialization and increased population consume more and more energy day by day.[1] Hence conventional energy resources are using in large amount every day in this modern world. Due to this energy resources are decreasing continuously. [2] non-conventional energy sources such as wind energy, solar energy, geothermal energy are the alternatives to conventional energy sources but they have limitations due its nature, availability and other factors. hence, we need energy storage devices which can store the energy and use it later. battery, fuel cell and supercapacitors are the best energy storage devices.[3] among them, supercapacitor is best storage device because of high power density, quick charge-discharge mechanism, low input resistance, extended lifetime, and environmentally friendly. [4] Rechargeable batteries, such as lithium ion batteries, is best option due to their high energy density but they have sustained performance, limitations in their short cycle life, relatively slow charging discharging rates and consequently lower power densities. [5]

SCs can be divided into three groups, i.e. (a)Electric double layer capacitor(b)Pseudo Capacitor and (c)Hybrid capacitor.

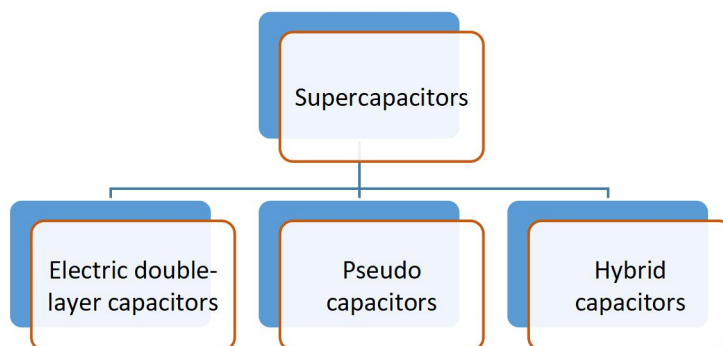


Fig A-Classification of Supercapacitors

Electric double layer capacitor i.e.EDLCs that exploit double layer electrodes to store the electric charge through non-faradic interactions means electrostatic interaction. [6]while in pseudocapacitors charge storage mechanism have carried out faradaically through oxidation-reduction reactions associated with their various potential and in

Hybrid supercapacitors, the charge storage mechanism of the two electrodes is not similar, and the storage mechanism is based on both Faradaic and non-Faradic behaviour of used material [6].

Synthesis Method

There are various synthesis methods for electrode material in supercapacitors. Some of them as shown in following table

Synthesis method	Supercapacitor Material
Electrochemical deposition	Metal oxide Conducting Polymer
Chemical Bath Deposition	Ruthenium oxide
Chemical Vapor Deposition	Graphene Carbon Nanotube
Sol gel	Carbon aerogel MnO ₂ SnO ₂
Chemical Precipitation	Nikel oxide Manganese oxide

Table: Synthesis method of Supercapacitors[7]

4.Characterization

Following are some of the characterization techniques which are used for supercapacitor applications

1. XRD (X ray diffraction)
2. SEM (Scanning Electron Microscopy)
3. TEM (Transmission Electron Microscopy)
4. UV Visible Spectroscopy
5. Electrical studies
6. Electrochemical studies

5.Applications

Supercapacitors have many applications. some of them have shown in following figure

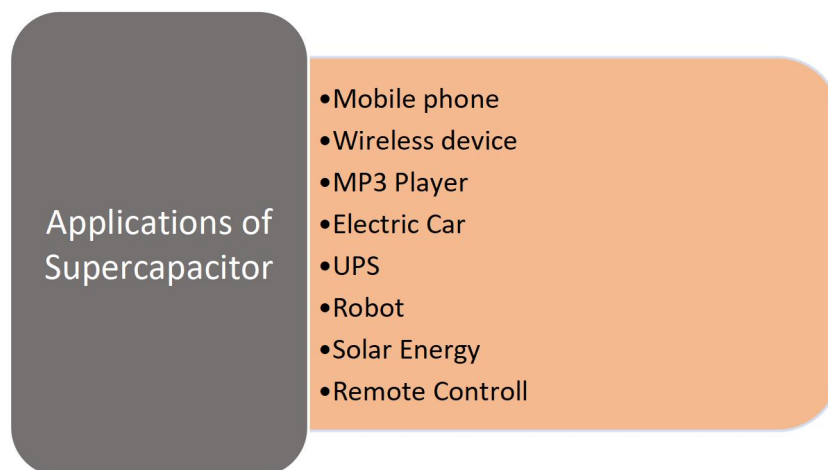


Fig B: Applications of Supercapacitors

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POPULATION GEOGRAPHY AS CLIMATE ISSUE: THE FERTILITY BY AGE DIFFERENTIAL

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Introduction

India was the first country in the world to institute a National Family Planning Programme in 1952. India is a signatory to the 1994 International Conference on Population and Development (ICPD) Programme of Action that commits to a target-free and voluntary approach to family planning. Further, the National Population Policy 2000 clearly lays out a non-coercive strategy. This strategy is echoed in Uttar Pradesh's own Population Policy 2021-2030, a document that was released on July 11, 2021 the same day the draft population control bill for the state was also introduced.

If the assumption is that "certain" communities require population control measures, then that too is not backed by evidence. The TFR for UP's Muslim population has fallen more dramatically compared with any other group. The most significant impact of a two-child norm will be on the poor and already vulnerable communities, particularly women, regardless of caste or community, who already have little to no access to health services, including family planning and education. Disincentives that deny schooling benefits, rations, employment opportunities and political representation will only exacerbate the already stark inequities. Revoking benefits when the poor have been hardest hit by the Covid-19 pandemic will bring even more hardship.

Economic and educational status are a far more robust indicator of the number of children that a woman will have than religious belief. According to NFHS-4, 2015-16 data, the TFR among women in India with 12 or more years of education is 1.7 in comparison to women with no education where it is 3.06. Similarly, the TFR in the highest wealth quintile is only 1.54 in comparison to 3.17 in the lowest. Rather than a two-child policy that is anti-women, anti-child and anti-poor, we would do well by learning from Kerala. Investments in women's empowerment, employment opportunities, education and health system strengthening have brought down overall TFR for Kerala to 1.6 in 2015-16.

Review of Literature

According to NFHS-4 (2015-16), Uttar Pradesh has a TFR of 2.7, which is above the replacement level of TFR. The Technical Group of Population Projections, constituted by the National Commission on Population under the Ministry of Health and Family Welfare, has projected in July 2020 that UP will achieve replacement level of TFR by 2025, without any need for coercive policies (United Nations).

Nirmala Buch, a former senior Indian Administrative Service officer, found that in the states that adopted a two-child policy, there was a rise in sex-selective and unsafe abortions; men divorced their wives to run for local body elections, and families gave up children for adoption to avoid disqualification. As per NFHS-4, while UP's sex ratio for the overall population is 995, the sex ratio at birth for children born in the last five years is 903 girls for every 1,000 boys. The data clearly indicates an alarming trend in sex-selective practices in the state. Stringent population control measures will potentially lead to an increase in these practices and unsafe abortions, given the strong son-preference in the country (United Nations).

The declining sex ratio for females in India was attributed to causes like: (1) Women's lower status contributing to low age at marriage for girls, lower literacy and educational attainment, higher fertility and mortality levels during the reproductive ages. (2) Lesser attention paid to the female children when compared to the male ones. (3) Increasing incidence of female foeticide through the use of the modern techniques of sonography, by identifying the sex of the baby at early stages of pregnancy (Census of India, 2011).

Formulation of the Problem

“Population, global warming and consumption patterns are inextricably linked in their collective global environmental impact,” reports the Global Population and Environment Program at the non-profit Sierra Club. “As developing countries’ contribution to global emissions grows, population size and growth rates will become significant factors in magnifying the impacts of global warming.” so, therefore what is the climate profile and age specific fertility rate in India

Research Questions of the Study

- ❖ What are the fertility by age in India concern to the Climate change?
- ❖ What is the profile of population in India

Objectives of The Research

- ❖ To analyze the fertility by age in India concern to the Climate change
- ❖ To analyse the profile of population in all over India

Research Methodology

The present study follows the simple method of analysis i.e. analytical method for analyzing problems in Policy formulation and policy implementation in India. Thus, the study investigates the variations in Policy formulation and policy implementation in India.

Therefore, the used the methodology that, Descriptive, Analytical and Library methods of research will be used to complete the proposed research works. Both the sources of data collection primary and secondary, will be used to collect the data. In primary sources government reports, census reports, original documents of government, population policies and resolutions, etc. In secondary sources reference

Data Source

The study have collected data from Drafts of each Five Year Plan, Planning Commission, Government of India, Different kind of Census of India, Provisional population totals, different kind of series, Registrar General and Census commissioner, Government of India, Different kind of National Family Health Survey, Government of India, United Nations Population Fund, www.unfpa.org; Sierra Club’s Global Population and Environment Program, www.sierraclub.org/population; Worldwatch Institute. www.worldwatch.org, World Bank, *World Development Indicators*, United Nations, Department of Economic and Social Affairs, Population Division, *World Population Policies 2015*.

Significance of the Study

The significance of this study describes that, the According to the United Nations Population Fund, human population grew from 1.6 billion to 6.1 billion people during the course of the 20th century. (It took all of time for population to reach 1.6 billion; then it shot to 6.1 billion over just 100 years.) During that time emissions of CO₂, the leading greenhouse gas, grew 12-fold. And with worldwide population expected to surpass nine billion over the next 50 years, environmentalists and others are worried about the ability of the planet to withstand the added load of greenhouse gases entering the atmosphere and wreaking havoc on ecosystems down below.

Developing countries like **India** have a steady growing population country. According to the United Nations Population Fund, fast-growing developing countries (**like China and India**) will contribute more than half of global CO₂ emissions by 2050 (United Nations).

Climate Issue and Population Geography

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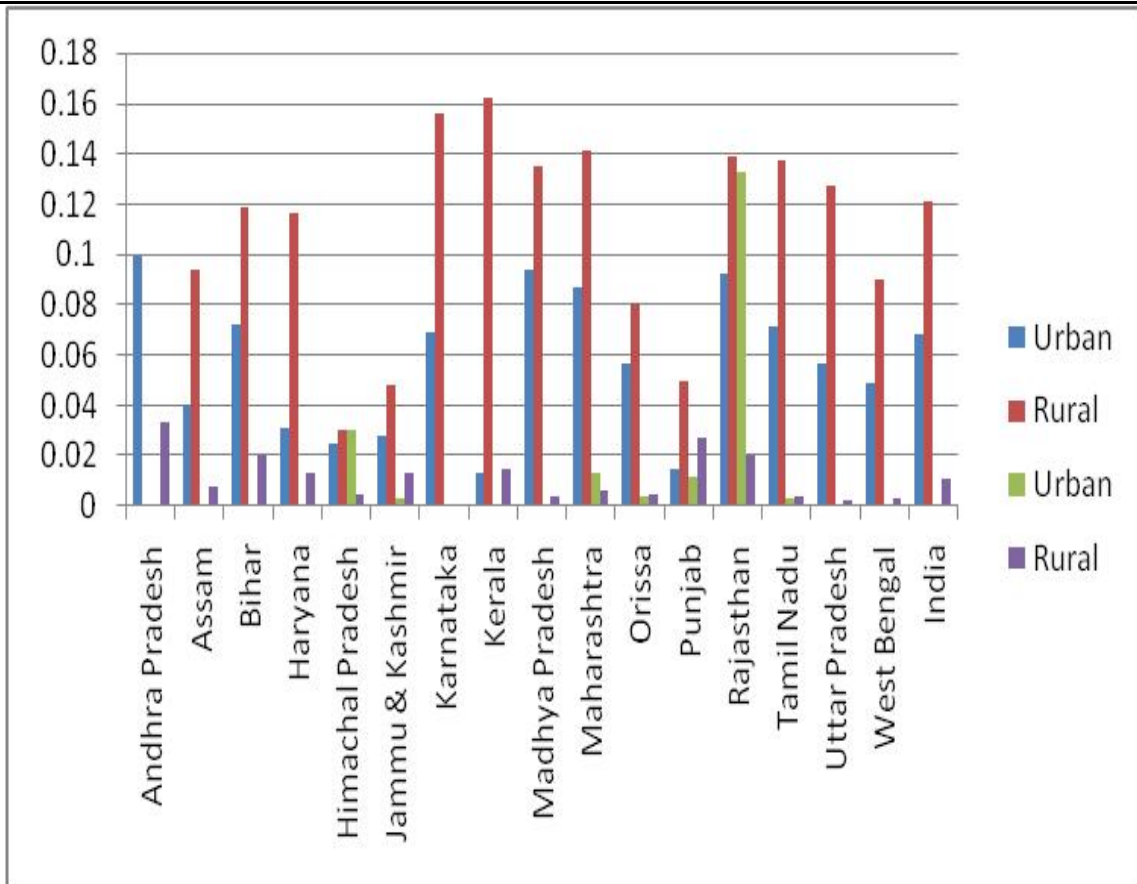
The Problem of Age Specific Fertility Rates in States By Residence

These are so many issues in formulating policies to control population such as uncertainty in different kind of. Age group have different fertility is a main problem to formulate policies to control population and this issue become more difficult to government to make policies to control population

Age Specific Fertility Rates in States

States	15-19		40-44	
	Urban	Rural	Urban	Rural
Andhra Pradesh	0.099			0.033
Assam	0.04	0.094		0.008
Bihar	0.072	0.119		0.02
Haryana	0.031	0.116		0.013
Himachal Pradesh	0.025	0.03	0.03	0.005
Jammu & Kashmir	0.028	0.048	0.003	0.013
Karnataka	0.069	0.156		0.001
Kerala	0.013	0.162		0.015
Madhya Pradesh	0.094	0.135		0.004
Maharashtra	0.087	0.141	0.013	0.006
Orissa	0.057	0.081	0.004	0.005
Punjab	0.015	0.05	0.012	0.027
Rajasthan	0.092	0.139	0.133	0.02
Tamil Nadu	0.071	0.137	0.003	0.004
Uttar Pradesh	0.057	0.127		0.002
West Bengal	0.049	0.09		0.003
India	0.068	0.121		0.011

The Figure of Age Specific Fertility Rates in States : 15-19 to 40-44



Source: Figure based on the basis of above data

Conclusion

Above diagram also shows Under different kind of age group like 15-19, and 40-44 years, women are having different kind of fertility (Bihar, Rajasthan, Tamil Nadu and Uttar Pradesh Madhya Radesh, Maharashtra, West Bengal, Karnataha, Kerala, Punjab, Tamil Nadu) (National Family Health Survey, 2011).

These are so many issues in formulating policies to control population such as uncertainty in different kind of. Age group have different fertility is a main problem to formulate policies to control population and this issue become more difficult to government to make policies to control population.

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GLOBAL CLIMATE CHANGE ITS CONSEQUENCES PROBLEMS AND IMPLICATIONS: A GEOGRAPHICAL STUDY

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Abstract. Today, the issues of global warming and significant climate change are extremely relevant. They are discussed not only by scientists and politicians, but also by ordinary citizens. It must be understood that this problem really deserves extensive attention. Numerous studies have long confirmed that warming does have an impact on the environment, even at the regional level. If we leave some thoughts about extrapolation in the future, then the usually cited facts on local effects are easily verified by local residents, to a greater extent when it comes to melting permafrost or warm winters. In addition, biospheric effects relating to individual organisms are observed by all of us at the household level and therefore do not raise questions. In the modern world, the climate is changing under the influence of natural and anthropogenic factors. It seems to us that every person should want to preserve the natural conditions in which we live. Within the framework of this article, it is proposed to consider in more detail how this can be done.

1 Introduction :-Global climate change today is one of the most acute problems of the world economy and politics. 97% of scientists agree that the problem exists, and that it has worsened in the last 20 years during the industrial revolution, which led to massive emissions of harmful substances into the atmosphere, water and soil. In my work, I want to show how the impact of global warming on the world is manifested, what methods exist to combat this problem. In the beginning, I would like to form an idea about the main causes of global warming. The factors of influence of global warming on the world will also be listed [1].

2 Causes of climate change :- Today, scientists consider Earth's climate change as a global problem of mankind. The climate on Earth is changing and it is impossible to refute. The natural causes of climate change on Earth include the influence of the Sun. Solar radiation unevenly heats the surface of our planet (more strongly in the equatorial region), so winds and sea currents are formed. If solar activity is increased, then geomagnetic storms and warming occur. The following natural causes of climatic transformations include shifts of the planetary planet, volcanic eruptions, movements of continental and oceanic plates, changes in the geomagnetic field. One interesting fact has been noticed about volcanism: one powerful volcanic eruption is followed by a sharp cooling in this area for several years. Although volcanic eruptions are rare, on a scale of a few years they can play a major role in climate cooling and the extinction or preservation of entire species [2].

It is no secret that for quite a long time, the continents move with the help of tectonic plates. Thus, new seas and oceans are created, mountains collapse or grow: a surface is created, where the climate is subsequently formed. For example, the Ice Age, which occurred about 3 million years ago and went down in history, extended the movement of the North and South African plates. As a result of their collision, the Isthmus of Panama was formed. Perhaps he prevented the mixing of the waters of the two oceans (Atlantic and Pacific), because of which, presumably, the glaciation period lasted longer. These factors have always contributed to cyclical fluctuations. Anthropogenic factors, those associated with human activities, have been added to the natural causes of climate change. These include, for example, the greenhouse effect. Since the beginning of the 21st century, its impact on the planet has exceeded the influence of solar radiation by 8 times in intensity [3]. Here are other additional problems affecting the climate and the environment that man thoughtlessly creates:

1. Fuel combustion. The amount of CO₂ (carbon dioxide) has increased by 10-15% over the past hundred years, and 400 billion tons of carbon dioxide have been released due to fuel combustion alone. The higher the CO₂ content, the less heat the Earth dissipates. Ice cores extracted from wells at the Vostok and Mirny stations in Antarctica showed that the carbon dioxide content in the atmosphere is growing, which causes warming and an increase in the temperature contrast of the weather.

2. Aerosols. They can be isolated from natural and anthropogenic sources. Aerosols can lead to droughts in some regions, and to a significant deterioration in weather conditions in the form of snowfall, rain and temperature decrease in others. They also influence the formation and growth of clouds.

3. Cement industry. Cement production is an intense source of CO₂ emissions, and therefore responsible for approximately 2.5% of CO₂ emissions from industrial processes (energy and industrial sectors).

4. Land use. Irrigation, deforestation and agriculture are fundamentally changing the environment. Changes in land use can influence climate by changing the properties of the earth's surface, which is not only a direct source of heat in the troposphere, but also one of the main sources of atmospheric water vapor. It is not surprising that a change in the characteristics of the earth's surface can change the thermodynamic and dynamic characteristics of the atmosphere and thus lead to various adverse climatic processes. Land use can influence the characteristics of the regional climate system, such as temperature, precipitation, evapotranspiration.

5. Cattle breeding. Although the relationship between livestock production and climate change is not visible at first, it does exist. According to 2015 data, 85% of the forest in the Amazon is cut down for pasture and farmland to grow soybeans, which are often used as animal feed. Growing meat for human consumption requires the use of large resources. It is expected that by 2050 the world population will increase to 9 billion people. This means that in order to feed the population with meat, meat production must increase, and with it the amount of greenhouse gases (about 46-50%) that adversely affect the environment [4].

3 Consequences of global warming :- When talking about global climate change, everyone suspects a frightening reality - global warming. No matter how many people fear this word, the facts prove it. If states do not start to seriously deal with the problem of environmental protection, by 2100 the temperature on the planet may rise by 3.7-4.8 °C. Climatologists warn: irreversible consequences for the environment will come already with a warming of more than 2 °C. The melting of age-old ice indicates global warming. Greenland annually loses 250-300 million tons of ice. A bare darker surface of water or land will heat up even faster.

Due to the melting of ice sheets, as well as due to the expansion of sea water, the level of the World Ocean will continue to rise (it is already rising by about 3 mm annually, and by the end of the 21st century it may rise by 0.3–0.6 m or more). In 2021, extreme weather conditions have been noticed. Such countries as Canada, South America, Iran, Afghanistan, Pakistan, Turkey suffered from severe drought. A drought has been going on in East Africa for about 40 years [5]. Record temperatures have been recorded in some parts of the world. These places include: California's Death Valley (54.4 degrees), British Columbia (46.6 degrees) and Sicily (48.8 degrees). Residents of Western Europe are faced with severe floods. Numerous human casualties and financial losses were suffered by Germany, the Henan province in China, and the southeastern United States. Natural ecosystems suffer no less. They are vulnerable. By the end of this century, 20 to 90% of coastal wetlands and about 70 to 90% of coral reefs could disappear [6]. Based on the first nine months of 2021, the last seven years are on track to be the warmest on record, according to the preliminary WMO State of the Global Climate Report 2021, based on data from the first nine months of 2021.

If it is not possible to stop the increase in the temperature of the planet, then:

1. Natural disasters will begin. Climate zones will shift, and the weather will change dramatically. There will be frequent extreme floods, droughts, rainfall and fires.
2. Some countries may become uninhabitable. By 2100, due to high humidity and high average temperatures, it will be impossible to live in some areas of the Earth. The following countries are at particular risk: Saudi Arabia, Qatar, the United Arab Emirates, etc.
3. Different types of plants and animals will begin to die en masse. According to scientists' forecasts, up to 30-40% of ecosystems and living beings are threatened with extinction, because their habitat will change much faster than they will adapt to it.
4. There will be hunger. The warming will negatively affect crop yields. This will be especially noticeable in underdeveloped countries (Latin America, Asia, Africa). By 2080, the number of hungry people could increase by 600 million people.
5. The level of the World Ocean will rise. As UN analysts warn, millions of people on the coast could die from private floods. The following countries fall into the risk zone: Bangladesh, Maldives, the Netherlands, etc. Some territories in Russia, Italy, the USA, and Germany may be sunk.
6. People will get sick more often. Increasing rainfall, water borne diseases will probably spread like malaria. If the Earth becomes warmer, then people may develop skin cancer, allergies, as well as problems with breathing, heart, etc.
7. The seasons will become longer or shorter. It is likely that spring will come 10 months earlier than in the past.

8. There will be a violation of the food chain. Birds will fly south earlier, animals will hibernate longer.
9. The population of the planet will decrease (75%). Half of the world's population will die from natural disasters, and 25% from diseases.
10. Air quality will deteriorate. The consequences are dirty air and smog.

4 Ways to solve the problem :- The main cause of modern warming is considered to be the release of greenhouse gases and carbon dioxide into the atmosphere, so the main efforts should be aimed at limiting this mission. It is also important to reduce the share of fossil energy sources - coal and oil in the global energy balance. The construction of new nuclear power plants, hydroelectric power plants, wind and solar power plants will help reduce emissions into the atmosphere. According to researchers, within 10 years, carbon dioxide emissions should be halved (by 45%). It is undeniably difficult to refuse air travel. It is worth reading the sad statistics to change your mind about this: only 1 standard transatlantic round-trip flight emits about 1.6 tons of carbon dioxide. Every inhabitant of the planet can contribute to the prevention of global warming. For example, citizens of any country can use as much natural sunlight as possible, limit or reduce the growth in overall energy consumption, or switch to a green energy supplier. They are also able to plant many trees on their site and monitor the growth of old ones. In order to personally influence the state of the ecosystem, it is recommended to travel frequently on foot or by bicycle. And here is another interesting way that will help prevent overheating of the planet - increasing the reflectivity of the Earth. In some countries, the practice of painting the roofs of new houses white is already practiced. This allows a few degrees to reduce the temperature in cities. The situation with shopping is no less interesting. The products that the entire population of the Earth buys leave their carbon footprint due to the way they are produced or transported. For example, clothing accounts for 3% of global carbon dioxide emissions. Similar circumstances apply to food products. As a rule, they are sent across the ocean and have more "food miles". Therefore, the best option is to consume locally produced seasonal products. Having fewer children is also a good idea to contribute to climate change. On average, one person consumes 5 tons of carbon dioxide per year, but each country has different circumstances. Even in one state, there is much more trace from rich people than from people with less income to services and goods. I would like to note such a concept as a "green" economy. For the first time, its concept was voiced at the London Center for Environmental Economics in 1989. Unfortunately, it has not received universal recognition. Today, when governments are looking for effective ways to get their country out of related (energy, food and financial) crises, the concept of transition to a green economy has been proposed as a means of accelerating the development of frustrated national policies, international cooperation in support of sustainable development. It involves the sustainable development of agriculture, "green" industrial production. Such an economy has a beneficial effect not only on the environment, but also on social and environmental transformation.

5 Conclusion :-Climate change and related ecological processes are monitored by the Institutes of Ecological and Climate Research, Biological and Geological Sciences. Their tasks include studying the mechanisms of plant adaptation to climate change and its impact on the soil cover. An example of an organization that specializes in obtaining objective scientific data is the IPCC. At the end of 2022, the International Economic Forum in Davos on May 22-26 will discuss the mobilization of the efforts of the public and private sectors to achieve the global climate goals for 2030-2050. And at the UN climate summit COP27 in Egypt, it is planned to discuss the report on the state of the global climate (from WMO) for 2021 and the Sixth Assessment Report of the IPCC. I believe that, taking into account the problems associated with the process of global warming, humanity will be responsible for what surrounds it. I know that nature is not to be trifled with. We all live under the same sky, and in order for our children and future generations to be able to continue to live, it is simply necessary to protect the ecosystem today. Small steps on the path of change to a better life will be a big leap for humanity. I, Belyaev Gavril Alexandrovich, would like to express my sincere gratitude to my scientific advisor, Valeriy Alexandrovich Yakovlev, for his help in finding sources of literature, which became the basis for writing this scientific article.

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ANALYSIS OF FOOD FRANCHISING MODELS: AN EMPIRICAL STUDY WITH REFERENCE TO MUMBAI CITY

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Abstract:

A population of more than 2 Cr, Mumbai often known as the "City of Dreams" and the financial capital of India. With its attractive business environment and a multitude of opportunities, Mumbai provides a fertile ground for all food franchising models from world. The city's conducive business ecosystem plays a important role in supporting franchises, offering a large and diverse consumer base, efficient transportation systems, and a competitive marketplace that helps in innovation and growth.

The food service market in India was predicted to be about 110 billion U.S. dollars in 2025. The food franchise market had increased significantly over the year from 2014. Hence, this study aims to discuss the reasons for huge growth rate of food franchising business models in Mumbai. Also study compared four different models of food franchise in the Mumbai city.

The study used qualitative methodology with the use of in-depth interviews/ questionnaire for collecting data. These findings can be used by all franchises that seek to establish successful businesses in the Mumbai food franchising market. Other franchise businesses models may also benefit from some aspects of the study.

Key words : franchising models, Indian market.

1. Introduction:

A franchise business model is a legal relationship between the owner of a brand (franchisor) and an individual or entity (franchisee) that is granted the right to run or operate a business using the franchisor's brand name and support. In this model, the franchisor authorizes the franchisee to sell its products or services, typically in a specific geographical area.

India, with a population of approximately 1.46 billion people, proved one of the largest food franchise markets in the world. And it will grow with a rate of 30% over a next five years. It is predicted that the global turnover is around Rs. 900 billion. The franchising sector contributes near around 1.8 per cent to the Indian GDP and is predicted to contribute nearly 4 per cent by the end of 2022. [9] India does not have any food franchise-specific rules and laws or regulatory bodies to regulate franchise businesses and franchise agreements. The Indian Contract Act 1872, the Foreign Exchange Management Act 1999 and the Income-tax Act 1961 are some of the main acts that regulate all types of franchise arrangements in India. The Indian Foodservice sector has now become engine for economic growth for India, as it also provide employment to 5.5-6 million people in country. The organized market or franchisees includes large and small format restaurants & cafes in food and beverages which contributes of 30% of the market. By that statistic, if employments were to grow proportionately and franchising captures a hold of the larger market and given the overall need to organize the F&B services for reasons of food safety and better tax services enablement, it has a potential to increase employment by 60 million in India.

Mumbai - often referred to as the 'Financial capital of country' among the masses, is one of the top locations for food entrepreneurs exploring the best franchise opportunities in India. The fast-paced urbanization across the entire city and the adjoining suburbs has witnessed a huge number of brands and business owners to expand via the franchise business model, thereby giving rise to a significant number of new business opportunities in Mumbai for food business seekers. However, since the existing literature on the success factors of franchising models in Mumbai is still scarce, this study is expected to answer the following research question: what are the reasons for

huge growth of food franchising models in Mumbai city? Also following study work compare the four different basic models of local and international franchising shows huge potential in urban cities like Mumbai. Therefore, to fill the research gap, there is a need to determine the critical success factors for franchisers within the franchising area.

2. Review of Literature

- a. Ruchir Sharma (2023) has focused in his reference “Analysis of Franchise as a Cornerstone of Success in Indian Market” that various significant aspects of the franchise business model, providing valuable insights into its advantages, challenges, and potential for growth in Indian Market.
- b. Prof A. Seshachalam, (2022) has focused in his reference “Viability of Franchising Business Models: An Empirical Study” that three critical success factors emerged from this study, the franchisor’s capability, interconnection with franchisees, and constant innovations in models. Also he focused on how to examine the viability of various franchisee models prevailing in the Indian market. For this research the he has selected a sample size in the city of Chennai.
- c. Dr. Fanny Johansson (2018) has focused in her reference “Critical Success Factors: A study of Swedish Restaurant Franchisors” that how to find out what the CSFs are for Swedish restaurant franchisors of different sizes, what challenges they may come across and what their solutions to said problems are.
- d. Thao Hien Bui (2022) has focused in her reference “A literature review of franchisee performance: Insights for further research” that how to review and discuss the determinants of franchisee performance in different countries but predominantly based in developing countries with well-structured franchise systems.

3. Objective of the study

“To study the different critical success factors this helps franchising models in Mumbai City. Also compare the basic four models of food franchising in the context of metro cities like Mumbai.”

4. Limitation of the study

Researchers restricted a study to the franchisee from Mumbai region. Researcher also restricted to the secondary data for analysis purpose of the said project. Analysis and Interpretation of data is done of only objective related questions from the questionnaire.

5. Origin of the problem

Mumbai is currently attracting the huge competition among all food franchising business in market. The study identifies the success factors which help to achieve significant and stable growth for restaurant franchising in Mumbai. Also it is very important to study the basic models for franchising business before entering in to market.

6. Research Methodology

Research Methodology- Descriptive research methodology has been used to check the validity of the problem. We carried out a qualitative study involving the use of discussion/interview/ questionnaire.

Data Collection:

- i) A focus group discussion/interview/ questionnaire were conducted between sept 2023 to dec 2023 to gather information from the industry players, franchisors, and franchisees to gather their success stories. Basically structured questionnaire prepared and distributed to the respondents present in Phoenix Mall Kurla for findings. A total of six franchisors were interviewed as well as filled questionnaire. These were the only franchisors that operated proper franchises with corresponding franchisees in the business environment considered for study. The interview guide/ questionnaire used raised the following questions: What does success mean to you? How would you measure success? What are financial supports from local government in Mumbai? What are the key surrounding factors motivate them to do business in Mumbai? The primary data collected from local franchising offices basically engaged in food industry. We have

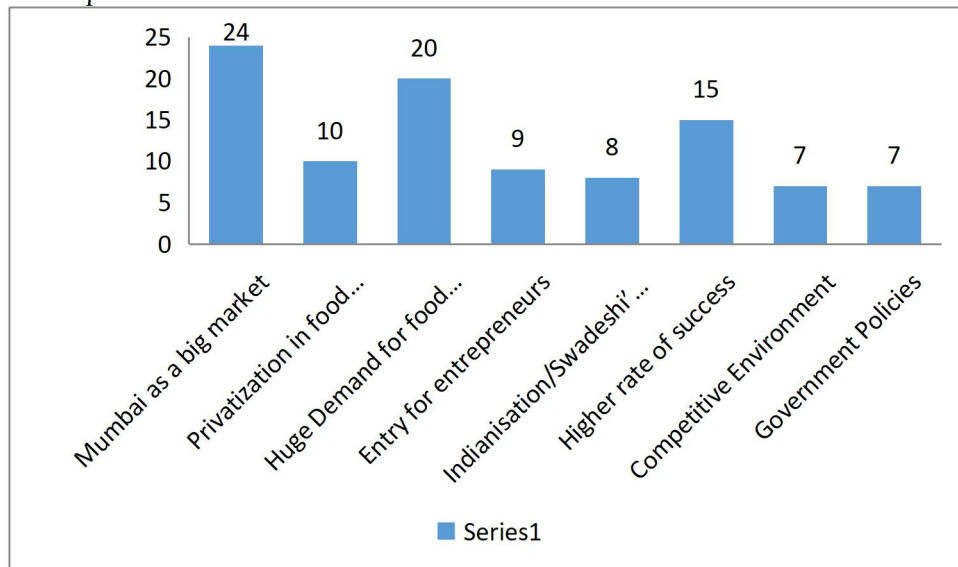
selected 6 such national and international franchisee (100 respondents) collected from questionnaire asked through calling, personally visit and through internet.

- ii) The secondary data is collected from the journal, newspapers, and Research thesis on digital technology for comparing the business models.

Sampling Techniques- Random sampling technique has been used to collect the, original information of given problem.

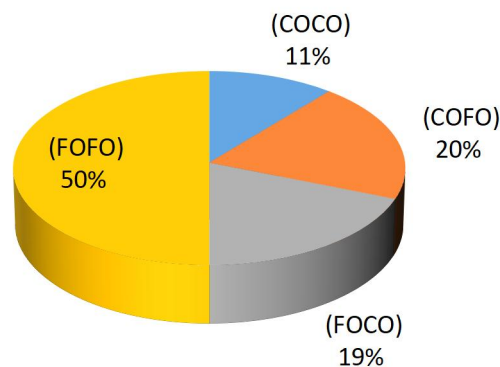
Data Analysis and Interpretation

- i) Total 100 questionnaires (with 8 important reasons or critical successful factors) distributed to all targeted 6 franchisors in Mumbai City, almost 85 completed questionnaires were received directly and 15 completed by interview because some language barriers or legal issues. Hence all 100 questionnaires were used to interpret the results. Data gathered through the questionnaire was subjected to frequency counts and all responses to the questions, which are quantified, are then presented in percentage forms.
- ii) First section of the questionnaire sought to identify specific reasons to get success or their critical success factors for establishing franchising in particular Mumbai city. It enabled the researcher to identify the responses of those factors or reasons that never considered before from the current analysis. In second section of questionnaire sought to understand the type of franchising models established in Mumbai. Collected responses to the questions quantified and presented in percentage forms.
- iii) Following graph reflects the percentage wise reasons/critical success factors responsible for successful establishments of franchising business in Mumbai city. Out of 8 factors, Mumbai as a big market and huge demand for food franchising business, contribute 44% whereas privatization and higher rate of success, makes 35%. Above four factors actually dominate all other factors because of diverse population and elevated life style of residents. Interestingly, two other important factors such as government support and entry of entrepreneur are needed to be addressed more in future.



- iv) Following pie chart reflects the current scenario of percentage wise types of franchising models in Mumbai city. Franchise Owned Franchise Operated is seems to be most favorite business model which cover almost 50% of all food franchising business in city. Interestingly company owned company operated contributes only 11% because franchisor always dominated operating, branding and marketing of business.

Percentage wise type of Franchising model in Mumbai City



7. Findings-

Interviews/questionnaires with franchisors of food industry responded the following success factors for their huge success in Mumbai city.

1. *Mumbai as a big market:* Due to the large demand and well connectivity to world, foreign investors and brands, local entrepreneur view the Mumbai city as a big, beneficial destination to set up franchised outlets. The franchise models also works across diverse fields like food and beverage, restaurants and ice cream parlors and so on and thus allowing a greater number of local as well as international companies with varied products and services to set up successful franchise businesses across the Mumbai city.
2. *Privatization in food industry:* With privatization of everything in India, Mumbai city witnessed there is a very easy access to do ease of business. Hence all local private and international brands started to open up their chains in food franchising in streets as well as malls.
3. *Huge Demand for food franchised models:* As a city is known as financial capital of country, observed that continuous increasing purchasing power or standards of living of their residents. Now people aware the all food brands, tastes and choices which ultimately opened up huge stable and demandable market for all franchise system.
4. *Entry for entrepreneurs:* So many studies reflected that world franchise industry most of the time driven by young or first generation entrepreneurs who entering minimum risky environment with well-established models. This is also proved in Mumbai city as so many local entrepreneurs started their own food franchising successfully and now stabled in market. In fact, currently about 35% of Indian franchisees are new entrepreneurs wish to spread their chains in all limbs of city like Yewale tea.
5. *Indianisation/Swadeshi' of products:* Understanding the customer sentiments and catering to their specific needs in Mumbai city all franchising units now started locally made food to build massive consumer base (i.e Nadbrahma Idly). And hence now all big brands provided customized orders which attracts or catch basically all middle class customer.
6. *Higher rate of success:* As compare to other startup ventures, food franchising models showed very less rate of failure. There may be so many reasons behind reducing chances of failure such as food franchising models are properly proven models which cater all daily demands or tastes of highly diverse population of Mumbai city. Day by day all units of models increasing their advertisement campaign and come out with existing loopholes with proper research, example: new brands of coke industries/franchising selling free of cost their products to colleges students
7. *Competitive Environment:* Franchisors now understood the importance of studying the competitive environment and crafting winning strategies in the mumbai city where diversity is very high and it automatically boost their critical success factors.
8. *Government Policies:* The Mumbai local regulation requirements such as local bylaws are crucial

considerations in franchising. Government policies are very much supportive to the franchising industry in terms of taxation, providing utility services like water and light. Also security from all kinds of threats makes Mumbai for safer to run all franchise business during midnight also.

Interviews with franchisors of food industry responded also various franchising models which help to understand their structure and effective settlement in Mumbai city.

Table 1: Comparison of various types of Franchise Models

Sr. No.	Company Owned Company Operated (COCO)	Company Owned Franchise Operated (COFO)	Franchise Owned Company Operated (FOCO)	Franchise Owned Franchise Operated (FOFO)
Nature of Working	The franchise store unit is owned and run by the brand only.	Company/Industry invests in the franchise business and the franchisee runs by guidelines of company	Owens the property and is responsible for all additional capital expenditures.	Gives the franchise investor its brand name
Control on operation	Franchisee does not have any operational control except Franchisor	Company support and provide training to the franchisee and franchisee is responsible for daily operations	Franchisor support and provide training to the franchisee and franchisee is responsible for daily operations	Franchisee have all operational control with Franchisors support
Control on branding and marketing	Franchisor of company	Franchisor only	Franchisor only	Franchisee
In charge of Hiring	Franchisor of company	Franchisee	Franchisor only	Franchisee
Example	Mc.Donald	Subway	Fresho	Bikanerwala

Conclusion

Throughout the paper, we have explored the various reasons for critical success factors such as higher rate of success, entrepreneurial potential, government policies, competitive environment and finally diverse population of Mumbai city which benefits of franchising, including access to an established brand, and economies of scale. This research paper has shed light on the significant aspects of the franchise business model, providing a clearer picture of the successful franchising business process/working model, its operations, branding and marketing rights, risk assessment and hiring authority.

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AN ERA OF SMART MANUFACTURING WITH REFERENCE TO IMPLEMENTATION OF INDUSTRY 4.0 ASPECTS IN AUTOMOTIVE INDUSTRIES

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Abstract: The first industrial revolution was characterized by steam power and the power loom; the assembly line was introduced during the second industrial revolution; and automation and data-enhanced automation came along in the 1970s during the third industrial revolution. This fourth industrial revolution is characterized by a range of interconnected automated systems that are fusing the physical, digital, and manufacturing worlds. Industrialization has witnessed a process of social and economic change taking place in society and transforming a human group of agricultural background into industrial society. Similarly 21st century witnessed the emergence of 4th Industrial Revolution which is the phase of digital transformation. Transformation of manufacturing processes, production & supply chain processes. IR 4.0 is aimed at creating intelligent factories where technologies are transformed with help of Cyber-physical system, IOT, Cloud computing, Big Data, robots, additive manufacturing, Simulation, system integration, Artificial intelligence, Cyber-physical system creates capabilities needed for smart factories. After analyzing the literature it has been concluded that IOT is the heart of today's manufacturing process. In detail paper describes its implementation, benefits, impact, limitations & recommendations.

Keywords: Industry 4.0, Smart manufacturing, IOT's, cloud computing, Cyber-physical system, Robotics, AI, Machine learning

INTRODUCTION:

Industry 4.0: "the technological combination of CPS into logistics and manufacturing with the use of internet of services and things in the industry process. They have implications for downstream services, value creation, work organization and business models." Industry 4.0 is ongoing transformation which changes the traditional way of manufacturing and industrial practice to the smart manufacturing and industrial practice by using latest smart Technologies.

Technologies driving Industry 4.0: Industry 4.0 is revolutionizing the way companies manufacture, improve and distribute their products. Manufacturers are integrating new technologies, including Internet of Things (IoT), cloud computing and analytics, and AI and machine learning into their production facilities and throughout their operations.

1. Internet of Things (IoT): The Internet of Things (IoT) is a key component of smart factories. Machines on the factory floors are equipped with sensors that feature an IP address that allows the machines to connect with other web-enabled devices. This mechanization and connectivity make it possible for large amounts of valuable data to be collected, analyzed and exchanged

2. Cloud computing: Cloud computing is a cornerstone of any Industry 4.0 strategy. Full realization of smart manufacturing demands connectivity and integration of engineering, supply chain, production, sales and distribution, and service. Cloud helps make that possible. In addition, the typically large amount of data being stored and analyzed can be processed more efficiently and cost-effectively with cloud. Cloud computing can also reduce startup costs for small- and medium-sized manufacturers who can right-size their needs and scale as their business grows.

3. Big Data Analysis: Big data analytics is the often complex process of examining big data to uncover information such as hidden patterns, correlations, market trends and customer preferences that can help organizations make informed business decisions. On a broad scale, data analytics technologies and techniques give organizations a way to analyze data sets and gather new information.

3. AI and machine learning

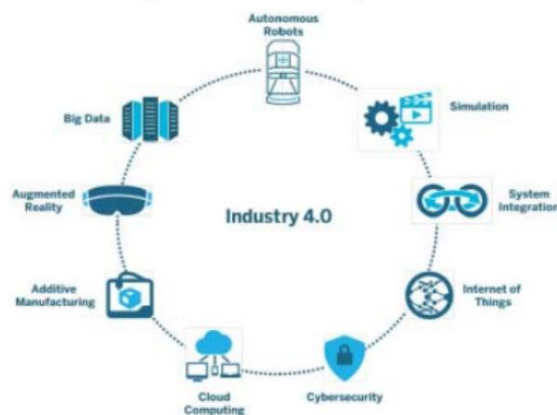
AI and machine learning allow manufacturing companies to take full advantage of the volume of information generated not just on the factory floor, but across their business units, and even from partners and third-party sources. AI and machine learning can create insights providing visibility, predictability and automation of operations and business processes. For instance: Industrial machines are prone to breaking down during the

Production process. Using data collected from these assets can help businesses perform predictive maintenance based on machine learning algorithms, resulting in more uptime and higher efficiency.

4. Cyber security: Manufacturing companies have not always considered the importance of cybersecurity or cyber-physical systems. However, the same connectivity of operational equipment in the factory or field (OT) that enables more efficient manufacturing processes also exposes new entry paths for malicious attacks and malware. When undergoing a digital transformation to Industry 4.0, it is essential to consider a cybersecurity approach that

Encompasses IT and OT equipment.

5. Edge computing: The demands of real-time production operations mean that some data analysis must be done at the “edge”—that is, where the data is created. This minimizes latency time from when data is produced to when a response is required. For instance, the detection of a safety or quality issue may require near-real-time action with the equipment. The time needed to send data to the enterprise cloud and then back to the factory floor may be too lengthy and depends on the reliability of the network. Using edge computing also means that data stays near its source, reducing security risks.



Source: Wikipedia

LITERATURE OF REVIEW: This section explores the topics concerning the context of this paper. The very first revolution in the automotive industry was back in 1913 when Henry Ford founder of Ford Motor Company introduced assembly line technique in mass production, followed by massive technological transformation across the automotive manufacturing value chain driven by potentials of Industrial Revolution 4.0

Management thinker and 'father of Industry 4.0' Henrik von Scheel describes three key drivers for Industry 4.0 success: think value, not tech; think people, not tools; and set clear targets from the start. “It’s the biggest structural change of the past 250 years — a transformation of scale, scope and complexity unlike anything humankind has experienced before,” says von Scheel.

Zuzana Papulová, Andrea Gažová- in the international journal the author published the research on Implementation of Automation Technologies of Industry 4.0 in Automotive Manufacturing Companies. In production, processes are important for companies, especially with the aim to provide their efficiency and fluidity. In the manufacturing industry, companies try to avoid unnecessary downtime and errors, they try to prevent incidents rather than solve them. Investment in the right, reliable and supported technologies should therefore be a matter of course.

Elvis Hozdic in the international journal of modern manufacturing Technologies stated about smart factories for industry 4.0-The emergence of the Internet and Internet technologies of modern times undoubtedly made a big progress in all human activities. It is inevitable integration in production systems, which will further affect the increase in the complexity of the existing production systems, as well as new systems coming to us, such as cyber – physical production systems. The development of production systems in the spirit of cyber – physical production systems, use of digitization and e - business imperative is to aspire to smart factories – factories of the future.

Tommaso Pardi published in journal of Industrial and Business Economic- the article reviews the historical evolution of automotive manufacturing technologies, organizations and analyses the impact on "fourth industrial revolution" concepts on their current transformations, considering their consequences for employment and work.

As stated in a market research report, by the end of 2022, automotive manufacturers expect that 24% of their plants will be smart factories. The report also mentions that 49% of automakers have already invested more than 250 million dollars in smart manufacturing. This data clearly implies that the automotive industry is keen on transforming to Industry 4.0.

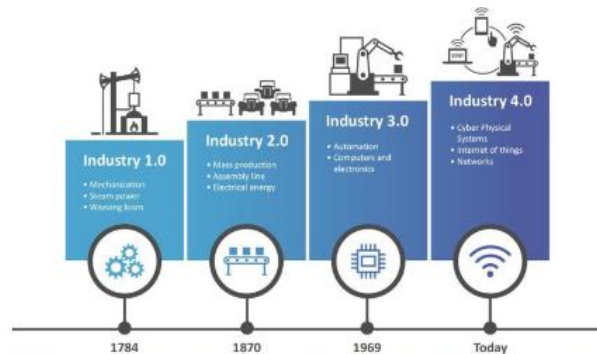


Fig 2. Industrial Revolution

Source: Wikipedia

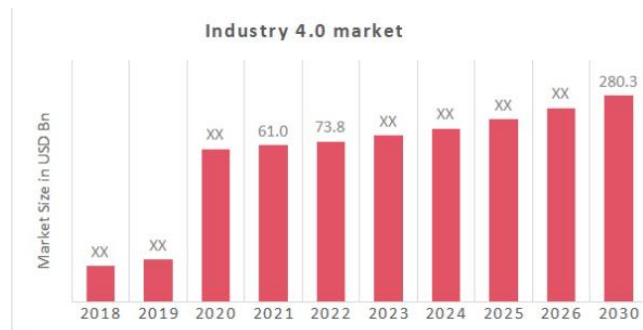
Although the idea is not new and was on the agenda of academic research in many years with different perceptions, the term “Industry 4.0” is just launched and well accepted to some extent not only in academic life but also in the industrial society as well. While academic research focuses on understanding and defining the concept and trying to develop related systems, business models and respective methodologies, industry, on the other hand, focuses its attention on the change of industrial machine suits and intelligent products as well as potential customers on this progress. It is therefore important for the companies to primarily understand the features and content of the Industry 4.0 for potential transformation from machine dominant manufacturing to digital manufacturing. In order to achieve a successful transformation, they should clearly review their positions and respective potentials against basic requirements set forward for Industry 4.0 standard.

Industry 4.0 is originated first in Germany to increase the benefits of the global competition for German manufacturers thanks to its characteristics that could be seen in more automation and digital physical World connection to achieve the goal of enabling decision-making process by monitoring the assets and the processes. In other words, German manufacturers have been one of the strongest competitors in the World thanks to the privileges of implementing I4.0 which in its turn could play a very important role in managing complicated processes such as tasks that should be processed by different partners located in different locations. After the success in Germany, USA has followed and launched Smart Factories parallel with the UK’s project “Smart Advanced Manufacturing”. All was about intelligent corporations through implementation of I4.0 technologies such as cloud computing, internet of things and cyber-physical systems since I4.0 has been aiming for a prospective smart manufacturing where machines, devices and interfaces could be combined by what is called artificial intelligence to enable software to analyze, remote control, and develop automation

The vision for the future of the Industry 4.0 is to enable machines and electrical-driven components to collect data and information and thereby utilize them to gain self- development, improvements, and self-upgrading as well.

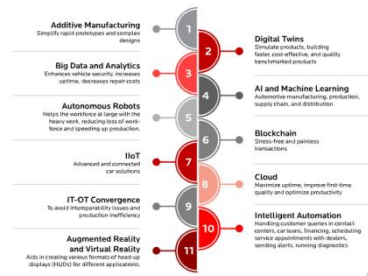
Future more, since the World is facing a new stage of evolution in the manufacturing industry where digitalization is taking place rapidly, connecting people, machines, devices, and equipment in the manufacturing field is going to increase efficiency, productivity and to make workplaces safer, which is an important part of the Industry 4.0 vision. According to many studies, intelligent manufacturing is the future target for most manufacturers throughout the World. One of the most possible enablers to achieve this intelligent manufacturing has been Industry 4.0 (I4.0) technology applications in all manufacturing processes such as production, logistics, packaging, maintenance, safety, and quality.

Industry 4.0 market size was valued at USD 61.0 billion in 2021. The Industry 4.0 market industry is projected to grow from USD 73.81 Billion in 2022 to USD 280.20 billion by 2030, exhibiting a compound annual growth rate (CAGR) of 21% during forecast (2022-2030). The rising adoption of various advanced and smart devices, development in value chains are the key market drivers enhancing the industry 4.0 market growth.



Source: Secondary research, primary research, MRFR, Database and analyst review

Application of Industry 4.0 in Automotive: Seamless move from fuel-efficient, powerful vehicles to the emerging electric-powered vehicles, the automotive industry is witnessing some path-breaking changes with the onset of Industry 4.0. One such remarkable development is the inclusion of Additive Manufacturing or 3D Printing.



Additive manufacturing is a cutting-edge and faster-growing technology that allows designers to work on and simplify rapid prototypes and complex designs, which otherwise would have been hard to achieve through legacy subtractive manufacturing processes. This newfound technology provides the automotive industry with designs and freedom to innovate, making the supply chain proficient. In addition, this is an efficient, optimized, and cost-effective way to enable testing, manufacturing, managing, and assembling automotive parts and components.

Digital Twins

"Digital Twins" is a primary data-driven manufacturing concept, enabling manufacturers and enterprises to simulate products, building faster, cost-effective, and quality benchmarked products. A digital twin is a virtual doppelganger of an entire vehicle in the automotive industry, replicating its software, mechanics, electrics, and physical characteristics. The digital twin is all-inclusive of real-time sensors, performance, inspection metrics, service history, configuration changes, warranty, and replacement data.

Big Data and Analytics

Cost pressure, high-strung competition, market volatility, and sudden disruption have been challenging for the automotive industry. Big Data and Analytics is a powerful tool that helps discover incredible possibilities. Analytics, when done right, can help in the advancement of the automotive industry in several ways. It effectively enhances vehicle security, increases uptime, decreases repair costs, and much more.

AI in Automotive

Artificial Intelligence uses data and algorithms to recreate human intelligence and smart thinking. It contributes to independent problem solving across different sectors. AI finds numerous applications across the automotive assembly and value chain.

Currently, AI is sought after and implemented in design thinking, automotive manufacturing, production, supply chain, and distribution. In addition, AI is used to create 'driver assistance' and 'driver risk assessment' systems, transforming and strengthening security in the transportation sector. AI is also gaining a stronghold in the aftermarket services such as predictive maintenance and insurance.

Autonomous Robots

For decades, the automotive industry has been using robots in its production and assembly lines. This technology pushes the industry to be more efficient, accurate, and agile in the process. In addition, the use of robotic vision, spot and arc welding, painting, sealing and coating, internal logistics, and material repair and removal helps the workforce at large with the heavy work, reducing loss of workforce and speeding up production.

Blockchain

Auto manufacturers, businesses, sellers, and insurers are processing millions of transactions daily. While transactions are now mainly online, through banks, web or mobile, cybersecurity risks, lack of transparency, excessive documentation continue to prove irksome, getting in the way of productivity. Blockchain technology has been a promising tool leading to stress-free and painless transactions. Blockchains are shielded from accidental data deletion or loss and easily integrate with the existing technological framework. Blockchain is a perfect immunity booster against fraud prevention and ensures process automation wherever required. A blockchain-based service always enhances your current system making everything better.

IIoT

Redefining solutions aligned with the new automotive age, IIoT is bringing in advanced and connected car solutions, keeping innovation at an all-time high. Vehicle-to-Vehicle (V2V) applications, Advanced Driver-Assistance Systems (ADAS), Vehicle to Infrastructure (V2I) applications, in-vehicle infotainment systems, predictive maintenance solutions, navigation & telematics, and Vehicle to Everything (V2X) communication applications, IIoT has immense potential to design and innovate come of age automotive features.

Cloud

Original Equipment Manufacturers (OEMs) in the auto industry are using Cloud Computing and Solutions to improve the quality and efficiency of production. From sales to aftermarket service, the technology introduces the concept of new connected vehicles across all categories. Automotive suppliers use cloud computing to maximize uptime, improve first-time quality and optimize productivity. In addition, dealers leverage cloud computing and cloud technologies to reach and engage potential in-market shoppers, monitor vehicle performance, and create a customer service experience. Thanks to the cloud, consumers today enjoy enhanced shopping experiences, timely service, and variety.

IT-OT Convergence

IT/OT convergence is one consolidated way to control industrial operations. It integrates the overall technology framework with the operational framework, the information technology (IT), the hardware, and software.

The convention siloed approach practiced by the factory workers is now challenging with PLCs, human-machine interfaces, industrial PCs, and automation controllers installed in every touch point. Incorporating modern

capabilities in the legacy system proves difficult and might lead to disparity in management systems. To avoid interoperability issues and production inefficiency, a seamless marriage between IT-OT frameworks is necessary to produce that perfect vehicle.

Intelligent Automation

What we have today is a supercomputer on wheels. The modern car is an automated automobile with lots of sensors and cameras that generate a wealth of data. With the help of Intelligent Automation, data and technology are brought together for collection, manipulation, analysis, and dissemination. Robotic process automation is an absolute necessity on the automobile shop floor, from welding to assembly to painting, and this technology manages everything. Even car financing and distribution have been simplified through automation.

From physical to digital bots, making the most of robotic process automation has been the current trend in the automotive industry. Bots are everywhere, from handling customer queries in contact centers, car loans, and financing, scheduling service appointments with dealers, sending alerts, running diagnostics, and even selling cars.

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TRANSFORMING INDIAN EDUCATION THROUGH ATMANIRBHAR BHARAT

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Abstract: Transforming Indian Education Through Atmanirbhar Bharat

This abstract showcase on innovative trends in Indian education aligned with the vision of Atmanirbhar Bharat:

Key Trends:

Technology Integration: Bridging the digital divide with technology in rural areas.

Personalized Learning: Vocational training for a skilled, self-reliant workforce.

Online & Blended Learning: Blended learning combines traditional face-to-face instruction with online learning components. Gamification and Localization: Indigenous, engaging e-learning solutions. Flipped Classrooms and Blended Learning: Locally-driven, accessible education models. AI in Education: AI-driven platforms for personalized learning experiences.

Challenges: Infrastructure limitations, digital divides, and resistance to change.

Opportunities: Adoption of localized solutions, global collaborations, and innovation-friendly policies.

Introduction

In the fast-changing world of education in India, there's a growing need to find new and better ways to teach and learn. Traditional methods are getting a makeover because of new technologies, the changing needs of society, and a better understanding of how people learn.

This paper is all about exploring these exciting "New Ways of Teaching and Learning in Education" and understanding how they're making a difference in Indian classrooms.

Our journey begins by looking at what others have discovered about these new methods. We'll check out the theories and research that support the idea of trying out different and creative ways of teaching. After that, we'll dig into specific cool trends that are catching on, like using technology, personalizing learning experiences, turning lessons into games, and getting hands-on with projects. We'll share real examples from India to show how these trends are working and making studying more interesting and effective.

But hey, it's not all sunshine and rainbows. We know there are challenges for teachers and schools when they want to try something new. So, we're not just talking about the good stuff – we're also looking at the problems and how we can solve them to make education better for everyone.

As we explore these new trends, we're not just stuck in the present. We're also looking ahead, trying to see what the future might hold for education in India. This paper is not just for scholars; it's for teachers, school leaders, and even the people who make the rules about education. We want everyone to get excited about the power of new ideas in education, and we believe that, together, we can create a brighter future for learning in India. So, let's dive into the world of exciting changes and explore how they can make education in India even better.

Material & method

The Concept Of "Atmanirbhar Bharat"

"Atmanirbhar Bharat" translates to "Self-Reliant India" and is a concept that encapsulates India's vision for economic and strategic self-reliance. The concept gained prominence in 2020, particularly during the COVID-19 pandemic, when the Indian government announced a comprehensive economic package with the aim of making

India self-reliant and resilient in various sectors.

Key components and principles of the Atmanirbhar Bharat with reference to Educational domain include 4 points:

Innovation and Technology: Atmanirbhar Bharat emphasizes the role of innovation and technology in achieving self-reliance. This involves investing in research and development, promoting technological advancements, and leveraging innovation for economic progress.

Skill Development: The concept recognizes the importance of developing a skilled workforce. Skill development initiatives are crucial to empowering individuals, enhancing employability, and contributing to the overall self-reliance of the nation.

Infrastructure Development: Building robust infrastructure, both physical and digital, is a key pillar. This includes investments in roads, railways, airports, and digital connectivity to support economic activities across the country.

Global Engagement: While focusing on self-reliance, Atmanirbhar Bharat does not imply isolationism. The concept recognizes the importance of engaging with the global community for trade, technology collaboration, and strategic partnerships.

Literature Review:

In recent years, India has been steering towards self-reliance and economic empowerment. In the pursuit of Atmanirbhar Bharat, innovative trends in education have emerged as catalysts for self-reliance and economic empowerment. This ambitious initiative has prompted a reevaluation of various sectors, including education, to foster innovation and creativity.

Innovative Trends in Education Aligned with Atmanirbhar Bharat:

1. Personalized Learning & Technology Integration:

Personalized learning supports individualized skill development, contributing to self-reliance by tailoring education to the unique needs and interests of each learner. Utilizing technology aligns with Atmanirbhar Bharat by fostering digital literacy and empowering learners to navigate an increasingly technology-driven world independently.

2. Online and Blended Learning:

Online learning provides flexibility, allowing students to access educational materials at their own pace and from anywhere with an internet connection.

Blended Learning: Blended learning combines traditional face-to-face instruction with online learning components. In a blended learning model, students attend some classes in person and complete other parts of the course online. Blended learning often includes a mix of classroom activities, online discussions, collaborative projects, and self-paced online modules.

It provides more personalized and adaptable learning experience by integrating technology into traditional teaching methods. Provide flexible educational pathways, supporting Atmanirbhar Bharat's goal of accessible and adaptable learning opportunities for all.

3. Gamification:

Gamification endeavors to literally create a game out of learning by theming all components of your classroom in a game metaphor, making your class like one big first-person game. Remember that the goal is to enhance learning by increasing student engagement. Gamification promotes an engaging learning environment, encouraging students to take charge of their education. This aligns with Atmanirbhar Bharat's vision of self-motivated and proactive learners.

4. Flipped Classrooms:

In a flipped classroom, traditional teaching methods are reversed.

Students independently learn new material before class through videos or readings. Class time is then used for interactive activities, discussions, and problem-solving. - Flipped classrooms encourage independent learning and critical thinking, contributing to the self-reliant mindset by fostering a sense of responsibility. This approach aims to increase engagement, provide individualized learning, and allow for immediate feedback during in-class activities.

5. Artificial Intelligence (AI) in Education:

Artificial Intelligence (AI) in education involves the use of advanced technologies to enhance and personalize the learning experience. AI applications include adaptive learning platforms, intelligent tutoring systems, and automated grading. AI analyzes student data to tailor educational content, provide personalized feedback, and support educators in making data-driven decisions. The goal is to improve learning outcomes, increase efficiency, and offer a more customized educational experience.

6. Augmented and Virtual Reality (AR/VR):

Augmented Reality (AR) and Virtual Reality (VR) are immersive technologies used in education.

Augmented Reality (AR): Integrates digital information into the real-world environment, enhancing the user's perception by overlaying computer-generated images, videos, or data onto physical objects or surroundings.

Virtual Reality (VR): Creates a simulated, computer-generated environment that users can interact with using special devices. VR immerses users in a completely artificial environment, isolating them from the physical world.

In education, AR and VR are utilized to enhance learning experiences, allowing students to interact with virtual objects, explore simulations, and engage in immersive educational content.

Relevant Examples:

Technology Integration & Personalized Learning:

Example: The "SkillMaster Institute" in India incorporated personalized learning pathways using its proprietary platform called "LearnFlex." This platform tailored courses based on individual learner profiles, aligning with Atmanirbhar Bharat's goal of empowering individuals with relevant skills for self-reliance.

Online and Blended Learning:

Example: "**Global Vision Academy" In India (MH, Ahmednagar)** integrated online modules with traditional classes for its English Language learning program. Students accessed lectures through "Zoom," a digital platform, while engaging in practical on-site learning, supporting Atmanirbhar Bharat's goal of developing self-reliant professionals in the English Language learning sector.

Gamification:

Example: The "MathMania" app, introduced in government schools across India, Fun ways math learning for primary students. Developed by a local ed-tech company, the app seamlessly blended entertainment with education, fostering a fun and interactive learning environment.

Flipped Classrooms:

Example: "EduWave College" in India adopted a flipped classroom model, offering online lectures by local educators through its platform "EduConnect." The model enhanced accessibility to quality education, enabling students to learn at their own pace while receiving guidance from experienced Indian educators.

AI in Education:

Example: "LingoMaster," an Indian startup, developed an AI-driven language learning platform. The platform analyzed individual student performance and adapted lessons to address specific language proficiency areas, offering personalized learning experiences.

Here are some benefits and opportunities associated with innovative trends in education with reference to Atmanirbhar Bharat:

Skill Development for Self-Reliance:

Benefit: Innovative trends in education focus on practical skills and entrepreneurship, aligning with Atmanirbhar Bharat's goal of creating a skilled and self-reliant workforce.

Opportunity: Educational initiatives can prioritize skill development programs that equip students with the capabilities needed to contribute to India's economic growth.

Inclusive Access to Education:

Benefit: Technology-driven educational innovations can improve access to quality education, particularly in remote areas, supporting Atmanirbhar Bharat's vision of inclusivity.

Opportunity: Investment in digital infrastructure and online education platforms can bridge gaps, ensuring a more equitable distribution of educational resources.

Global Competitiveness:

Benefit: Exposure to cutting-edge educational practices enhances the competitiveness of Indian students on the global stage.

Opportunity: Atmanirbhar Bharat encourages the integration of global best practices while ensuring that Indian education retains its unique identity, fostering a balance between global competitiveness and cultural preservation.

Entrepreneurship and Innovation:

Benefit: Innovative education models nurture an entrepreneurial mindset, aligning with Atmanirbhar Bharat's emphasis on fostering a culture of innovation.

Opportunity: Education can play a pivotal role in cultivating the next generation of entrepreneurs, driving economic growth and self-reliance.

Flexible and Adaptable Learning:

Benefit: Online and blended learning models provide flexibility, allowing learners to adapt their education to their pace and preferences.

Opportunity: As India embraces innovative learning approaches, there is an opportunity to create personalized and adaptive learning experiences that cater to diverse learning styles.

Here are some challenges and barriers related to innovative trends in education in the given context:

1. Infrastructure Challenges:

Context: In many parts of India, especially rural areas, inadequate technology infrastructure and limited access to the internet pose challenges for implementing online and technology-driven education.

Impact: This hinders the seamless integration of technology, limiting the reach of innovative educational solutions.

2. Teacher Training and Readiness:

Context: Many educators in India may lack adequate training and familiarity with innovative teaching methodologies and technologies.

Impact: The successful implementation of innovative trends depends on the preparedness of educators, highlighting the need for extensive teacher training programs.

3. Language Barriers:

Context: India's linguistic diversity presents challenges in developing and implementing educational content that caters to students from various linguistic backgrounds so they need English language proficiency to bridge the gap.

Impact: Language barriers can affect the effectiveness of online learning platforms and materials, hindering comprehension and engagement.

4. Financial Constraints:

Context: Financial limitations at the individual and institutional levels can impede the adoption of innovative technologies and resources.

Impact: Schools, colleges, and students may struggle to afford the latest technology, hindering their ability to participate fully in innovative learning environments.

5. Resistance to Change:

Context: Traditional education systems and established teaching methods may face resistance to change from educational institutions and stakeholders.

Impact: Reluctance to embrace innovative trends can slow down the adoption of new teaching methodologies, hindering progress in education.

6. Assessment and Evaluation Challenges:

Context: Traditional assessment methods may not align with the dynamic and interactive nature of some innovative trends.

Impact: The challenge lies in developing effective evaluation methods that accurately measure student performance and mastery of skills acquired through innovative approaches.

Addressing these challenges requires a comprehensive and collaborative effort involving policymakers, educators, technology providers, and other stakeholders like we all have to create an environment conducive to the successful implementation of innovative trends in education in India.

Future Outcome:

Technology Integration and Digital Transformation:

Future education is likely to witness deeper integration of emerging technologies, including artificial intelligence, augmented reality, and virtual reality, transforming the learning experience. Digital platforms will play a central role in creating interactive and personalized learning environments.

Skill Development for Future Careers:

The focus on skill development is expected to evolve to align with the demands of future careers. Education will likely emphasize a broader set of skills, including critical thinking, problem-solving, creativity, and digital literacy, preparing students for dynamic and rapidly changing job markets.

Global Collaborations and Exchanges:

With an emphasis on global competitiveness, educational institutions in India may strengthen international collaborations, fostering student exchanges, joint research programs, and partnerships with global universities. This can contribute to a more diverse and enriching educational experience.

Innovation Hubs and Incubators:

Education in India may witness the establishment of innovation hubs and incubators within educational institutions, encouraging students to explore entrepreneurship, research, and innovation. These hubs can serve as catalysts for

transforming ideas into impactful solutions.

Flexible and Lifelong Learning:

The concept of lifelong learning may become more prominent, with educational systems adapting to the need for continuous skill development throughout individuals' careers. Flexible learning pathways, micro-credentials, and online courses may become integral to this evolving educational landscape.learners.

Here are more specific recommendations with a focus on India and Atmanirbhar Bharat:

1. Teacher Empowerment Programs:

Launch Atmanirbhar Teacher Empowerment Programs to provide educators with specialized training in utilizing indigenous educational technologies, fostering self-reliance in teaching methodologies.

2. Multilingual Content Development:

Invest in the creation of multilingual educational content that aligns with Atmanirbhar Bharat, ensuring that students from diverse linguistic backgrounds have access to high-quality learning materials in their preferred languages.

3. Grassroots Innovation Grants:

Establish grants and support systems for grassroots-level innovations in education, encouraging individuals and small groups to develop Atmanirbhar solutions that address local educational challenges.

4. Global Partnerships for Skill Development:

Forge global partnerships with industry leaders to enhance skill development programs. Collaborate with international organizations to align skill development initiatives with global industry standards while ensuring Atmanirbhar Bharat's goals are met.

5. Localized Entrepreneurship Education:

Integrate entrepreneurship education into the curriculum, emphasizing Atmanirbhar values. Encourage students to explore innovative solutions, fostering a spirit of self-reliance and business acumen.

6. Digital Literacy Campaigns:

Launch nationwide Atmanirbhar Digital Literacy Campaigns to ensure that students and educators are proficient in leveraging digital tools effectively, enhancing their participation in online and technology-driven education.

7. Inclusive Education Centers:

Establish Inclusive Education Centers with a focus on Atmanirbhar values in remote and underserved areas. These centers can act as hubs for community-based learning initiatives, ensuring education reaches every corner of the country.

These specific recommendations aim to align educational strategies with the goals of Atmanirbhar Bharat, emphasizing the development and adoption of indigenous solutions for a self-reliant and globally competitive education sector in India.

Conclusions : The future of education in India, guided by Atmanirbhar Bharat, holds transformative potential.

- a. Innovative trends in education are pivotal for self-reliance and global competitiveness.
- b. Technology integration, skill development, and cultural preservation are key focal points.
- c. Challenges include digital access, teacher readiness, and regulatory frameworks.
- d. Benefits encompass empowering local solutions, skill development, and inclusive access.
- e. Opportunities lie in global collaborations, innovation hubs, and flexible learning pathways.
- f. Future directions may involve global partnerships, cultural integration, and lifelong learning.

- g. Policymakers play a crucial role in creating an enabling environment for educational innovation.
- h. A holistic approach, emphasizing well-being and sustainability, is vital for future-ready education.
- i. Education serves as a catalyst for individual empowerment and contributes to a self-reliant India.

"Education is our key to self-reliance and a bright future. By embracing new ways of learning, valuing our traditions, and ensuring everyone has access, we could shape not only the future of learning but the Strong foundation of a self-reliant and globally competitive India in upcoming years".

THE ROLE OF INFORMATION TECHNOLOGY IN RESEARCH

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Abstract :-

Information and communication Technologies (ICT) have become commonplace entities in all aspects of life. Across the past twenty years the use of ICT have fundamentally changed the practices and procedures of nearly all forms of Endeavour tithing business and governance.

Problem solving is an age old activity. The development of electronic devices, specially the computers, has given added impetus to this activity Computer is certainly one of the most versatile and ingenious developments of the modern technological age. Today people use computers in almost every walk of life. To the researcher, the use of computer to analyses complex data has made complicated research designs practical. Electronic computers have by now become an indispensable part of research students in the physical and behavioral sciences as well as in the humanities in this age of computer technology, must be exposed to the methods and use of computers. A basic understanding of the manner in which a computer and ICT works helps a person to appreciate the utility of this powerful tool. Keeping all this in view, The present paper introduces the basics of ICT & computers, especially it. answers questions like: What is a ICT computer? How does it function? How does one communicate with it? How does it help in analysing data? How does it help in Research.

Key words- ICT Research Role Software Data

Introduction

Information Technology covers a broad spectrum of hardware and software solutions that enable organizations to gather, organize, and analyze data that helps them achieve their goals. Information technology can be used for information processing , communication and problem solving tasks.

Information Technology covers almost every aspect of our daily lives from business to leisure and even society. Today PCs, Cell phones, email and internet have all not become integral parts of our very culture but also play an essential role in our day to day activities.

Objective :-

The objective of this present study is to study the importance role of information technology in research.

Research Methodology :-

The information which is used in this study that is collected from different secondary sources. It is completely depend on the secondary data.

Data Analysis :-

Information Technology

The information technology (IT) refers to creation, gathering processing, storage and delivery of information.

Following device and systems are considered information technologies.

1. The postal system – IT exchanges information.
2. A filling cabinet – IT stores information.
3. A library – It stores information
4. A mathematical algorithm – It process information

Information Technology refers to both the hardware and software that are used to store retrieve and manipulate information.

Information system

Information system is a combination of people hardware software procedure network and data resources.

The components of Information system are as-

1. People – It is one the important component of an information system. People are the end users who use computers to make themselves more productive.
2. Procedure – The rules or guidelines for people to follow when using software, hardware & data procedures. These procedures are typically documented in manuals written by computer specialist.
3. Software – A programme consists of step by step instruction that tell the computer how to do its works. The purpose of software it is to convert data into information.
4. Hardware – The equipment that processes that data to create information is called as hardware. It includes the keyboard, mouse, monitor, system, unit and other device Hardware is controlled by software.
5. Data – The raw, unprocessed facts, including text. Number, image and sound are called data processed data yields information.
6. Connecting – The additional part to the information system, called connectivity, allows computers to connect and to share information.

These connections, including internet connection, can be by telephone lines, by cables or through the air connectivity allows users to greatly expand the capability and usefulness of their information system.

Data and software

Data are any facts, number or text that can be processed by a computer. Today organization are accumulating vast and growing amount of data in different formats and different database. This includes operational or transaction data such as, population, area under various geographical aspect, sales, lost, inventory payroll and accounting.

Data is raw material for data processing data related to fact, event and transactions. Information is data that has been processed in such a way as to be meaningful to the person who receives it. It is anything that is communicated.

Eg. Researchers who conduct market research survey might ask member of the public to complete questionnaires about a product or a service. These completed questionnaires, are processed and analyzed.

Software –

Computer software is a collection of computer programme & related data that instruct of computer what to do and how to do it.

Applications of information technology in various sector/ Research

1. I.T. in Business Research
2. I.T. in industry Research
3. Product design Research
4. Product manufacturing Research
5. I.T. at home and play Research
6. I.T. in education and training Research
7. I.T. in science and engineering Research

The role of computer in research

Applications in

1. Education

Some of the various uses

- (i) Provide a large data bank of information;
- (ii) Aid to time-tabling;

-
- (iii) Carry out lengthy or complex calculations;
 - (iv) Assist teaching and learning processes;
 - (v) Provide students' profiles;
 - (vi) Assist in career guidance
2. Commerce
- (i) Assist the production of text material (known as word processing) such as reports, letters, circulars etc.
 - (ii) Handle payroll of personnel, office accounts, invoicing, records keeping, sales analysis, stock control and financial forecasting.
3. Banks and Financial
- (i) Cheque handling; institutions
 - (ii) Updating of accounts;
 - (iii) Printing of customer statements;
 - (iv) Interest calculations.
4. Management
- (i) Planning of new enterprises;
 - (ii) Finding the best solution from several options;
 - (iii) Helpful in inventory management, sales forecasting and production planning;
 - (iv) Useful in scheduling of projects.
5. Industry
- (i) In process control;
 - (ii) In production control;
 - (iii) Used for load control by electricity authorities;
 - (iv) Computer aided designs to develop new products.
6. Communications
- (i) Helpful in electronic mail; and Transportation
 - (ii) Useful in aviation: Training of pilots, seat reservations, provide information to pilots about weather conditions;
 - (iii) Facilitate routine jobs such as crew schedules, time-tables, maintenance schedules, safety systems, etc.;
 - (iv) Helpful to railways, shipping companies;
 - (v) Used in traffic control and also in space flight.
7. Scientific Research
- (i) Model processing;
 - (ii) Performing computations;
 - (iii) Research and data analysis.
8. The homes
- (i) Used for playing games such as chess, draughts, etc.;
 - (ii) Can be used as an educational aid;
 - (iii) Home management is facilitated.

Researchers interested in developing skills in computer data analysis, while consulting the computer centers and reading the relevant literature must be aware of the following steps:

- (i) data organization and coding;
- (ii) storing the data in the computer;
- (iii) selection of appropriate statistical measures/techniques;
- (iv) selection of appropriate software package;
- (v) execution of the computer program.

In spite of all this sophistication we should not forget that basically computers are machines that only compute, they do not think. The human brain remains supreme and will continue to be so for all times. As such, researchers should be fully aware about the following limitations of computer-based analysis:

1. Computerized analysis requires setting up of an elaborate system of monitoring, collection and feeding of data. All these require time, effort and money. Hence, computer based analysis may not prove economical in case of small projects.
2. Various items of detail which are not being specifically fed to computer may get lost sight of.
3. The computer does not think; it can only execute the instructions of a thinking person. If poor data or faulty programs are introduced into the computer, the data analysis would not be worthwhile. The expression “garbage in, garbage out” describes this limitation very well.

Conclusion :-

The adoption and use of ICTs in Research have positive impact. Ict can affect the delivery of education & enable wider access to the research and teaching learning process. The wider a availability of best practice & best research material. Which can be shared be ICT. ICT can faster better technique literature review Researcher for researchers.

Performing calculations almost at the speed of light, the computer and ICT has become one of the most useful

Research tools in modern times. Computers and ICT are ideally suited for data analysis concerning large research projects. Researchers are essentially concerned with huge storage of data, their faster retrieval when required and processing of data with the aid of various techniques. In all these operations, computers and ICT are of great help. Their use, apart expediting the research work, has reduced human drudgery and added to the quality of research activity.

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वर्तमान में मिलते भविष्य के बीज: बाल कहानी साहित्य

शोध छात्रा- इगडे शीतल कचरू

बलभीम महाविद्यालय, बीड.

मनुष्य की शेषावस्था के पश्चात आनेवाली बाल्यावस्था सामाजिक शिक्षा का प्रथम सोपान है। लगभग 10-12 साल की उम्र तक बाल्यावस्था कहलाई जाती है। इस उम्र में बालक सृष्टि की हर चीज से परिचित होना चाहता है, साथ ही बात-बात पर कार्य कारण भाव समझ कर लेना चाहता है। इस उम्र के बच्चों में प्रचंड जिज्ञासा वृत्ति रहती है ऐसे समय पर उनकी ज्ञान लालसा प्राप्त होना आवश्यक है। अन्यथा बच्चों की मनोदशा कुंठित होने का खतरा उत्पन्न हो सकता है। अक्सर देखा गया है कि बड़े लोग बच्चों को अभिव्यक्ति की स्वतंत्रता नहीं देते, अनुशासन के नाम पर बच्चों पर कुठाराघात होते हैं। उन्हें डराया, धमकाया जाता है परिणामस्वरूप उनके व्यक्तित्व के विकास में बाधा पहुँचती है। आज का बालक कल का जिम्मेदार नागरिक होता है। इस देश की बागडोर और भविष्य उनके ही हाथों में रहने वाला है। ऐसी दशा में बालकों के मन-मस्तिष्क में उठनेवाले सैंकड़ों प्रश्नों के उचित एवं यथायोग्य उत्तर प्राप्त होने चाहिए जिससे वे ज्ञान संपन्न होंगे। इस दिशा में वर्तमान बाल कहानी साहित्य अत्यंत महत्वपूर्ण भूमिका निभाता है।

हिंदी बाल कहानी साहित्य बच्चों को सही दिशा देने का कार्य कर समाज को प्रगति पथ पर पहुँचाने में मदद करता है। वह बच्चों का सहायक है परंतु इन कहानियों का सही अर्थ लगाना भी उतना ही जरूरी है क्योंकि हर कोई बाल साहित्य को गंभीरता से नहीं लेता, उसमें छिपे गहन अर्थ को नहीं समझता है। इस संदर्भ में प्रकाश मनु कहते हैं - "यह सिर्फ ऊपर-ऊपर से साहित्य का पढ़ना-पढ़ाना नहीं, बल्कि यह पीढ़ी-दर-पीढ़ी हरे पेड़ों की एक कभी ना खत्म होनेवाली कतार लगाते जाना है। बाल साहित्य और उसकी यह भूमिका मजाक की नहीं, गंभीरता से सोचने और समझने की चीज है।"¹

बाल साहित्य में छिपे गहन अर्थ को समझने की आवश्यकता है, जो समय के साथ बच्चों के मानसिक विकास की दृष्टि से आवश्यक है, क्योंकि बाल कहानी साहित्य बच्चों का भावनिक तथा मानसिक दृष्टि से विकास करता है। जो कि बच्चों के वर्तमान ही नहीं तो भविष्य के लिए भी अति आवश्यक है क्योंकि आज का बालक कल का जिम्मेदार नागरिक बनकर देश की बागडोर संभालेगा। आज का बालक भविष्य में नेता, डॉक्टर, इंजीनियर, वैज्ञानिक तथा अन्य क्षेत्र में विविध पदों पर कार्य करेगा। बाल कहानियाँ वर्तमान में ही भविष्य को सही दिशा देने का कार्य करती हैं, जिससे बच्चें भविष्य में भी अपना और अपने देश का नाम रोशन करें। बाल कहानियाँ बच्चों को इसप्रकार का ज्ञान देने की कोशिश करता है जो इस प्रकार है-

1. शिक्षा के प्रति सकारात्मक दृष्टिकोण:-

बाल कहानी साहित्य अपनी कहानियों के माध्यम से बच्चों में शिक्षा के प्रति सकारात्मक दृष्टिकोण का निर्माण करता है जो उनके भविष्य के लिए अति आवश्यक है। देवेंद्र कुमार की कहानी हिंदी कहानी 'स्कूल चलो' में 'भरतू' रिक्शेवाला बच्चों को स्कूल पहुँचाने का कार्य करता है। वह अनपढ़ है, एक दिन ऐसी घटना घटती है, जिसके परिणामस्वरूप रिक्शे में मिला किताब वह पहचान नहीं पाता है। उसके सामने प्रश्न निर्माण होता है आखिर किताब किसकी होगी ? दूसरे दिन रमेश के माँगने पर वह किताब लौटाता है। उस दिन से उसके मन में पढ़ाई के प्रति ललक उत्पन्न होती है। यह बात रमेश की माँ समझ जाती है। वह भरतू से कहती हैं -

"भरतू , मैं तुम्हें पढाऊँगी और तुम मुझे अपने गाँव के बारे में बताओगे- वहाँ के लोग, खेत, जंगल, पहाड़, वहाँ के परिवे। मुझे ये सब बातें कहाँ पता हैं अभी वही होगी तुम्हारी फीस।"2

इसी प्रकार 'सुनीता कॉलरा' की 'सुजाता की सूझ-बूझ' कहानी में सुजाता की शिक्षा के प्रति प्रबल इच्छा देख उसकी बुआ पुष्पा उससे कहती है - "सुजाता बेटी, तुम जितना पढाना चाहो पढो, और पढ-लिखकर अपने पैरों पर खड़ी हो जाओ।"3 उनकी और एक कहानी 'पिटू का कमाल' और अनुजा भट्ट की 'चीनू ने खोली आंटी की आँखें' कहानी में भी उसी प्रकार शिक्षा के प्रति सकारात्मक दृष्टिकोण दिखाई देता है। इस

प्रकार हिंदी बाल कहानियों में शिक्षा के प्रति सकारात्मक दृष्टिकोण मिलता है, जो बच्चों के भविष्य के लिए अत्यावश्यक है। इस दृष्टिकोण को बढ़ाने हेतु हिंदी में इस प्रकार के विषय को लेकर और अधिक मात्रा में कहानियों का सृजन करना अत्यावश्यक है।

2. प्रेरणा:-

बाल कहानी साहित्य बच्चों को सत्कर्म की प्रेरणा देता है, जिससे बच्चों का भविष्य स्वास्थ्य पूर्ण हो सके हिंदी और मराठी बाल कहानी साहित्य में इस प्रकार की कहानी है बच्चों को अच्छे कर्म की प्रेरणा देती हैं। हिंदी में बृजभूषण गुसा की 'सत्यप्रिय विद्यार्थी' कहानी में न्यायविद् गोपालकृष्ण को बचपन में गुरुजी ईमानदारी तथा सच्चाई के लिए प्रेरणा देते हुए कहते हैं- "तुमने हल चाहे नहीं निकला, लेकिन सही बात कहकर तुमने ईमानदारी और सच्चाई का उदाहरण पेश किया है, इसीलिए बहुत बड़े आदमी बनोगे।"4 गुरुजी ने बालक गोपालकृष्ण द्वारा अपनी गलती स्वीकार करने पर उसे डाँटा -फटकारा नहीं बल्कि प्यार से उसे ईमानदारी तथा सच्चाई की प्रेरणा दी है जो बच्चों को आवश्यक होती है।

शिवनारायण सिंह के 'बर्थ-डे केक' कहानी में रमेश जरूरत मंद वृद्धा को अपने बेटे की दवाई के लिए अपने केक के पैसे दे देता है, तो रमेश की माँ उसके कार्य का पुरस्कार कर उसे सामाजिक कार्य के लिए प्रेरणा देती है। रमेश की माँ रमेश से कहती है- "दया, करुणा जैसे श्रेष्ठ गुणों से ही तो मनुष्य मनुष्य कहलाता है। सिर्फ अपनी खुशी के लिए जीना भी कोई जीना होता है ? तुमने किसी असमर्थ की खुशियों के लिए अपनी खुशी कुर्बान की है, इस पर मुझे नाज है। दया, प्रेम जैसे गुणों का अपने में विकास करते हुए तुमने आज अपना जन्म दिवस मनाया है, तुम्हारे जन्म दिवस की इससे बड़ी उपलब्धि और क्या हो सकती है।"5 रमेश की माँ ने रमेश को असमर्थकों की सेवा करने की प्रेरणा दी है, जो वर्तमान युग में अति महत्वपूर्ण है। इन कहानियों के अलावा हिंदी बाल कहानी साहित्य में कई अन्य कहानियाँ हैं जिससे बच्चों को अच्छे कार्य करने की प्रेरणा तथा सही दिशा मिलती है। जैसे 'चीनू ने खोली आंटी के आँखें', 'पिटू का कमाल', अमृतलाल नागर के 'इकलौता लाल', राकेश भारती की 'सच्चा विजयी' आदि।

3. समयसूचकता एवं प्रसांगावधानता :-

बाल कहानी साहित्य में समयसूचकता को महत्व दिया गया है, जिससे बच्चों को कठीण समय आने पर उचित व्यवहार करने की सीख मिलती है। हिंदी बाल कहानियों में भी समयसूचकता से भरपूर कहानियाँ मिलती हैं। हिंदी में ब्रह्मदेव की 'बहादूर बागाराम' की कहानी में बागाराम को अजगर निगल लेता है तब वह हिम्मत नहीं हारता, सोचता है- "अगर मैं ज्यादा देर यहाँ रहा तो मैं मर जाऊँगा क्योंकि यहाँ पेट में सांस लेने के लिए हवा नहीं है। अजगर तो अब जाकर किसी गुफा में लेट जाएगा और एक महीने तक मुझे ही पचाता रहेगा। इसका

मुँह बंद हो गया है और मैं इस जेल में फँस गया हूँ।"6 यह सोचकर बागाराम कमर से कुल्हाड़ी निकालता है और अजगर के पेट में वार करता है - "पन्द्रह-बीस कुल्हाड़ी चलने के बाद उसे लगा कि थोड़ी-सी ताजी हवा का झोंका आया है। वह फौरन जान गया कि दर्द के मारे अजगर ने अपना मुँह खोला होगा। कुछ और वारों के बाद पेट में एक छेद हो गया। उस छेद में से बागाराम रेंगकर बाहर निकल गया और तेजी से दौड़ा।"7 इससे बागाराम की सूझ-बूझ का पता चलता है और ध्यान में आता है कि कठिण प्रसंग आ गया तो बिना डरे शांति से सूझ-बूझ से काम लेना चाहिए।

सुरेंद्र आंचल की कहानी 'भोलू भूत' में भी समय सूचकता को महत्व दिया गया है। कहानी में सहसमल तथा उसके दोनों बेटे मेहनत करने के लिए शहर जाते समय रास्ते में बावड़ी के पास रुककर खाना खाने लगे तो भोलू नामक भूत उनके सामने आता है। सहसमल भूत को बिना डरे उसके दोनों बेटों से कहता है- "वाह! यह हुई न बात! इस भूतड़े को कब से ढूँढ रहा हूँ। आज मिल गया आओ छोकरों, मेरे साथ। रेत के रस्से गुँथ कर बांध दो और डाल दो बैलगाड़ी में।"8 इससे भोलू भूत डरता है और उनको इनाम स्वरूप पक्का मकान, कुआँ तथा अन्य वस्तुएँ उपहार स्वरूप भेंट करता है। सहसमल की सूझ-बूझ के कारण ही भूत को उनसे डरना पड़ा। कहानी द्वारा बच्चों के मन में भूत के बारे में जो डर बैठा रहता है वह कम हो जाने में मदद हो जाती है।

4. आत्मविश्वास को बढ़ावा:-

हिंदी बाल कहानी साहित्य में बच्चों में आत्मविश्वास बढ़ाने हेतु अनेक कहानियों का सृजन हुआ है। जैसे शिवनारायण सिंह की 'गुणों का महत्व' कहानी में कोयल अपनी नन्ही बेटी कोयलिया का आत्मविश्वास बढ़ाते हुए कहती है - "नहीं बेटी! साहस कभी न खोना चाहिए। अभ्यास से कठिन कार्य भी सरल बन जाता है। तुम फिर से गाने की कोशिश करो।"9 यहाँ कोयल के माध्यम से बच्चों में आत्मविश्वास निर्माण करने की कोशिश की गई है।

5. प्रामाणिकता :-

बाल कहानी साहित्य में प्रामाणिकता को महत्वपूर्ण मानकर साहित्य का सृजन किया गया है। प्रामाणिकता एक ऐसा गुण है जिससे समाज में व्यक्ति का मान-सम्मान बढ़ता है। हिंदी बाल कहानियों में प्रामाणिकता को लेकर अनेक कहानियों का सृजन हुआ है। हिंदी में ब्रजभूषण गुप्ता की 'सत्यप्रिय विद्यार्थी' कहानी में बालक गोपालकृष्ण अपनी गलती मानते हुए गुरुजी से कहता है- "मैंने कल पुस्तक में से देखकर हल निकाला था, अपनी योग्यता से नहीं, इसीलिए मैं अपराधी हूँ। मैंने अपने गुरु को धोखा दिया है।"10 गोपालकृष्ण में प्रामाणिकता का गुण था जिससे वे बड़े होकर न्यायविद् बनें। महान व्यक्ति के इस गुणों को दर्शाकर बच्चों में प्रामाणिकता का निर्माण करने का कार्य हिंदी कहानियाँ करती हैं जो कि बच्चों के लिए महत्वपूर्ण है।

6. आलसी वृत्ति के दुष्परिणाम:-

बाल कहानी साहित्य में आलसी वृत्ति के दुष्परिणामों पर भी प्रकाश डाला गया है। गुलजार के 'बोसकी का पंचतंत्र' की पहली शेर की कहानी में शेर बूढ़े बड़े पीर बरके की बात सुनकर सोचता है - "चलो अपनी मेहनत बची यह जंगल भी अपना है, राजा भी हम हमें ही तो होगा न परजा का गम।"11 यहाँ शेर पर आलस छा गया और उसे एक नन्हें खरगोश ने अपनी बुद्धिमानी से मौत के घाट उतारा। इसी प्रकार हिंदी में और कई कहानियाँ हैं जो बच्चों को गलत बातों से दूर रहने की शिक्षा देती हैं, जो वर्तमान और भविष्य की दृष्टि से महत्वपूर्ण है।

7. विनम्रता और गलती का स्वीकार:-

हिंदी बाल कहानी में बच्चों को विनम्रता से अपनी गलती का स्वीकार कर पश्चाताप करने की सीख मिलती है। हिंदी में अनुजा भट्ट की 'चीनू ने खुली आंटी की आँखें' कहानी में अपनी गलती को स्वीकार कर पश्चाताप करते हुए बबली और डब्लू रोते-रोते अपनी मम्मी से कहते हैं - "हमें अपनी गलती का एहसास हो गया है। अब हम नेक इन्सान बनने की कोशिश करेंगे। मेहनत करेंगे। आज हम पिकनिक नहीं जाएँगे बल्कि हर तीसरे सोमवार अपने दोस्तों के साथ मिलकर इन बच्चों को पढ़ाएँगे, इनकी मदद करेंगे। विश्वास करो मम्मी, हम सुधरेंगे।"¹² अर्थात् बबली और डब्लू को अपनी गलती का एहसास होता है और वे उसे स्वीकार करते हैं।

शिव नारायण सिंह की 'उपयोगिता अपनी अपनी' कहानी में आम के पेड़ का अहं नष्ट हो जाता है और उसे ध्यान में आता है कि प्रत्येक वस्तु की अपनी-अपनी उपयोगिता होती है। वह बबूल के पेड़ का महत्व समझ जाता है, पश्चाताप करते हुए बबूल के पेड़ से कहता है- "मित्र गर्ववश मैंने तुम्हारा अपमान किया था। पर आज मेरा सिर शर्म से झुक गया है। कँटीले होते हुए भी तुम इतने उपयोगी हो सकते हो यह मैंने न जाना था। मैं तो किसी के दाँतों को दर्द दे सकता हूँ। मगर दर्द की दवा तो तुम्हारे ही पास है। अब से मैं कभी तुम्हारे मन को चोट पहुँचानेवाली बात न कहूँगा।"¹³ इस प्रकार हिंदी बाल कहानियों में गलतियों को स्वीकार कर पश्चाताप करने से कोई छोटा नहीं होता यह महत्वपूर्ण सीख मिलती है, जो कि बच्चों के वर्तमान एवं भविष्य के लिए महत्वपूर्ण है।

8. निःस्वार्थी वृत्ति तथा सेवाभाव:-

हिंदी बाल कहानी साहित्य में निःस्वार्थी वृत्ति तथा सेवाभाव को महत्व दिया है जो बच्चों के स्वास्थ्यपूर्ण विकास के लिए आवश्यक है जिसमें उन्हें भविष्य में उत्पन्न होने वाली समस्याओं का इटकर सामना करने की ताकत मिलती है। जगतराम आर्य की 'अनोखा मित्र' कहानी में कृष्ण अपने मित्र के लिए निःस्वार्थी वृत्ति दिखाई है। कृष्ण अपने आदमियों से कहते हैं- "मेरे मित्र की टूटी-फूटी कुटियाँ के स्थान पर एक अति सुंदर भवन तैयार कर दो और गृहस्थी के उपयोग की सभी वस्तुओं से उनका घर भर दो, किसी चीज की कमी न रहे।"¹⁴ कृष्ण का अपने गरीब मित्र सुदामा की गरीबी दूर कर उसे एक अच्छा जीवन देना, इसमें कृष्ण के निःस्वार्थी वृत्ति के दर्शन होते हैं। अर्थात् प्रस्तुत कहानी द्वारा मनुष्य में निःस्वार्थी वृत्ति के महत्व को स्पष्ट किया है। इसी तरह उषा महाजन की 'दोस्ती की उम्र' कहानी दो मित्र बिसेसर तथा रमेश की है। बिसेसर आगे पढाई नहीं कर पता तो रमेश अपनी पढाई पूरी कर नौकरी करने लगता है। बहुत सालों बाद बिसेसर घर वालों के कहने पर शहर में जाकर रमेश से नौकरी माँगने के लिए हिचकिता है तो बिसेसर के पिता बिसेसर से कहते हैं- "अरे नहीं बेटा, कभी दोस्त अपने बचपन के दोस्त को भूल सकता है! चाहे कितना भी बड़ा बन जाए, तुम जाओ तो सही।"¹⁵ बचपन के मित्र को कभी भूलना नहीं चाहिए। हमेशा उसे कठिन प्रसंग में मदद करनी चाहिए क्योंकि संकट के काम संकट में काम आनेवाला ही सच्चा मित्र होता है यह सीख बच्चों को मिलती है।

9. अतिथि सत्कार का पुरस्कार:-

अतिथि सत्कार भारतीय संस्कृति का आधार स्तंभ है। भारतीय संस्कृति में अतिथि को महत्वपूर्ण माना गया है। हिंदी बाल कहानी साहित्य में बच्चों में अतिथि का आदर करने संबंधी कई कहानियाँ मिलती हैं। शैलेंद्र प्रसाद की 'भील-भीलनी' कहानी अतिथि सत्कार का पुरस्कार करनेवाली कहानी है। कहानी में भगवान शंकर संध्या के समय यति का रूप धारण कर 'आहुक' के घर जाकर उसके झोपड़े में एक रात रहने के लिए आश्रय माँगते हैं तो

आहुक कहता है- "महाराज, मेरे झोपड़े में जगह बहुत थोड़ी-सी है। हम दोनों किसी प्रकार इसमें गुजारा कर लेते हैं। आप इसमें कैसे रहोगे? आपको बड़ा कष्ट होगा।"16 आहुक के ऐसा कहने पर आहुआ ने उन्हें रुकने के लिए कहाँ तो यति रूपी भगवान शंकर रुक गए। वे दोनों बाहर सो गये और यति को झोपड़े में सोने की प्रार्थना की। इस प्रकार यहाँ पर अतिथि का सत्कार कर भारतीय संस्कृति से बच्चों को परिचित कराया है और 'अतिथि देवो भवः' इस सुभाषित का अर्थ समझाने की कोशिश की है।

10. पर्यावरण संरक्षण के प्रति जागरूकता :-

बाल कहानी साहित्य में बच्चों में पर्यावरण के प्रति जागरूकता निर्माण कर पर्यावरण संरक्षण के लिए करने के लिए प्रेरणापरक कई कहानियों का सृजन किया गया है जो न सिर्फ बच्चों के लिए बल्कि प्रकृति के स्वास्थ्यपूर्ण एवं उज्वल भविष्य के लिए भी महत्वपूर्ण है। हिंदी बाल कहानी साहित्य में डॉ. उषा पुरी की 'तुलसी चौरा' कहानी में तुलसी के गुण तथा पर्यावरण संतुलन के लिए उसका महत्व किस प्रकार है इस बात को पाठकों के सामने लाया गया है। कहानी की ग्राम सेविका पर्यावरण की दृष्टि से तुलसी का महत्व स्पष्ट करते हुए लोगों से कहती है - "तुलसी वायु और जल दोनों को साफ करती है। तुलसी में एक उड़नशील तेल होता है जो हवा में मिलकर ज्वर उत्पन्न करनेवाले मलेरिया की कीटाणुओं को नष्ट कर देता है। तुलसी की सुगन्ध से वायु में दूर-दूर तक मौजूद हानिकारक जन्तु नष्ट हो जाते हैं। घर के आंगन में तुलसी का पौधा भी इसलिए लगाते हैं। इससे घर में साफ हवा प्रवेश करती है। पानी में तुलसी के पत्ते डाल करपिया जाता है। पत्ते डाल देने से पानी कई दिन तक खराब नहीं होता। वही पानी रोगी को भी पिलाया जा सकता है। है न पानी को शुद्ध करने का अद्भुत तरीका।"17 इस प्रकार प्रस्तुत कहानी में तुलसी का पर्यावरण संरक्षण की दृष्टि से महत्व स्पष्ट किया है।

पंकज चतुर्वेदी की 'बेर का पेड़' कहानी में पेड़ों के उपयोग तथा महत्व बताया है जिससे पेड़ लगाने की प्रेरणा मिलती है जो पर्यावरण दृष्टि से महत्वपूर्ण है। प्रकृति का संतुलन पेड़ों से ही तो होता है अगर पेड़ ही नहीं रहेंगे तो पर्यावरण संतुलित नहीं रहेगा। इसी प्रकार शिव नारायण सिंह की 'उपयोगिता अपनी-अपनी' कहानी में बबूल के पेड़ का महत्व स्पष्ट किया है। आम का पेड़ क्षमा मांगते हुए बबूल के पेड़ से कहता है - "मित्र गर्ववश मैंने तुम्हारा अपमान किया था। पर आज मेरा सिर शर्ध से झुक गया है। कँटीले होते हुए भी तुम इतने उपयोगी हो सकते हो, यह मैंने न जाना था। मैं तो किसी के दाँतों को दर्द दे सकता हूँ। मगर दर्द की दवा तो तुम्हारे ही पास है। अब से मैं कभी तुम्हारे मन को चोट पहुँचाने वाली बात ना कहूँगा।"18 इस प्रकार यहाँ पर बबूल के पेड़ का महत्व बताया गया है जिससे पेड़ों का संरक्षण करने की सीख मिलती है पेड़ बचेंगे तो निश्चित ही पर्यावरण संरक्षण होकर संतुलन रहेगा।

निष्कर्षतः हिंदी में मौलिक बाल कहानी साहित्य लेखन की शुरुआत वास्तव में 20वीं शताब्दी के आरंभ में हुई। सन 1914 में विद्यार्थी, 1915 में शिशु और 1917 में बालसखा साहित्य पत्रिकाएँ आरंभ हुईं। इनमें मैथिली शरण गुप्त, कामता प्रसाद गुरु, डॉ. महेंद्र गर्ग, चंद्रमौली शुक्ल आदि प्रमुख एवं श्रेष्ठ रचनाकारों ने रचनाएँ लिखी हैं। वैसे देखा जाए तो मौलिक बाल कहानी साहित्य अंग्रेजी बाल साहित्य के प्रभाव स्वरूप ही हिंदी में आया है। उसके पूर्व अनूदित बाल साहित्य हिंदी में आ चुका था।

आजादी के बाद बाल साहित्य में परिवर्तन आ रहा है। बच्चों का बचपन भी इससे प्रभावित हो चुका है। समाज, परिवेश और समसामयिक परिस्थितियों से प्रभावित होकर वे विकसित हो रहे हैं। इसलिए बाल साहित्य

रचनाकार को इन सब बात सब का ध्यान रखकर साहित्य निर्मित करते हैं बदलते युग की मानसिकता को लेखक ने ध्यान में रखना रखते हुए लेखन करते हैं और वर्तमान एवं भविष्य के लिए बालकों को सजक करते हैं।

बदलते हुए जमाने में मनोरंजन के साधन भी बदल रहे हैं। टेलीविजन, कंप्यूटर, लैपटॉप, मोबाइल और उस पर के विभिन्न एप्स, इंटरनेट बच्चों को आकर्षित कर रहे हैं, वीडियो और फिल्मों के माध्यम से कहानी जब पर्दे पर आ रही है तब कहानी कहाँ पढ़ी जाएगी इस पर सवाल उठ रहे हैं ऐसे में विशेषज्ञों का मानना है कि बच्चों पुस्तकें भी बड़ी संख्या में पढ़ रहे हैं। जैसे टेलीविजन आने पर रेडियो समाप्त नहीं हुआ वैसे ही इलेक्ट्रॉनिक्स माध्यमों में पुस्तकें भी खत्म नहीं होगी। अतः बालसाहित्य और उसका महत्व आज है और भविष्य में भी बना रहेगा क्योंकि बाल साहित्य भविष्य के बीच बोलने का कार्य करता है।

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निजाम शाही कालीन फराहबक्ष महल या स्थापत्य कलेचा अभ्यास (१५०८ ते १५८३)

संशोधक :- डॉ.प्रा एन एन विधाते

(इतिहास विभाग प्रमुख)

श्रीमती एस के गांधी कॉलेज कडा ता.आष्टी जी.बीड

प्रस्तावना

सन १४९० च्या सुमारास अहमद निजामशाह यांनी अहमदनगर शहराची स्थापना केली व स्वराज्य विस्तार केला. १६ वे शतक हे निजामशाहीचा सुवर्णकाळ ह्या काळात अहमदनगर जे जगाच्या नकाशावर इतके समृद्ध शहर झाले की त्याची तुलना बगदाद, कैरो सारख्या मोठ्या शहरांशी होऊ लागली हिंदुस्तान मध्ये मुस्लिम सत्तेची सुरुवात झाल्यानंतर विविध भागांत त्यांनी आपली सत्तास्थाने निर्माण केली.

अहमदनगरच्या समृद्धीचे प्रतीक हे तेथे बांधण्यात आलेल्या वास्तूंत आहे. म्हणून जागतिक पातळीवर इतिहासाच्या अभ्यासाला अनन्यसाधारण महत्त्व आहे. १६ वे शतक हा अहमदनगर शहराचा सुवर्णकाळ होता. या काळात अहमदनगर मध्ये विविध वास्तूंची निर्मिती करण्यात आली, तसेच सांडपाण्याची व्यवस्था, विविध ठिकाणी पाणी पोहचवण्यासाठी बांधण्यात आलेले पाठ (कॅनल्स) व नळांची निर्मिती ही ह्याच काळात झाली. त्याचप्रमाणे फराहबक्ष महल या वास्तूचे बांधकाम याच कालखंडात झालेले दिसून येते. फराहबक्ष महल ही वास्तू निर्माण करण्याची जबाबदारी चंगेज खान, नियामतखान, इत्यादींनी केले.

अहमदनगरच्या दक्षिण-पूर्वेस सुमारे दोन मैलांवर फराहबक्ष महल चे अवशेष सापडतात. तसेच फराहबक्ष महल हे १६ व्या शतकातील बाग कॉम्प्लेक्स आहे. अहमदनगरचा बुरहाण निजामशहा याने बाग आणि भूमिगत कालवा बांधण्याचे आदेश दिले. 'गुलशन -ई -ब्राहीम' या पुस्तकात लिहिले आहे कि, "जेव्हा मुर्तजा निजामशहा मनोरंजन करण्यासाठी फराहबक्ष महालात गेले तेव्हा त्यांना ती बाग फारशी आवडली नाही. म्हणून मुर्तजा निजामशहा ने सलाबतखान यास ही वास्तू पाडून तेथे नवीन वास्तू बांधण्याचा आदेश दिला आणि नियामतखान यास त्या बागेच्या अधीक्षक (Superintendent) पदावरून काढून टाकले " नियामतखान यास बेदखल करून मुर्तजा निजामशहा ने फराहबक्ष महल बांधण्याची जबाबदारी सलाबतखान दुसरा यावर सोपवली व ई. स. १५८३ मध्ये महल व बाग यांचे बांधकाम पूर्ण केले. या महल मध्ये पूर्ण झालेल्या रेग्युलर कंपाऊंड चे केंद्रस्थान फराहबक्ष महल होते. तसेच दिल्ली येथील फतेह शाह नावाच्या गायकांसमवेत बुद्धिबळ खेळत, नृत्य, गायन, संगित व मनोरंजन करत मुर्तजा निजामशहा नेहमी या महालात मनोरंजन करण्यासाठी येत असत. या वाड्यात सांस्कृतिक कार्यक्रम, संगीत वादन, प्रशासकीय कृत्ये तसेच मेहफिल होत असत.

उद्दिष्ट

- १) फराहबक्ष महलाच्या स्थापत्य शैलीची माहिती तपासने.
- २) फराहबक्ष महलच्या निर्मिती मागील आर्थिक, सामाजिक, सांस्कृतिक व मनोरंजन विषयक बाबींचा अभ्यास करणे.
- ३) अहमदनगरच्या फराहबक्ष महलच्या स्थापत्य शैलीची वैशिष्ट्ये मांडणे.

निजामशाही कालीन फराहबक्ष महलचा इतिहास

अहमदनगरच्या दक्षिण पूर्वेस (आग्नेयेस) सुमारे दोन मैलावर फराहबक्ष नावाचा एक महल आहे. निजामशाही बादशहाने जे खास महाल बांधले त्यापैकी हा एक आहे. फरिया बाग हे नाव 'फराहबक्ष' या उर्दू शब्दावरून पडला त्याचा अर्थ आनंददायी किंवा सुखदायी होतो (The delightful) 'फराहत' म्हणजे 'आनंद' आणि 'बक्ष' म्हणजे 'देणे' यावरून आनंद देणे असा अर्थ निघतो. बिस्त बाग उत्तम प्रकारे बनविल्या वर दुसरा बादशहा बुरहाण निजामशाहा याच्या मनात आणखी एक उत्तम बाग व राजवाडा तयार कराव असे वाटले व सलाबतखान (थोरला) व चंगेझ खान या सरदारांचा सल्ला घेतला, त्याचप्रमाणे बुरहाणशहाने एक उत्तम जागा हवा, पाण्याच्या दृष्टीने योग्य, अशी पसंत करून तेथे हे काम सुरु करण्याचे ठरविले व आपल्या पदरचा एक सुप्रसिद्ध कारागीर नियामतखान दख्खनी याकडे ते काम सोपवले.

*** नियामत खान विरुद्ध शहा ताहीर :**

नियामत खान या सरदाराने या इमारतीचा एक नकाशा तयार केला व राजवाड्याच्या कामास आरंभ केला. परंतु या राजवाड्याच्या काम सुरळीत चालावे, असा योगायोग नव्हता. नियामत खान व प्रसिद्ध शियापंथी शाह ताहीर याचे धर्मभेद यामुळे फार वितुष्ट आले. बुरहाण शहा जवळ शाहताहीर चे फारच वजन असे. कारण त्याच्या सांगण्यावरून बुरहाण शाह ने शियापंथाचा स्वीकार केला. अर्थात या धर्माचा तंट्यात फराहबागेचा राजवाडा सापडला. नियामत खान कडे काम सोपवण्यात येऊन त्याने नकाशाही तयार केला त्याचे शहताहीवर याला वैमनस्य वाटले व त्याने बुरहाण शहाच्या मनात वेगळ्याच गोष्टी भरून नियामतखान चा नकाशा नापसंत करविला हि गोष्ट इ.स. १५४६ (९५४ हिजरी) या साली झाली त्यामुळे अर्थातच नियामतखान चे काम बंद पडले. नंतर शहताहीरने स्वतः एक नकाशा तयार करून महालाचे, तलावाचे व बागेचे काम सुरु केले. या नंतर देखरेख करण्याचे काम नियामतखान वर न सोपवता सलाबतखान (थोरला) यावर सोपविले .काम थोडे आकारात येते त्यात सलाबत खान मरण पावला.

दरम्यान बुरहाण शहा, शहा ताहीर दोघेही मरण पावले. त्यामुळे हे काम काही दिवस तसेच बंद पडले. पुढे मुर्तझा निजामशाहाच्या कारकिर्दीत हे काम पूर्ण झाले. सलाबत खान दुसरा याने काम संपूर्ण केले असे म्हणतात. अहमदनगर गॅझिटीयर मध्ये सलाबत खानने हिजरी ९९१ (इ.स. १५८३) मध्ये हे काम पूर्ण केले असा उल्लेख आहे. फराबागे संबंधीत एक शिलालेख शिलालेख आहे त्यावर महालाचे काम नियामत खानने पूर्ण केले असे नमूद केलेले आहे. फराहबक्ष महालाच्या एका दरवाज्या जवळ एक पाण्याचा खजिना असून, त्यावर एका शिलेवर वळणदार अक्षरांनी एक लेख कोरला आहे, त्याची नोंद मुजदे अहमदनगर' किंवा ज्यावरून ते पुस्तक लिहिले गेले, ती 'तवारिख शाहाबी यात देखील ह्या शिलालेखाच्या तारीखेची नोंद दिसत नाही. तो लेख खालील प्रमाणे आहे.

"नमे ई अजखुबीने आबोहवा

शुद्ध फेरबक्ष ई चुनी मशहुरबाद

बुद नियामत खान च्युं साईएबीन

सइ हाये उ हमा मशकुरबाद

खास्तं तरिखश अजपीरे खिर्द

गुपत यारब ता अबद मामुरबाद "

या लेखाचा अर्थ असा : "सौन्दर्य व उत्तम हवा यावरून या जागेचे नाव फराहबक्ष म्हणजे सुख देणारा असे होते. त्याच नावाने तो प्रसिद्ध असे. ज्याअर्थी नियामत खान या इमारतीचा कारागीर झाला, त्याअर्थी त्याच्या प्रयत्नां बद्दल कृतज्ञता असावी. मी एका वृद्ध व शहाण्या माणसास त्याची तारीख विचारली. तो म्हणाला, गुप्त यारब, ता. अबद मामूर बाद (हे परमेश्वरा यावंत चंद्र दिवाकरी) येथे वास्तव्य असो."

* फराहबक्ष महल मध्ये चांदबीबी चे वास्तव्य

बेहस्त बाग व फराहबक्ष बाग हे दोनही बाग (महल) निजामशाही बादशहांचे खास होते. बेहस्त बागेतील महल, फैजबक्ष, लक्कड महल वगैरे महालात निजामशाही बादशहांचे आरंभी बरेच वास्तव्य असे. परंतु पुढे फराहबक्ष महल तयार झाल्यानंतर त्यांचे वास्तव्य फराहबक्ष महल मध्ये होऊ लागले. मुर्तजा निजामशाहा च्या वेळेस बेहस्त बागेतील त्याच्या अत्याचारामुळे पुढील बादशहांचे ह्या वस्तू वरील लक्ष उडाले व फराहबक्ष बागेला महत्व आले. सुप्रसिद्ध सुलताना चांदबीबी इथे मधून-मधून राहत असे. तिच्या वेळी हा महल उत्तम रितिते श्रृंगारीला होता, त्यावेळेची फराहबक्ष महालाची शोभा आवर्तनीय आहे. सुलताना चांदबीबी यांचे अहमदनगर मध्ये दुसरे असे कोणते वास्तव्याचे मुख्य स्थानाचा उल्लेख आढळून येत नाही.

फराहबक्ष महालाचे स्थापत्य :

* परिमाण आणि बांधणी : फराहबक्ष महल व बाग मिळून २००० झिरा (बोटाच्या टोक पासून ते कोपर्या पर्यन्तची लांबी) लांबी व रुंदीचा चौरस आहे. याचे संपूर्ण क्षेत्र २७८ बिघा बनते. मध्यभागी ५२८ झिरा चौरस तलाव आहे. ज्याचे मूळ क्षेत्र हे १९ बिघा आहे. डोंगराच्या पायथ्या पासून भूमिगत जलवाहिनी त्यात पाणी आणते. जलाशयाच्या मध्यभागी दोन मजल्यांची भव्य व आश्चर्यका (खोल्या) आणि उंच कपोला आहे. आश्चर्यकारक इमारत आहे.

* फराहबक्ष महला चे परिमाण : हा महल अष्टकोनी आहे, त्यावरील मजला सपाट छताने व्यापलेला आहे, त्याच्या मध्यभागी ३० फूट उंचीचा घुमट आहे. बाह्य प्लॅटफॉर्मसह सर्व इमारती ६५.६२ मी. X ४५.१६ मी. रुंद आहे. खडबडीत दगड आणि चुन्याच्या मिश्रणा पासून बनवलेल्या आहेत. बाहेरील आणि आतील भागात चुन्याचे प्लास्टर केलेले आहे. हि अर्धवट पडलेली इमारत चौरस तलावाच्या मध्यभागी असलेल्या एका उंच अष्टकोनी ढाच्यावर बांधली गेलेली आहे.

* चौकोनी तलाव

फराहबक्ष चा मोठा राजवाडा एका विस्तीर्ण व चौरस तलावाच्या मध्यभागी आहे. तलावाच्या मध्यभागी असल्याने त्यास विशेष शोभा येते. या तलावासाठी नियामत खान यांनी कापूरवाडी कडून एक नळ तयार करण्यात आला त्यास हल्ली भिंगारचा नळ म्हणतात. तसेच भंडारा नळ पण फराहबक्ष बागे करीता बनविण्यात आला होता. फराहबक्ष महल मधील पाण्याची संपूर्ण सोय या नळांवर अवलंबून होती. त्या तलावाभोवती सुमारे ५०० बिघे जमीन घेऊन तिथे एक सुंदर बाग निर्माण करण्यात आला. त्या बागेत गुलाबाची सुगंधी झाडे लावण्यात आली होती. संपूर्ण महल व परिसर गुलाबाच्या सुगंधाने दुर्मळून जात असे.त्या काळी फराह बाग हे एक स्वतंत्र गाव म्हणून मानण्यात आले होते. त्या करीत पाटील-कुलकर्णी, खुर्द व फराह बाग बुदुक अशी दोन नावे इतिहासात आढळून येतात. फराहबक्ष महला ची बाग आता अगदी नष्ट झाली आहे व तलाव ही कोरडा आहे. त्यामुळे फराहबक्ष महल आता पूर्वी सारखा रमणीय नाही दिसत.

* अष्टकोनी भव्य राजवाडा

फराहबक्ष महल चा राजवाडा (मुख्य महल) हा अष्टकोनी आहे. तथापि, बेहस्त बागेच्या महला प्रमाणे आठ बाजू सारख्या लांबीच्या नाही आहे. चौरसाचे कोपरे काढून अष्टकोणी बसविण्यात आले आहे. हा राजवाडा हल्लीच्या स्थितीत देखील भव्य दिसतो. त्याच्या मध्यभागी एक विस्तीर्ण दिवाणखाना आहे. त्याचा उपयोग रंगमहल म्हणून सभा व मैफिली साठी केले जात असे. दिवाणखान्याच्या वरती घुमट असून, त्याची तलावापासून एकंदर उंची सुमारे ३० फूट आहे. दिवाणखान्याच्या सर्व बाजूस दोन मजली विस्तीर्ण दालने आहेत.

या इमारतीच्या बाजूला मोठमोठ्या कमानी काढल्या आहे. दुसऱ्या मजल्यावरून खालील दिवाणखान्यातील सर्व दिसावे अशी उत्तम योजना केलेली आहे. त्याने इमारतीची दर्शनी शोभा खुलून दिसते. दिवाणखान्याच्या चारही बाजूस एकावर एक अश्या दोन दोन कमानी आहेत. कोपऱ्यासही तशी व्यवस्था केलेली दिसून येते. इमारतीच्या दुसऱ्या मजल्यावर एक चोर मजला बनविण्यात आला आहे. त्याची उंची सुमारे ४ फूट आहे. लपून शत्रुवर हल्ला करण्यासाठी याचा उपयोग केल्या जात असे.

* फराहबक्ष महालाच्या स्थापत्य कलेची वैशिष्ट्ये :

फराहबक्ष महल मधील रंगमहल (दिवाणखाना) भव्य आहे कारण ह्या महलाची निर्मिती मुख्यतः मेहफिल, जलसा, नृत्य, गाणी अशा इतर कार्यक्रमांसाठी व आराम करण्यासाठी केली होती.

- रंग महालातील कार्यक्रमाचा आवाज (ध्वनि) कोणत्याही कुत्रिम साधनाचा वापर न करता संपूर्ण महाल मध्ये व्यवस्थित व स्पष्ट ऐकू जाईल अशी रचना करण्यात आली आहे. त्या कारणाने हा महल उत्तम ध्वनी योजनेसाठी प्रचलित होता. तसेच हा महल आपल्या उत्तम वायुयोजन व प्रकाश व्यवस्थेसाठी देखील प्रचलित होता.
- रंगमहालामध्ये मध्यभागी मोठा नक्षीदार घुमट आहे.
- फराहबक्ष महल बांधण्याची कल्पना ही मुख्यतः बिश्त बाग या महाला वरून सुचली होती.

फराहबक्ष महला चा उतरता काळ व सध्याची स्थिती

मराठा शासनापर्यंत फराहबक्ष महाल चा उपयोग हा एक निवासस्थान म्हणून केला जात असत. तोपर्यंत फराहबक्ष महल ची भव्यता-दिव्यता टिकून होती. पण १८१८ ला अहमदनगर मध्ये ब्रिटिश राज्य सुरू झाले. ब्रिटिश राज्याच्या सुरुवातीला देखील हा महल अगोदर कलेक्टरच्या निवासस्थान म्हणून वापरला गेला. नंतर डॉक्टर ग्रॅहम यांनी त्याचा सिविल हॉस्पिटल म्हणून उपयोग केला. १८३९ साली डॉक्टर ग्रॅहम यांनी मेजर रॉबर्टसन जे अहमदनगर चे कलेक्टर होते त्यांना पत्रव्यवहाराद्वारे फराहबक्ष महलची जमीन शेती करण्यासाठी मागितली. त्यानंतर फराहबक्ष महालाच्या अवतीभवती असलेल्या बागा नष्ट करून ती जमीन शेतीसाठी वापरण्याची परवानगी मिळवली. त्याच जमिनीवर सिल्कची शेती करण्यात आली व महलाच्या काही भागात सिल्कच्या कारखाना चालू करण्यात आला.

शेतीसाठी लागणारे सगळे साहित्य व अवजारे हे महालातच ठेवले जात होते. त्याचबरोबर शेती मध्ये काम करणारे बैल पण हे महालाच्या बाहेरील भागात बांधले जात असे. त्याचे रूपांतर नंतर गोठ्यात झाले. अश्या प्रकारे फराहबक्ष महल चा उतरता काळ चालू झाला.नंतर फराहबक्ष महल व परिसर हा कॅन्टॉलमेंट लष्कराच्या ताब्यात गेले. त्या परिसरात टॅक, बंदुकी यांचा सराव चालत असे. गोळीबार आणि तोफांच्या कंपनी मुळे फराहबक्ष महल मध्ये भरपूर पडझड झाली. नंतर तिथे टॅक म्युझियम उभारण्यात आले.

भारत सरकारने फराहबक्ष महल ला दिनांक ४ मार्च १९०९ रोजी महाराष्ट्रातील राष्ट्रीय स्मारक म्हणून घोषित केले. एकेकाळी संपूर्ण जगात अद्वितीय असलेला फराहबक्ष महल ची अवस्था आता दयनीय आहे.)

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जागतिक तापमान बदल आणि ग्रंथालये

मोहन दत्तात्रय महाडिक

संशोधक विद्यार्थी
डॉ. बा.आं. म. विद्यापीठ, औरंगाबाद

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सार :

प्रस्तुत लेखामध्ये जागतिक तापमान वाढ व ग्रंथालये तसेच ग्रंथालय व्यावसायिकांवर कोणते परिणाम होतात याचा आढवा घेण्यात आला आहे. जागतिक तापमान वाढ ही संपूर्ण जगाची समस्या असून या समस्येचा ग्रंथालयावर होणारा परिणाम व त्यावर उपाय सुचवले आहेत. या जागतिक तापमान वाढीमध्ये सर्व विद्यार्थी, महाविद्यालये आणि विद्यापीठ ग्रंथालयांनी जुन्या बाबींच्या पुर्नवापरावर भर दिला गेला पाहिजे. ग्रंथालयांनी जागतिक तापमान वाढीच्या काळामध्ये जुने ग्रंथ, बांधीव खंड, जुने वर्तमानपत्र व इतर कागदपत्रे जाळून किंवा टाकून देण्याऐवजी त्यांचा पुन्हा उपयोग करण्यावर भर द्यावा.

शोधसंज्ञा : ग्रंथालय, तापमान, वातावरण बदल इ.

प्रस्तावना :

आजकाल पर्यावरण प्रदुषण हा विषय ज्याच्या त्याच्या जिव्हाळ्याचा झाला आहे. बच्चे कंपनीना तर हा ग्लोबल वॉर्मिंग विज्ञानाच्या पुस्तकातून सतत भेटतच असतो. हवेतील पाण्याची वाफ, कार्बन डायऑक्साईड, मिथेन आणि इतर वायूमुळे पृथ्वीच्या भूपृष्ठाचे आणि वातावरणाचे तापमान वाढते त्याला हरितगृह परिणाम म्हणतात. वातावरणाच्या थरांवर सूर्यकिरणे पडतात. वातावरणाचे थर सूर्यकिरणांना शोषून घेतात किंवा ते उत्सर्जित होतात. पृथ्वीच्या पृष्ठभागावरून उत्सर्जित होणारी सूर्यकिरणं हरितगृह वायू शोषून घेतात किंवा पुन्हा उत्सर्जित करतात. याच सौरऊर्जेमुळे पृथ्वीचा पृष्ठभाग आणि वातावरण तापतं. या वातावरण बदलाचा किंवा तापमान वाढीचा परिणाम मानव, प्राणी तसेच निर्जीव वस्तूवरही होत असतो म्हणजेच कागदावर देखील याचा परिणाम होताना दिसून येतो. पर्यायाने ग्रंथालयातील ग्रंथसंपदेवरही या वातावरण बदलाचा परिणाम होताना दिसून येतो. आज स्थानिक, राष्ट्रीय आणि आंतरराष्ट्रीय स्तरावर जागतिक तापमान वाढीचा परिणाम व त्यावर करण्यात येणाऱ्या उपाययोजनेबाबत मंथन केले जात आहे. प्रस्तुत लेखामध्ये जागतिक तापमान वाढीचा परिणाम मानव, शेती व व्यवसायांवर जसा होतो त्याचप्रमाणे ग्रंथालय, ग्रंथालयातील साहित्य व ग्रंथालयामधून दिल्या जाणाऱ्या सेवा यावरही होतो याविषयी विवेचन करण्यात आले आहे.

जागतिक तापमान वाढीचे दुष्परिणाम :

जागतिक तापमान वाढीमुळे पिण्याच्या पाण्याचा तुटवडा निर्माण होईल. अन्नधान्य निर्मितीच्या प्रक्रियेत बदल होईल. नैसर्गिक आपत्ती जसं की पूर, वादळं, दुष्काळ, उष्ण वार्याच्या लहरीत होणाऱ्या मृत्यूचं प्रमाण वाढेल. तापमान बदलामुळे निसर्ग बेभरवशाचा होईल. समुद्राची पातळी वाढणं आणि वादळांमुळे पुराची स्थिती नेहमी तयार होऊ शकते. असं असलं तरी ज्या त्या भागानुसार हे बदल आपल्याला दिसतील. प्राणी आणि वनस्पतींची भवतालातील बदलाशी जुळवून घेण्याची जी क्षमता आहे त्याहून तीव्र गतीने बदल होताना दिसतील. त्यामुळे वन्य पशू आणि वनस्पतींच्या अनेक प्रजाती नष्ट होतील. मलेरिया, दूषित पाण्यामुळे निर्माण होणारे आजार आणि

कुपोषणामुळे लाखोंच्या संख्येनं बळी जाऊ शकतात. जागतिक तापमानवाढीमुळे काही बदल घडतील. त्यामुळे पृथ्वीचं तापमान आणखी वाढेल. जसं की आर्टिकमध्ये गोठलेल्या किंवा घन स्वरूपात असलेला मिथेन हा ग्रीनहाऊस गॅस वितळेल.

ग्लोबल वार्मिंगची कारणे :

अनेक गोष्टी ग्लोबल वॉर्मिंगला कारणीभूत ठरतात. ग्लोबल वार्मिंगची खालील कारणे ओळखली गेली आहेत.

-) विद्युत प्रदूषण.
-) जीवाश्म इंधन जाळणे, उदा .तेल आणि पेट्रोलियम.
-) पृथ्वीवरील कार्बन बुझून नष्ट करणे जे कार्बन शोषून घेतात आणि साठवतात .यात वातावरण, जमीन आणि महासागर यांचा समावेश होतो.
-) हरितगृह वायूंचे, विशेषत :CO₂ वातावरणात सोडणे, प्रामुख्याने जीवाश्म इंधनाच्या वापराद्वारे हरित वायू हवेत सोडला जातो.

उर्जा उपयोगात आणण्याची आणि हवा प्रदूषित करण्याची काही इतर कारणे :

-) वीज सतत चालू ठेवणे.
-) दूरदर्शन पाहणे
-) रेडीओ ऐकणे
-) कपडे धुणे किंवा वाळवणे
-) हेअर ड्रायरचा उपयोग करणे.
-) मायक्रोवेव्हमध्ये जेवण गरम करणे
-) एअर कंडिशनरचा मोठ्या प्रमाणात उपयोग करणे.
-) भांडे धुण्यासाठी मशीनचा उपयोग करणे.

जागतिक तापमान वाढीमुळे निर्माण होणाऱ्या विविध समस्या :

-) यामुळे सार्वजनिक आरोग्याच्या समस्या निर्माण होतील.
-) तापमानवाढीमुळे संसर्गजन्य रोग, उष्णता, तणाव आणि कुपोषणाचा प्रसार वाढेल कारण त्याचा शेतीवर परिणाम होतो .
-) कारण युरोपमध्ये उष्णतेच्या लाटेने अंदाजे ३६,००० लोकांचा बळी गेला आहे.
-) त्याचबरोबर यामुळे बर्फ वितळेल आणि समुद्र वाढतील .दोन ध्रुवांवर आणि ग्रीनलँडमध्ये बर्फाची चादर तयार होईल.
-) तापमानवाढीमुळे जगभरातील हिमनद्या वितळत आहेत .
-) शास्त्रज्ञ असेही म्हणतात की पूर, दुष्काळ, उष्णतेच्या लाटा, चक्रीवादळ, किनारी भाग पाण्याखाली असतील . किनाऱ्यालगतच्या समुद्रसपाटीवरील परिणामांमुळे पुराची शक्यता निर्माण होते.

जागतिक तापमान वाढ व ग्रंथालये :

जगभरातील ग्रंथालयांना त्यांचे अस्तित्व टिकवून ठेवण्यासाठी अनेक घटक उपलब्ध आहेत. ग्रंथालये हि माहिती केंद्रे आहेत, शिकण्याचे साधन आहे, माहिती प्रदान करण्याचे ठिकाण आहे, भारतीय सांस्कृतिक वारशांचे जतन करणारी एक संस्था आहे. त्याचबरोबर संग्रहालये, धार्मिक ठिकाणे, शहरातील स्मारके इ. चा एक घटक म्हणून ग्रंथालयाची ओळख आहे. ग्रंथालय हे नेहमीच साहित्य जतन करून ठेवणे, मागणी प्रमाणे वाचकांना ते उपलब्ध करून देणे यासाठी काम करत असते. हे करत असताना कर्मचारी आणि वाचकांना ते सुरक्षितपणे माहिती पुरवठा करण्याचे कार्य करते. ग्रंथालयामध्ये असणारे वाचनसाहित्य उपभोक्त्यांना व्यवस्थितपणे व संगणकाच्या आधारे सहजपणे उपलब्ध करून देण्याचे कार्य करते. ही प्रक्रिया योग्यरीत्या पार पडण्यासाठी एखाद्या आज्ञावलीचा उपयोग केला जातो. सदरील आज्ञावलीमध्ये ग्रंथालयातील सर्व प्रकारच्या साहित्याचा संग्रह करून तो सुरक्षित ठेवण्याचे कार्य केले जाते.

परंतु तांत्रिक त्रुटी निर्माण होणे, रासायनिक घटकामुळे संरक्षण करण्यात अडथळा निर्माण होणे यापासून सुरक्षित ठेवणे हे भविष्याच्या दृष्टीकोनातून महत्वाचे आहे. म्हणून ग्रंथालयातील साहित्य जतन करून ठेवणे या बाबीस महत्त्व प्राप्त होते. या दृष्टीकोनातून राष्ट्रीय ग्रंथालये, विद्यापीठ ग्रंथालये व सार्वजनिक ग्रंथालये यांच्यावर ही विशेष जबाबदारी असते. ग्रंथालयातील ग्रंथसंग्रह कायम जतन करून ठेवण्यासाठी त्यांची योग्य हाताळणी आणि काळजी घेणे महत्वाचे आहे. यासाठी वाचन संग्रहाचे डीजीटायजेशन करणे ठेवणे, दुय्यम प्रत तयार करणे या प्रकारची कामे ग्रंथालयांना करणे क्रमप्राप्त आहे. त्याचबरोबर कोणत्याही प्रकारच्या आपत्तीसाठी ग्रंथालयांनी तयार राहणे आवश्यक असते. आर्द्रता, उष्णता, पावसाळा, यातही उच्च तापमान पातळी, निम्न तापमान पातळी यामुळे ग्रंथालयातील वाचनसाहित्यावर परिणाम होतो. परिणामी वाचनसाहित्य वाचकांसाठी उपलब्ध होऊ शकत नाही. म्हणून उपाययोजना करणे गरजेचे असते. हवामान नियंत्रणातील अडचणी लक्षात घेऊन, IFLA च्या मार्गदर्शक तत्वात असे म्हटले आहे कि, "सर्वसाधारणपणे, ग्रंथालयातील वाचनसाहित्य संग्रहित करून ठेवले पाहिजे आणि स्थिर स्थितीत वापरले पाहिजे जसे की खूप गरम, खूप कोरडे, आणि खूप थंड तापमान असायला नको. "म्हणजेच ग्रंथालयातील तापमान नियंत्रित असले पाहिजे.

उष्णता आणि ग्रंथालये :

2003 च्या उन्हाळ्यात युरोपमधील उष्णतेच्या लाटेदरम्यान, तांत्रिक प्रणाली ब्रेकिंग पॉईंटवर ताण निर्माण झाला होता. यामुळे ग्रंथालये आणि आणि सांस्कृतिक क्षेत्रातील इतर संस्था, जे एक समान परिरक्षण वातावरणावर अवलंबून आहेत त्यांच्या संग्रहाचे सुरक्षित रक्षण करणे म्हत्वाचे होते. व्हिएन्ना मधील आधुनिक कला संग्रहालयासारखी इमारत, त्याच्यासह ब्लॅक बेसाल्ट दगडाचा दर्शनी भाग आणि पॅरिसमधील बिब्लिओथेक नॅशनल त्याच्या काचेच्या टॉवर्ससह यांची सुरक्षा करण्यासाठी तापमान नियंत्रित करण्यात आले होते. याकामी एक आधुनिक उर्जा प्रणाली उपयोगात आणली गेली. त्यात पुढील घटकांचा समावेश होतो.

-) नैसर्गिक हवा अधिक प्रमाणात ग्रंथालयात प्रवेश करणार नाहीत याची दक्षता.
-) ग्रंथालयाचे सिमेंट कॉंक्रीट चे बांधकाम करण्यात येते ते उष्णताशोषक तयार करणे.
-) ग्रंथालयात एक नियंत्रित स्वरूपाची वातावरण तयार करणे.
-) गर्मीच्या दिवसामध्ये वातावरण योग्य त्या प्रमाणात थंड करणे आणि थंड वातावरणात आवश्यक त्या प्रमाणात उष्ण वातावरण निर्माण करण्यासाठी यंत्राचा उपयोग करणे.

- 五) ग्रंथालय इमारतीमध्ये निर्माण झालेली अधिकची उष्णता कमी करण्यासाठीची उपाययोजना करणे.
- 六) ग्रंथालयामध्ये संपूर्णपणे अक्षय उर्जेचा उपयोग करणे.
- 七) कॉम्पॅक्ट फ्लोरोसेंट लाइटिंग, ऑक्युपन्सी सेन्सर्स आणि सन-शेडिंग उपकरणे देखील ऊर्जा सुधारण्यासाठी व ग्रंथालयाची कार्यक्षमता सुधारण्यासाठी या साधनांचा उपयोग केला जातो.
- 八) जागतिक तापमान वाढीपासून ग्रंथालय व ग्रंथालयातील वाचन साहित्य संग्रहाचे संरक्षण करण्यासाठी ग्रंथालयाचे बांधकाम व ग्रंथालयाची इमारत बांधणे आवश्यक आहे.
- 九) ग्रंथालये जागतिक तापमान वाढीचा मुकाबला करण्याच्या दृष्टीकोनातून तयार करणे गरजेचे आहे.
- 十) आज उष्णकटिबंधीय हवामानात, अति उष्णता असणाऱ्या प्रदेशात आणि ओलसरपणा म्हणजेच पावसाळा व अधिक प्रमाणत हिवाळा असणाऱ्या देशामध्ये ग्रंथालयातील वाचनसाहित्य संग्रह नष्ट होण्यापासून वाचवण्यासाठी एसी म्हणजेच एअर कंडिशनरवर निधी खर्च केला जात आहे.
- 十一) तसेच आजच्या आधुनिक काळामध्ये तयार करण्यात येणाऱ्या इमारती ह्या आधुनिक तंत्रज्ञानाच्या माध्यमातून व उत्कृष्ट प्रणालीद्वारे बनवणे गरजेचे आहे.
- 十二) ग्रंथालयांनी वाचक उद्धोधन वर्गामध्ये जागतिक तापमान वाढ या विषयी जागरूकता निर्माण करावी.
- 十三) ग्रंथालयांनी वाचन साहित्य संग्रहातील कागदांना वाळवी लागू नये यासाठी योग्य त्या उपाययोजना करव्यात तसेच कागदाचा पुनर्वापर करावा ते कागद जाळून टाकू नयेत.
- 十四) ग्रंथालयांनी हवामान विभागाकडून हवामानाचा अंदाज सतत घ्यावा.
- 十五) व्यक्ती, समाज व सेवाभावी संस्थांकडून उष्णतेचे परिणाम कमी करण्याचे उपाय जाणून घ्यावेत.

सारांश :

थोडक्यात ग्रंथालयांनी जागतिक तापमान वाढीचा धोका लक्षात घेऊन योग्य त्या उपाययोजना वेळोवेळी करणे गरजेचे आहे. त्याद्वारे वाचनसाहित्य सुरक्षित राहिल व ते वाचकांना उपलब्ध करून देता येईल.

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आरोग्य आणि योग एक चिंतन

प्रा.डॉ. प्रशांत मेहेर

शारीरिक शिक्षण विभाग

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प्रस्तावना :-

निरोगी आरोग्यासाठी आपलं मन प्रसन्न असण्याची आवश्यकता आहे. मनावर ताबा ठेवणे जरी कठीण असले तरी आपण आपल्या श्वासावर नियंत्रण ठेवणे आवश्यक आहे. हे श्वासावर नियंत्रण आपल्याला निरोगी आरोग्यासाठी आपलं मन प्रसन्न ठेवते. मनावर ताबा ठेवणे जरी कठीण असले तरी आपण आपल्या श्वासावर नियंत्रण ठेवणे आवश्यक आहे. हे श्वासावरच नियंत्रण आपल्याला योगाभ्यासातून मिळवता येते. योग अभ्यासाचा उपयोग कोणी आणि कसा करावा यावर आपण चर्चा करू निरोगी आरोग्यासाठी जो तो धडपडताना दिसतो. निरोगी आरोग्यासाठी हल्ली तर योगाचाही आधार घेतला जात आहे. पण आरोग्य म्हणजे काय, नि चांगल्या आरोग्यासाठी योगाचा उपयोग कसा होतो. अशी शंका प्रत्येकास पडते त्यावर आपण असे मत व्यक्त करू की चांगल आरोग्य म्हणजे फक्त योगाचा अभाव नाही, तर मानसिक, शारीरिक, आणि अध्यात्मिक या तीन गोष्टींचा समावेश होतो या तीन महत्त्वपूर्ण गोष्टीत मानवी जीवनाचा संतुलन राखलं जातं. योगा हे प्रतिबंधात्मक शास्त्र नसून रोग न होण्यासाठी ही प्रतिबंध केला जातो. योगाला सुरुवात वयाच्या आठव्या वर्षापासून करावी असे मत असते. योग हा फक्त शरीराशी निगडित नसून तो बराचसा मनाशीही निगडित आहे. मानवी शरीर आणि मन यांची सांगड घालून मानवी जीवनाचा विकास केला जातो. योगाची आठ अंग आहेत. यम, नियम, आसन, प्राणायाम, प्रत्याहार, धारणा, ध्यान आणि समाधी यांनाच अष्टांग योग म्हणतात. योगात आठ अंगांचा उपयोग केला जातो, त्यामुळेच योग हा फक्त शरीरावर नाही तर मनावरही परिणाम करतो. योगाभ्यासात आहार आणि विहाराची गरज आहे. योगाभ्यासातला आहार हा सात्विक असावा लागतो. सात्विक आहार म्हणजे ताज, सकस आणि पौष्टिक आहार खाल्लाच पाहिजे. म्हणजे पूर्णान या पूर्णान्नामध्ये भात, भाजी, पोळी, वरण, आमटी, कोशिंबीर यासारख्या पदार्थांचा समावेश होतो. आजच्या धावपळीच्या आयुष्यात पूर्णान खायला कोणालाच वेळ नसतो. लोक हवं त्यावेळेला हवं ते खातात. फास्ट फूड तसंच इन्स्टंट फूड मधल्या प्रिझरव्हेटीव्हचा शरीरावर परिणाम होतो. शक्यतो सात्विक आहार खाल्ल्याने योगासन करताना शरीरावर वाईट परिणाम होत नाही.

योगाभ्यासात प्रणायामालाही महत्त्व आहे. प्राणायामाच्या माध्यमातून मनावर ताबा ठेवता येतो. मनावर ताबा ठेवण्यासाठी आधी श्वासावर ताबा ठेवला पाहिजे. श्वासावर ताबा ठेवता आला की मनावर ताबा ठेवणे सोपे जाते, योगा करत असताना त्याच वेळी दुसरा कोणताही व्यायाम करायचा नाही. योगा सकाळी करत असाल तर दुसरा व्यायाम संध्याकाळी करावा. असे अनेक योगा अभ्यासकाचे मत आहे.

- ❖ **आरोग्य म्हणजे काय:-** आरोग्य म्हणजे स्थूल मनाने शारीरिक, मानसिक, सामाजिक संतुलनाची स्थिती होय, आरोग्यास असंतुलन निर्माण झाल्यास रोग जडतात. जी व्यक्ती आपली सामाजिक भूमिका व्यवस्थितपणे पार पाडण्यासाठी शारीरिक, मानसिक दृष्ट्या सक्षम असते. ती आरोग्यसंपन्न मानली जाते.
- ❖ **आहार:-** आरोग्य ही संकल्पना अत्यंत व्यापक अर्थाने उपयोगात आणली जाते. रोजच्या दैनंदिन मध्ये आपण आहाराला महत्त्व देतो. आहारामध्ये स्निग्ध पदार्थ, खनिजे, जीवनसत्वे, प्रथिने, लोह इत्यादी घटक तत्वांनी

नेहमी पुरेसा आणि ताजा आहार व्यक्तीला मिळाल्याने आरोग्य लाभते. रोजच्या आहारावर आपली आरोग्य विषयक स्थिती अवलंबून असते. त्यामुळे वेळच्यावेळी आहार घेणे अतिशय गरजेचे आहे.

- ❖ **स्वच्छता:-** व्यक्तीच्या खाना-पिनामुळे आणि स्वच्छतेमुळे आरोग्याला पोषक स्थिती निर्माण होत असते. आज अस्वच्छते मधून मलेरिया, गॅस्ट्रो इत्यादी सारखे रोग होतात. वैयक्तिक व सार्वजनिक पातळीवर व्यक्तीने स्वच्छतेची काळजी घेतली पाहिजे. यामुळे आरोग्य चांगले राहते.
- ❖ **व्यायाम व विश्रांती:-** व्यायामामुळे व्यक्तीला आपला आरोग्य विषयक दर्जा उंचावता येतो. नियमित आणि योग्य व्यायाम असल्यास निरोगी आणि दीर्घकालीन सद्द आरोग्य लाभते. व्यायामामुळे रोगप्रतिकारक शक्ती वाढते. व्यायामाबरोबरच विश्रांतीलाही तेवढेच महत्त्व आहे. आरोग्य आणि विश्रांती या दोन्ही प्रक्रियांचा आंतरिक संबंध आहे. कारण व्यक्तीचे शरीर म्हणजे हे यंत्र नव्हे. विशिष्ट काळापर्यंत व्यक्ती एखादे काम करू शकते. परंतु जास्त काम केल्यामुळे त्यास पुन्हा थकवा येतो. तेव्हा विश्रांतीची गरज असते. योग्य प्रसंगी चांगल्या प्रकारची विश्रांती घेतल्यास विश्रांतीनंतर व्यक्तीचे शरीर उत्साही बनते व कार्यक्षमता वाढण्यास मदत होते.
- ❖ **करमणूक:-** मनोरंजनातून व्यक्तीला आनंद मिळतो, मानसिक आणि शारीरिक स्वास्थ्य सुद्धा लाभते. जीवन सुखी आणि समाधानी बनते. जेव्हा व्यक्ती उदासीन बनतो तेव्हा तो मनोरंजनाचा आधार घेतो. सुयोग्य मनोरंजनामुळे व्यक्तीला शारीरिक, मानसिक स्वास्थ्य लाभते.
- ❖ **पर्यावरण:-** सभोवतालच्या परिस्थितीचा परिणाम आरोग्यावर होत असतो. व्यक्तीच्या कौटुंबिक, सामाजिक, सांस्कृतिक, सामाजिक स्थिती समतोलची राहू शकेल असे पर्यावरण लाभल्यास आरोग्याचा दर्जा उंचावतो.
- ❖ **नोकरी/व्यवसाय/काम:-** साधारणपणे व्यक्ती दोन प्रकारच्या कार्य करते बैठ्या स्वरूपाचे आणि बौद्धिक स्वरूपाचे काही कामे फारसे शारीरिक ताण न पडता व्यक्तीला करावे लागतात. काही कामे व्यक्तीला प्रत्यक्ष शारीरिक कष्ट करून आपली शक्ती, ऊर्जा खर्च करून करावे लागते. उदाहरणार्थ:- शेतमजूर, हमाल, कारखान्यातील कामगार इत्यादी. व्यक्ती शारीरिक कष्टाची कामे करतात. कामाच्या स्वरूपावरून आरोग्य विषयक समस्या अवलंबून असते. नौकरी करत असताना मानसिक समाधान असणे अत्यंत गरजेचे असते. मानसिक स्थिती व कामावरील ताणाचा देखील आरोग्यावर परिणाम होत असतो. म्हणून आनंदी वातावरणात काम केल्याने उत्साह वाढतो. कार्यक्षमता सुद्धा वाढण्यास मदत होते. तर शरीर आणि मन निरोगी असणे हे व्यक्तीच्या दृष्टीने चांगले समजले जाते. कोणत्याही प्रकारच्या वैद्यकीय उपचार न घेता व्यक्ती आपले जीवन जगतात. अश्याच व्यक्ती खर्चा अर्थाने सर्व बाबींमध्ये श्रीमंत असते. ज्या व्यक्तीजवळ खुप पैसा आहे. त्याचे आरोग्य चांगले नसेल तर जीवन जगणे कठीण जाते, ज्या देशातील समाज निरोगी असतो. त्या देशातील प्रगती जास्त होते. म्हणून आरोग्य चांगले असणे महत्त्वाचे आहे.
- ❖ **आरोग्य शिक्षण:-** लोक एखादी गोष्ट जेव्हा स्वतः करतात, पाहतात तेव्हा शिकणे सहज आणि परिणामकारक होते. केवळ सांगण्याने एवढे काम होत नाही, लहान मुलाच्या बाबतीत शिक्षणाचे सूत्र महत्त्वाचे वाटते, शिकण्या- शिकण्याचा प्रसंग आनंदाचा उत्सव झाला पाहिजे. ज्यात करमणुक, आनंद, उल्हास आहे. अशा गोष्टीशी लोक समाविष्ट होऊन त्या गोष्टी स्मरणात ठेवतात. कुठल्याही प्रकारे त्यांचा अपमान होणार नाही. पीडा होणार नाही असे प्रसंग टाळावेत, आरोग्य शिक्षणामुळे व्यक्तीमत्त्वामध्ये चांगली सुधारणा आढळून येते. त्यामुळे व्यक्तीचे आयुर्मान वाढते, कौटुंबिक स्थिती, स्वास्थ्य, प्रेम, माया आणि जीवनाचे नियोजन करण्यासाठी मदत होते.
- ❖ **योग म्हणजे काय:-** योगाचा उपयोग मनावर आणि शारीरिक कार्यावर नियंत्रण ठेवण्यासाठी देखील केला जातो. योग हा शब्द सुसंस्कृत शब्दापासून उद्भवला आहे. ज्याचा अर्थ सामील होणे, एकत्र येणे आहे. योग

शरीर, मन, चेतना आणि आत्मा यांना संतुलनात आणते. ज्याचा योग आपल्या रोजच्या मागणी समस्या आणि समस्याला तोंड देण्यास मदत करते.

- ❖ **योगाचे प्रकार:-** योगाचे सहा प्रकार आहेत राजयोग, हठयोग, ज्ञानयोग, कर्मयोग, भक्तीयोग या क्रमाने त्यांना योग्य शास्त्रात लिहिलेले आहे. म्हणून त्या क्रमाने त्यांना दर्जा व महत्व प्राप्त झाले आहे. हा एक व्यायाम आहे ज्यामध्ये श्वास नियंत्रण साधे ध्यान आणि आपल्या शरीरातील घटक संतुलित करून विशिष्ट शारीरिक मुद्रांचा अवलंब करणे समाविष्ट आहे. उत्तम आरोग्य, शारीरिक आणि मानसिक विश्रांतीसाठी योगाचा मोठ्या प्रमाणावर सराव केला जातो. योगाचा शाब्दिक अर्थ संघटन एकत्र येणे असा आहे.
 - ❖ **राजयोग:-** यम, नियम, आसन, प्राणायाम, प्रत्याहार, ध्यान, धारणा व समाधी हे पतंजली राजयोगाचे आठ अंग आहेत. त्यांना अष्टांग योग ही म्हटले जाते.
 - ❖ **हठयोग:-** षट्कर्म, आसन, मुद्रा, प्रत्याहार, ध्यान व समाधी हे हठयोगाचे सात अंग आहेत, मात्र हठयोगाचा जोर आसन किंवा कुंडलिनी जागृतीसाठी आसन, बंध, मुद्रा व प्राणायामावर अधिक असतो. यालाच क्रियायोग म्हटले जाते
 - ❖ **लययोग:-** यम, नियम, स्थूल क्रिया, सूक्ष्म क्रिया, प्रत्याहार, धारणा, ध्यान व समाधी असे लययोगाचे आठ अंग आहेत.
 - ❖ **ज्ञानयोग:-** अशुद्ध आत्म्याचे ज्ञान प्राप्त करणे, हाच ज्ञानयोग आहे. याला ध्यान योग असेही म्हटले जाते.
 - ❖ **कर्मयोग:-** कर्म करणेच कर्मयोग आहे. कर्माने आपल्यात कौशल्य आत्मसात करणे, हा त्यामागचा खरा उद्देश आहे. याला सहजयोगही म्हटले जाते.
 - ❖ **भक्तीयोग:-** भक्ती, कीर्तन, स्मरण, पादसेवन, अर्चन, वदन, दास्य, सौख्य व आत्मनिवेदन असे नऊ गुण असणाऱ्या व्यक्तीला भक्त म्हटले जाते. व्यक्ती त्याची आवड, प्रकृती व साधना यांच्या योग्यतानुसार त्याची निवड करू शकतो. भक्ती योगानुसार सौख्य, समन्वय, आपुलकी असे गुण निर्माण होतात.
 - ❖ **योगाचे फायदे:-** वजनात घट, सशक्त आणि लवचिक शरीर, तजेलदार त्वचा, शांत आणि प्रसन्न मन आणि उत्तम आरोग्य यातली जी गोष्ट तुम्हाला हवी असती ती घायला योग समर्थ आहे. योगाची मर्यादा ही फक्त योगसना पूर्तीच मर्यादित आहे. असा बऱ्याच वेळा लोकांचा गैरसमज होतो. कारण शारीरिक स्तरावर होणारे फायदे आपल्याला सहज लक्षात येतात. परंतु प्रत्यक्षात शरीर, मन आणि श्वासोच्छ्वास यांचा योगामुळे संयोग झाल्याने आपल्याला अगणित फायदे होतात. तुमचे मन, शरीर आणि श्वास यांचे एकमेकांशी संतुलन राखले गेल्याने जीवनाचा प्रवास शांत, आनंदी आणि सर्वार्थाने सफल होतो. योगाच्या नियमित सरावामुळे होणारे महत्त्वाचे फायदे खालील प्रमाणे आहेत. सर्व स्तरावर तंदुरुस्ती, वजनात घट, ताण-तणावापासून मुक्ती, अंतर्यामी शांतता, रोगप्रतिकारक शक्ती वाढ, सजगतेत वाढ होते, नातेसंबंधात सुधारणा, ऊर्जा शक्ती वाढते, शरीराचा लवचिकपणा आणि शरीराची ठेवण सुधारते. अंतर्ज्ञानात वाढ होते.
- नुसते शारीरिक स्वास्थ्य असून चालत नाही, तर त्याबरोबर मानसिक आणि भावनिक स्वास्थ्य राहिले पाहिजे. श्री रविशंकरजी नेहमी म्हणतात फक्त रोगविरहित शरीर असण्याला स्वास्थ्य म्हणता येणार नाही, तर आनंद, प्रेम आणि उत्साह हे तुमच्या जीवनात उत्स्फूर्तपणे व्यक्त होत असतील तर त्याला खरी आरोग्य संपन्नता म्हणता येईल
- ❖ **समारोप:-** भारतवर्षातील ऋषीमुनी, संत, आध्यात्मिक गुरु यानी आपल्यातील शक्तीचा विकास करून परमचैतन्य आत्मस्वरूपाचा साक्षात्कार करून पूर्ण आनंदाची प्राप्ती करण्यासाठी योग्यक्रियाचा उपयोग केला.

अन्न, वस्त्र, निवारा या मूलभूत गरजा बरोबर शिक्षण ही आधुनिक काळात मानवाची महत्त्वाची गरज बनली आहे. अलीकडच्या धकाधकीच्या जीवनात योग शिक्षणाची गरज मोठ्या प्रमाणात निर्माण झालेली दिसून येते, आज ही भारतामध्ये योगशिक्षणाद्वारे मोठ्या प्रमाणात मार्गदर्शन घेतले जाते, भारताची लोकसंख्या अंदाजे 140 कोटी पर्यंत वाढत गेली आहे. सरकारचे धोरण हे कल्याणकारी असल्यामुळे तळागाळातील लोकांना आरोग्य आणि योग शिक्षणाद्वारे आपली शारीरिक कुवत व क्षमता वाढवण्यासाठी प्रयत्न केले जातात, विविध सामाजिक संस्था, धार्मिक संस्था प्रामुख्याने सेवाभावी हेतू ठेवून लोकांचे आरोग्य आणि त्याची जीवन सुखी करण्यासाठी मदत होते. आहार, विहार, व्यायाम व शिक्षण इत्यादी चतुसूत्रीचा मानवाच्या जीवनावर सकारात्मक परिणाम होण्याच्या दृष्टी दृष्टीने आरोग्य आणि योग या विषयावर विचार मंथन, चिंतन करण्याचा मी प्रयत्न सदर संशोधन लेखनात केलेला आहे.

❖ **संदर्भ:-**

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बदलते वातावरण आणि साहित्य यातील ग्रंथालयाचे योगदान

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डॉ.राजकुमार हिरामन थोरवे

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विज्ञान व पी.एच.गांधी वाणिज्य महाविद्यालय,
कडा

- **सार** : जगाच्या इतिहासात अनेक स्थित्यंतरे झाली. यात ग्रंथालयाने महत्वाची भूमिका पार पाडल्याचे दिसून येते. आजच्या बदलत्या वातावरणात देखील ग्रंथालयाने जाणीवपूर्वक केलेले कार्य पर्यावरण व मानवी जीवनासाठी सहाय्यभूत ठरेल.

वातावरणाचे संरक्षण करण्याच्या महत्वाच्या जबाबदारीची जाणीव सर्वप्रथम स्थानिक पातळीपासून जागतिक पातळीपर्यंत असणे गरजेचे आहे ,त्याशिवाय वातावरण संरक्षणाचे महत्त्व समजणार नाही.आणि परिवर्तन होणार नाही ,हीच जाणीव करून देण्याचे काम जबाबदार पद्धतीने विविध पातळ्यांवर, विशेष सेवा व प्रयत्न करून ग्रंथालय देऊ शकते.

- **शोधसंज्ञा** : वातावरणातील बदल ,वाचन साहित्य, ग्रंथालयाचे योगदान.

- **प्रस्तावना** :

ग्रंथालय हा शिक्षण संस्थेचा आत्मा आहे कोणत्याही शिक्षण संस्थेची प्रगती ही त्या संस्थेच्या असणार्या ग्रंथालयावरून सहज लक्षात येते. ग्रंथालयातील ग्रंथसंपदा किती समृद्ध आहे यावर त्या शिक्षण संस्थेचे मूल्यांकन केले जाते. आधुनिक काळातील ग्रंथालयाचे महत्त्व जाणून घेताना ग्रंथालयाचा प्राचीन इतिहास जाणून घेणे गरजेचे ठरते. प्राचीन भारताच्या इतिहासामध्ये नालंदा विश्वविद्यालयाच्या ग्रंथालयाचा उल्लेख करणे क्रमप्राप्त ठरते. प्राचीन कालखंडापासून ते आधुनिक काळापर्यंत जगाच्या इतिहासात अनेक स्थित्यंतरे झाली. या स्थित्यंतरामध्ये ग्रंथालयाने महत्वाची भूमिका पार पाडल्याचे दिसून येते. इतिहासाच्या जडणघडणीत ग्रंथालयाची भूमिका नेहमीच प्रमुख ठरली आहे. बदलत्या वातावरणात देखील ग्रंथालयाची भूमिका ही मानवी जीवनाच्या उत्थापनासाठी सहाय्यभूत ठरलेली आहे. बदलत्या वातावरणांनी मानवी जीवनावर अनेकविध परिणाम केलेले आहेत. ते परिणाम स्पष्टपणे निदर्शनास येतात. परंतु पूर्वापार पद्धतीने चालत आलेल्या ग्रंथालयाचे योगदान या बदलत्या वातावरणात आशादायी ठरते. ग्रंथालयाचे व्यवस्थापन करणे हे देखील बदलत्या वातावरणात महत्वाचे आहे. व्यवस्थापन म्हणजे नियोजन प्रक्रिया आणि उपक्रमातील विविध हालचाली यांचे नियंत्रण करण्याची प्रक्रिया आहे.¹ सर्वांनी मिळून संस्थेची अपेक्षित उद्दिष्टे साध्य करण्यासाठी क्षमतेने काम करणे गरजेचे असल्याने असे वातावरण कशा पद्धतीने निर्माण होईल व टिकून राहील, याची काळजी घेणे या सर्व प्रक्रियेस व्यवस्थापन असे म्हणता येईल. बदलत्या वातावरणात आणि साहित्यात ग्रंथालयाचे योगदान काय आहे हे आपणास पुढील पद्धतीने स्पष्ट करता येईल.

- **बदलते वातावरण आणि साहित्य** :

जागतिक तापमान वाढ आणि वातावरण बदल हे आताच्या सर्वच माध्यमांसाठी आणि सर्वसामान्य लोकांसाठी रोजच्या परिचयाचे शब्द होऊन बसले आहेत. परंतु त्यांच्या परिणामांच्या खऱ्या स्वरूपाची ओळख किंवा त्यांच्या

परिणामांच्या दाहकतेचा अंदाज काही तुरळक अपवाद म्हणजे अपूर्णाकातली लोकसंख्या वगळता अजून बहुतांश लोकसंख्येला झालेला नाही, हे विशेष होय. आजच्या घडीला जीवसृष्टीच्या आणि जीवनासमोर निर्माण झालेल्या या निर्णायक अहवानाच्या उंबरठ्यावर संपूर्ण मानव जात येऊन थांबलेली आहे.² केवळ मानव नव्हे तर पृथ्वीवरील समग्र जीवसृष्टी ही नष्ट होण्याच्या मार्गावर येऊन थांबली आहे. आज गेल्या 58 वर्षांमध्ये पृथ्वीवरील 50 टक्क्याहून अधिक जंगले आणि साधन संपत्ती आपण नष्ट केलेली आहे. त्यासाठी आपण केवळ झाडे, झुडपे, वेलीच नव्हे तर अनेक पशुपक्षी, कीटक, जिवाणू आणि अगणित ज्ञात-अज्ञात, निष्पाप जीवांच्या जीवाची ही पर्वा केलेली नाही. जीवनात आवश्यक साधनसामग्री प्राणवायू पाण्यासमवेत जगण्यास योग्य वातावरण जेमतेम दोन तीन दशकात नष्ट होण्याच्या मार्गावर आहे. त्यानंतर मानवी जीवन अस्तित्वात राहिल किंवा नाही याची कोणतीही शास्वती राहिलेली नाही. आजचीच जगण्याची आव्हाने इतकी मोठी आहेत की या भविष्यातील नव्या आव्हानाकडे कोण आणि केव्हा बघणार असा प्रश्न विचारला जातो. सामान्य वापरात हवामानातील बदल ग्लोबल वार्मिंगचे वर्णन करतात, जागतिक सरासरी तापमानात सतत होणारी वाढ आणि पृथ्वीच्या हवामान प्रणालीवर त्याचे परिणाम व्यापकतेने हवामान बदलामध्ये पृथ्वीच्या हवामानातील पूर्वीच्या दीर्घकालीन बदलांचा समावेश होतो. जागतिक सरासरी तापमानातील सध्याची वाढ मागील बदलांपेक्षा अधिक जलद आहे आणि ती प्रामुख्याने मानवाने जीवाश्म इंधन जाळल्यामुळे होते. जीवाश्म इंधनांचा वापर जंगलतोड आणि काही कृषी आणि औद्योगिक पद्धती हरितगृह वायूमध्ये भर घालतात. विशेषतः कार्बन डायऑक्साइड आणि मिथेन हरितगृह वायू काही उष्णता शोषून घेतात. जी पृथ्वी सूर्यप्रकाशापासून गरम झाल्यानंतर उत्सर्जित होते, या वायूच्या मोठ्या प्रमाणात पृथ्वीच्या खालच्या वातावरणात अधिक उष्णता वाढते व वातावरण बदलते. जगातील कोणत्याही भागात राहत असलेल्या मनुष्याला त्याच्या आयुष्यात एकदा तरी हवामान बदलाचा अनुभव येत असतो. जेव्हा ऋतू बदलतात तेव्हा माणसे ऋतू नंतर कपडे बदलतात, मैदानी कृती बदलतात, शेतीच्या कामात बदल करतात, त्या बदलाला वातावरणातील बदल असे म्हणतात. हवामानातील बदलामुळे मानवी कृतींना तसेच योजना राबवताना आव्हाने निर्माण होतात. उदा. वारंवार पडणाऱ्या दुष्काळामुळे पाणीपुरवठा कमी होतो, पिके घेता येत नाहीत, आर्थिक स्थिती डबघाईला येते आणि त्यामुळेच कदाचित स्थलांतर घडून येते. इंटरनॅशनल पॅनल ऑन क्लायमेट चेंज या संस्थेनुसार मानवी कृतीमुळेच जागतिक तापमान ही समस्या उठवली असून त्यामुळे हवामान बदल घडत आहेत त्याचे परिणाम मानव आणि पृथ्वीवरील सर्व निसर्गावर झालेले दिसत आहेत. या परिणामामध्ये परिसंख्या मधील बदल टोकाच्या हवामानामुळे अन्न निर्मिती व पाणीपुरवठा यांना होत असलेला धोका आणि समुद्राच्या जल पातळीत वाढ झाल्याने मानवी वस्त्यांचे स्थलांतर इत्यादी बाबी आहेत. या सर्व दुष्परिणामामुळे गरिबी आणि दारिद्र्य वाढले आहे. हे टाळायचे असेल तर सर्व मानवी कृतीमुळे होणारे हवामान बदल रोखण्यासाठी प्रयत्न करणे काळाची गरज आहे.³ आणि यात ग्रंथालय महत्त्वाची भूमिका बजावते.

➤ ग्रंथालयाची भूमिका :

बदलत्या वातावरणात ग्रंथालयाची भूमिका फार महत्त्वाची मानली जाते. बदलत्या वातावरणाचा मानवी जीवनावर होणारा विपरीत परिणाम विशद करण्यासाठी बदलत्या वातावरणात ग्रंथालयाची भूमिका फार महत्त्वाची मानली जाते. बदलत्या वातावरणाचा मानवी जीवनावर होणारा विपरीत परिणाम विशद करण्यासाठी आपणास ग्रंथालयाची मदत होऊ शकते.

➤ शालेय ग्रंथालय :

शालेय ग्रंथालय हे विद्यार्थ्यांच्या व्यक्तिमत्त्व विकासातील पहिली पायरी आहे. या वयात विद्यार्थ्यांमध्ये वाचन कौशल्य विकसित करण्यात ही ग्रंथालय महत्त्वाची भूमिका पार पाडतात. त्यामुळे अशा शालेय ग्रंथालयाच्या माध्यमातून

बदलत्या वातावरणावर आधारित छोटे खाणी पुस्तिका ठेवून बालवयापासूनच त्यांच्यात जागृती व प्रबोधन करता येते.⁴

➤ **महाविद्यालयीन ग्रंथालय :**

शैक्षणिक प्रक्रियेत महाविद्यालय ग्रंथालय महत्वाची भूमिका पार पाडतात. विद्यार्थी व शिक्षकांच्या माहितीविषयक गरजा पूर्ण करण्याच्या दृष्टीने महाविद्यालयाच्या संग्रहातील ग्रंथ महत्वाचे ठरतात. त्यामुळे बदलत्या वातावरणात संबंधित संदर्भ ग्रंथ, नियतकालिके ठेवून त्याविषयी माहिती विद्यार्थी तथा शिक्षकांना प्राप्त होऊ शकते. त्याचबरोबर वृत्तपत्रांमध्ये आलेल्या बदलत्या वातावरणासंबंधीच्या बातम्यांचे कात्रण भित्तिपत्रकावर चिटकून त्यासंबंधीत माहिती देण्याचे कार्य ग्रंथालय करू शकतात.

➤ **विशेष ग्रंथालय :**

ग्रंथालयाच्या माध्यमातून बदलत्या वातावरणावर ग्रंथ प्रदर्शन भरून ग्रंथांच्या माध्यमातून ते याविषयी संबंधी माहिती देऊ शकतात. त्यामुळे ग्रंथ प्रदर्शन भरवणे गरजेचे असते.⁵

➤ **डिजिटल लायब्ररी :**

डिजिटल ग्रंथालय म्हणजे इलेक्ट्रॉनिक स्वरूपातील सर्व प्रकारचे साहित्य जसे पुस्तके, मासिके, ऑडिओ रेकॉर्डिंग, व्हिडिओ रेकॉर्डिंग आणि इलेक्ट्रॉनिक पद्धतीने प्रवेश करण्यायोग्य इतर साहित्य. यासारख्या डिजिटल वस्तूंचा संग्रह म्हणजे डिजिटल ग्रंथालय होय. बदलत्या वातावरणासंबंधी आपणास डिजिटल ग्रंथालयाच्या माध्यमातून माहिती देऊन जनजागृती करता येते.⁶

अशाप्रकारे आपण आज बदलत्या वातावरणात ग्रंथालयाचे महत्त्व याची माहिती सविस्तरपणे सांगता येईल.

➤ **सारांश :**

समाजाच्या व देशाच्या प्रगतीमध्ये ग्रंथालयाने प्राचीन काळापासून हातभार लावलेला आहे. त्यामध्ये काळानुरूप बदल होत गेले, काळानुरूप ग्रंथालयाचे स्वरूप जरी बदलले असले तरी ग्रंथालयाचे कार्य मात्र बदललेले दिसून येत नाही. ग्रंथालयात प्रत्येक प्रकारची व्यक्ती येऊन ती ग्रंथांच्या माध्यमातून ज्ञानार्जन करीत असते. म्हणून सामाजिक जीवनात ग्रंथालयाला अनन्य साधारण महत्त्व आहे. उत्तम व्यवस्थापन असेल तर ग्रंथालयांना बदलत्या वातावरणाविषयी खालील उपक्रमांच्या माध्यमातून प्रभावीपणे उपक्रम राबविता येतील.

- 1) बदलत्या वातावरणाविषयी वाचन साहित्याचा स्वतंत्र संग्रह करून तो वाचकांसमोर आणणे.
- 2) संबंधित साहित्याची ग्रंथपेटी योजना राबवणे.
- 3) बदलत्या वातावरणाविषयी माहिती विषयक सेवा देणे.
- 4) बदलत्या वातावरणाविषयी नवीन वाचन साहित्याचे ग्रंथप्रदर्शन भरवणे.
- 5) "वातावरण साक्षरता" सारखे नविन उपक्रम राबविणे.
- 6) वातावरण बदल व त्यावर राबविण्याच्या उपाययोजना अशाप्रकारे साहित्य वाचकांच्या नजरेस आणणे.
- 7) पर्यावरणासंबंधी माहितीपर मार्गदर्शन सेवा पुरविणे.
- 8) वातावरणातील बदल केंद्रस्थानी ठेवून
 - i) प्रचलित जागरूकता सेवा पुरवणे. (CAS)

- ii) निवडक माहिती प्रसारण सेवा पुरवणे. (SDI)
- iii) संदर्भ सेवा, सेवा पुरवणे.
- iv) सार लेखन सेवा (Abstracting)
- v) भाषांतर सेवा (Translation)
- vi) प्रतिलिपी सेवा (Reprography)
- vii) निर्देशक सेवा (Indexing) इ. सेवा पुरविणे.
- 9) विद्यार्थ्यांचा व वाचकांचा वयोगट लक्षात घेवून त्या वयानुरूप वाचन साहित्य उपलब्ध करून देणे.
- 10) बदलत्या वातावरणातील संशोधक व अभ्यासक यांना त्यांच्या संशोधन विषयाच्या अनुरूप माहिती सेवा पुरविणे.

बदलत्या वातावरणाविषयी जनजागृती करण्यासाठी ग्रंथालयाची भूमिका महत्त्वाची आहे. बदलत्या वातावरणाची माहिती संग्रहालयाच्या माध्यमातून व ग्रंथालयामार्फत चालवल्या जाणाऱ्या उपक्रमातून आपणास सांगता येईल. बदलत्या वातावरणाची माहिती देण्यासाठी शालेय ग्रंथालयाच्या माध्यमातून ती लहान मुलापर्यंत पोहोचविता येते. त्यासाठी छोट्या पुस्तकेच्या माध्यमातून मुलांना समजेल अशा भाषेमधून त्या पुस्तिका निर्माण करून ग्रंथालयात ठेवल्या पाहिजेत. महाविद्यालयीन व विद्यापीठातील ग्रंथालयाच्या माध्यमातून बदलत्या वातावरणाविषयी संदर्भ ग्रंथ उपलब्ध करून त्यांची माहितीसर्वात पर्यंत पोहोचवता येतेसर्वात पर्यंत पोहोचवता येते. ग्रंथ प्रदर्शनाच्या माध्यमातून त्याचबरोबर वर्तमानपत्रातील संबंधित विषयाच्या कात्रणाच्या माध्यमातून बदलत्या वातावरणाविषयी ग्रंथालयाच्या माध्यमातून माहिती उपलब्ध करून देता येते. शेवटी डिजिटल लायब्ररीच्या द्वारे ऑडिओ व व्हिडिओच्या माध्यमातूनही आपणास बदलत्या वातावरणाविषयी माहिती देता येते. अशाप्रकारे बदलते वातावरण आणि साहित्य यातून ग्रंथालयाचे योगदान स्पष्ट करता येईल.

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जागतिक वातावरण बदलाचा भारतावर होणारा सर्वकष परिणाम

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राज्यशास्त्र विभाग

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एखाद्या ठराविक ठिकाणी अनेक वर्षांपासून असलेली ऊन, वारा, पाऊस, थंडी यांची स्थिती म्हणजे हवामान. या सरासरी हवामानातला बदल म्हणजेच क्लायमेट चेंज - हवामान बदल असे म्हटले जाते. मानवी जगताकडून घरी, फॅक्टरी आणि वाहतुकीसाठी केला जाणाऱ्या तेल, गॅस आणि कोळशाच्या वापरामुळे हवामानत झपाट्याने बदल होत आहेत. जैव इंधन ज्यावेळी जाळलं जातं, त्यावेळी त्यातून ग्रीन हाऊस गॅसेसचं उत्सर्जन होतं. यात कार्बन डाय ऑक्साईड (CO₂)चं प्रमाण जास्त आहे. या वायूंमुळे सूर्याकडून आलेली उष्णता अडकून राहते आणि त्यामुळे पृथ्वीवरचं तापमान वाढतं. जागतिक स्तरावर यापूर्वीही अनेकवेळा जागतिक तापमान वाढ झाली होती. अंटार्क्टिकाच्या बर्फाच्या अस्तरात याचे पुरावे मिळतात. परंतु त्या वेळेसची तापमानवाढ ही पूर्णतः नैसर्गिक कारणांमुळे झाली होती व त्याही वेळेस पृथ्वीच्या वातावरणात आमूलाग्र बदल झाले होते. सध्याची तापमानवाढ ही पूर्णतः मानवनिर्मित आहे. पृथ्वीलगतच्या वातावरणामध्ये कार्बन-डाय-ऑक्साईड व अश्याच काही अन्य घातक वायूंचे प्रमाण वाढले की जागतिक तापमान वाढ होत असते. जागतिक तापमानात दीड अंश सेल्सिअस वाढ झाली तर त्याचे सर्वाधिक परिणाम जगातल्या सर्वच देशान भोगावे लागतील म्हटलं जात आहे. अन्नधान्याची टंचाई, महागाई, बेरोजगारी, उपजीविकेच्या संधी गमावणं, आरोग्याच्या समस्या आणि स्थलांतर अशा संकटांना या घटकांना तोंड द्यावं लागेल. परंतु भारताचा विचार केला तर त्याचे आणखी गंभीर परिणाम होऊ शकतात त्याचा आढावा घेण्याच्या उद्देशाने हा शोध निबंध प्रस्तुत करण्यात आला आहे.

शोध निबंधाचे उद्देश :

1. जागतिक वातावरण बदल आणि त्यातील विविध पैलूंचा अभ्यास करणे.
2. जागतिक तापमान वाढीचा जागतिक स्तरावर पडलेला प्रभाव जाणून घेणे.
3. जागतिक वातावरण बदलाचा भारतावर होणारा सर्वकष परिणाम अभ्यासणे.

संशोधन पद्धती

कोणत्याही विषयाचे किंवा घटनेचे अध्ययन करित असताना ते वैज्ञानिक पद्धतीने होणे आवश्यक असते. या दृष्टीने प्रस्तुत संशोधन करण्यात आला आहे. सामाजिक संशोधन पद्धतीत सर्वात महत्वाचे कार्य म्हणजे तथ्य संकलन करणे होय. प्रस्तुत संशोधनासाठी जागतिक तापमान वाढीचा भारतावर होणारा सर्वकष परिणाम याचे अध्ययन करण्यासाठी हा विषय निश्चित करण्यात आला आहे. प्रस्तुत संशोधनात द्वितीयक स्रोतांद्वारे तथ्य संकलन करण्यात आले आहे. द्वितीयक तथ्य संकलनासोबतच विशेषतः प्राथमिक तथ्य संकलन आणि निरीक्षण पद्धतीवर अधिक भर देण्यात आला आहे. जागतिक तापमान वाढीचा भारतावर होणारा सर्वकष परिणाम याचे अध्ययन पुढील मुद्यांच्या आधारे स्पष्ट करण्यात आले आहे.

अलीकडच्या काळात मोठ्या प्रमाणात वातावरणीय बदल जाणवू लागले आहेत. ऋतुमानाच्या चक्राला कुठे तरी ब्रेक लागल्याने वातावरणात अचानक होणाऱ्या बदलांचा प्रभाव वाढला आहे. ऋतुमानानुसार फेब्रुवारीपासून देशात उन्हाळ्याची सुरुवात अपेक्षित असते. होळीनंतर खऱ्या अर्थाने उन्हाळा सुरू झाला असे मानले जाते. पण अलीकडच्या काळात फेब्रुवारी आणि अगदी मार्च महिन्याच्या आरंभीच थंडी आपला मुक्काम वाढवत असल्याचे दिसून येते. वातावरणीय बदला मुळे कधीही आणि कोठेही पाऊस पडू शकतो, याची झलक आता दिसत आहे. हे वातावरणीय बदल नेमके का आणि कशामुळे होतात याबद्दल वातावरण बदलावर आधारित आयपीसीसीचा सहावा मूल्यांकन अहवाल नुकताच जाहीर झाला आहे. या अहवालात हरितगृह वायू उत्सर्जनामुळे होणारे वातावरणातील बदल आणि त्याचे संभाव्य धोके वर्तविण्यात आले आहेत.

जागतिक वातावरण बदलाचे भारतावरील परिणाम

भारताची लोकसंख्या मोठी आहे. शिवाय इथे गरिबी आणि विषमताही मोठ्या प्रमाणावर आहे. त्यामुळे जागतिक तापमानवाढीचे मोठे परिणाम भारताला भोगावे लागतील. भारताला मोठा समुद्र किनारा लाभला आहे. समुद्राच्या काठी राहाणार्यांची संख्याही जास्त आहे. भारतात अनेकांसाठी समुद्र रोजगाराचं साधन आहे. त्यामुळे समुद्राच्या पातळीत वाढ झाली तर देशावर त्याचे भयंकर परिणाम होतील. दुसरीकडे उष्णतेच्या लाटेचाही धोका आहे. 2015 साली उन्हाळ्याच्या झळांनी भारत आणि पाकिस्तानात अनेक लोकांचा बळी गेला होता. ही नित्याचीच बाब होऊ शकते. भारताच्या पूर्वेकडचं कोलकाता आणि दक्षिण पाकिस्तानातील कराची या दोन शहरांना याची सर्वांत जास्त झळ बसण्याची शक्यता आहे.

जागतिक वातावरण बदलाचे आर्थिक परिणाम

जागतिक तापमान वाढीचे मर्यादित साधनसंपत्ती असलेल्या दक्षिण आशियातल्या विकसनशील अर्थव्यवस्थांसाठी हे आव्हानात्मक असणार आहे. 2015 ते 2050 या काळात जागतिक तापमानवाढ नियंत्रणात ठेवण्यासाठी देशांना जवळपास 900 अब्ज डॉलर्स एवढी प्रचंड गुंतवणूक करावी लागेल, असा अंदाज व्यक्त करण्यात येत आहे. मात्र यापेक्षा जास्त खर्च येण्याची शक्यता आहे. Intended Nationally Determined Contributions (INDCs) या नव्या आंतरराष्ट्रीय करारात वातावरण बदल रोखण्यासाठी राष्ट्रांना उद्दिष्ट ठरवून देण्यात आली आहेत. ही उद्दिष्ट पूर्ण करण्यासाठी 2020 नंतर जे उपाय करावे लागतील, त्याचा सार्वजनिक आराखडा तयार करताना अनेक देशांनी अफाट खर्चाचा अंदाज वर्तवला आहे. या बाबत INDC ने दिलेलं उद्दिष्ट पूर्ण करण्यासाठी भारताला जवळपास एक ट्रिलियन डॉलर्स एवढा खर्च येईल, असा अंदाज भारताने व्यक्त केला आहे. या आकड्यांवरूनच समस्या किती मोठी आहे, याचा अंदाज येईल.

भारतातील समुद्राकाठची शहरे पाण्याखाली जातील

जागतिक तापमानवाढीनंतर बर्फ पडण्याचे प्रमाण कमी झाले व वितळण्याचे प्रमाण जास्त झाले आहे. हे वितळलेले पाणी समुद्राच्या पाण्यात मिसळून जाते परिणामतः पाण्याची पातळी वाढते. आर्टिक व अंटार्क्टिका व ग्रीनलँडमध्ये असे प्रचंड हिमनग आहे. या हिमनगांनी पृथ्वीवरील जवळपास ३ टक्के पाणी सामावले आहे. पाण्यावरील हिमनगांचा साधारणपणे बहुतांशी भाग पाण्याखाली असतो व फारच थोडा आपणास पाण्यावरती दिसतो. हे हिमनग जर वितळले तर पाण्याची पातळी वाढत नाही. पण जर जमीनीवरील हिमनग वितळले तर ते पाणी सरतेशेवटी महासागरात येते व पाण्याची पातळी वाढवते. एकट्या ग्रीनलँडमधील बर्फ वितळला तर पृथ्वीवरील पाण्याची पातळी २ ते ३ मीटरने वाढेल. व अंटार्क्टिकावरील संपूर्ण बर्फ वितळला तर पृथ्वीची महासागराची पातळी २० मीटरने वाढेल

व असे झाल्यास आज दिसत असलेला कोणताही समुद्रकिनारा अस्तित्वात रहाणार नाही. भारतात विशेषत्वाने मुंबई, कलकत्ता, चेन्नई व इतर समुद्राकाठची शहरे पाण्याखाली जातील.

पर्यावरण संतुलन आवश्यक

जागतिक तापमान वाढीला आळा घालण्यासाठी पर्यावरण संतुलन आवश्यक ठरणार आहे. कार्बन उत्सर्जन कमी करण्याचा प्रयत्न करणे गरजेचे ठरणार आहे. नाहीतर भारताला वाढती पाणीटंचाई, दुष्काळ, पूर, चक्रीवादळ आणि इतर नैसर्गिक आपत्तींशीही सामना करावा लागणार आहे. असे होऊ नये या हेतूने भारताने उत्तम आपत्ती व्यवस्थापन यंत्रणा उभारली असली तरी ती अधिक विकसित करण्यासाठी भारताला अधिक साधनसंपत्तीची गरज आहे. शिवाय भारताने अक्षय ऊर्जा निर्मितीची महत्वाकांक्षी उद्दिष्ट ठेवली आहेत. या माध्यमातून भारताने पर्यावरण संतुलन साधने आवश्यक ठरणार आहे.

कार्बन उत्सर्जन कमी करणे गरजेचे आहे

आणखी एक महत्वाचा मुद्दा म्हणजे जगायिक स्तरावरून 2050 पर्यंत शून्य उत्सर्जन करण्याचे उद्दिष्ट साध्य करणे गरजेचे असणार आहे. हे भारतासाठी खूप महत्वाचं आहे. कारण भारताने अजूनतरी कार्बन उत्सर्जन कधी कमी करणार याची मर्यादा ठरवलेली नाही. तर चीनने 2030 हे आपलं सर्वाधिक उत्सर्जन वर्ष असेल, अशी घोषणा केली आहे. भारत कमी कार्बन उत्सर्जनावर आधारित विकासासाठी या शतकाच्या मध्यापर्यंतच धोरण बनवत आहे. भारताने अक्षय ऊर्जेबाबत स्वतःची काही महत्वाकांक्षी उद्दिष्टंही ठेवली आहेत. या माध्यमातून भारताने पर्यावरण संतुलन साधने आवश्यक ठरणार आहे.

भारतात वाहतूक व्यवस्थेची वाढती मागणी हे दुसरं मोठं आव्हान आहे. सध्या भारतात सायकल आणि सायकल रिक्शा यांची संख्या प्रचंड आहे. मात्र जसजसा पगार वाढतो तसा लोकांचा कल मोटरसायकल घेण्याकडे वाढतो. याला आळा घालण्यासाठी भारताला इलेक्ट्रिक गाड्या बाजारात आणाव्या लागतील. शिवाय सार्वजनिक वाहतूक व्यवस्था सक्षम करावी लागेल. हे भारतासाठी आव्हानात्मक असेल. एक गोष्ट मात्र स्पष्ट आहे. ती म्हणजे 2050 पर्यंत उत्सर्जन लक्षणीयरीत्या कमी करण्यासाठी आजची परिस्थिती लक्षात घेऊन या समस्यांवरच्या उपायांबद्दल विचार करावा लागेल. या समस्या सोडवण्याची क्षमता दक्षिण आशियातल्या देशांजवळ नाही, हे स्पष्ट आहे. अशा परिस्थितीत जगाने कार्बन उत्सर्जनाचं आपलं लक्ष्य पुन्हा चुकवू नये, यासाठी आंतरराष्ट्रीय सहकार्य अधिकच महत्वाचं ठरेल.

समारोप

दक्षिण आशियामध्ये २१ व्या शतकात हवामान बदलाच्या परिणामाने उष्णतेच्या लाटा आणि दमट उष्णतेचा ताण अधिक तीव्र आणि वारंवार उद्भवू शकतात. हिंदूकुश हिमालयातील हिमनदीचे माघार, समुद्र पातळी वाढणे आणि तीव्र उष्णकटिबंधीय चक्रीवादळांचे चक्रवाढ परिणाम ज्यामुळे पूर येतो; अनियमित पावसाळा; आणि अलिकडच्या वर्षात तीव्र उष्णतेच्या ताणाचा भारतावर परिणाम होण्याची शक्यता जास्त आहे, जागतिक तापमान वाढीचे परिणाम सर्वत्र जाणवत असून अलिकडच्या वर्षात जगभरात उष्णतेच्या लाटांमुळे हजारो लोकांचा मृत्यू झाला आहे ही घटना आगामी घटनांची एक सुचना आहे असे म्हणता येईल. 1990 पासून अंटार्क्टिकामधील जवळजवळ चार ट्रिलियन मेट्रिक टन बर्फ वितळला आहे. जर आपण आपल्या सध्याच्या गतीने जीवाश्म इंधन जळत राहिलो तर नुकसानाचा दर वाढू शकतो, काही तज्ञ म्हणतात, ज्यामुळे पुढील 50 ते 150 वर्षांमध्ये समुद्राची पातळी अनेक मीटरने वाढेल

आणि जगभरातील किनारी समुदायांचा नाश होईल.जागतिक तापमानाचे पृथ्वीवर होणा-या अनेक परिणामांपैकी आतापर्यंतचा सर्वात जास्त दिसणारा परिणाम म्हणजे हिमनद्या आणि समुद्रातील बर्फ वितळणे होय. यासारख्या परिणामातून मानवी जीवना समोर मोठे आव्हान उभे राहू शकते.

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पर्यावरण संरक्षण आणि पर्यावरण शिक्षण काळाची गरज

प्रा.डॉ. तात्या बाळकिसन पुरी

राज्यशास्त्र विभाग प्रमुख,
खोलेश्वर महाविद्यालय अंबाजोगाई.

प्रस्तावना :-

पृथ्वीवरील कोणत्याही भागातील मनुष्य तसेच अन्य सजीव ज्या परिसरात राहतात, त्या परिसरातील सर्व घटक समूह मिळून तयार झालेली परिस्थिती म्हणजे पर्यावरण होय. पर्यावरणात तापमान, सूर्यप्रकाश, जल, वातावरण आदी घटकांसह वनस्पती, प्राणी, सूक्ष्मजीव निसर्गतः जन्म, वावर, मृत्यू यामुळे जन्मापासून मृत्यूपर्यंत निसर्गावर अवलंबून असल्याने इत्यादी जैविक घटकांचा समावेश होतो. पर्यावरण निरोगी राहण्यात पृथ्वीवरील सजीवांच्या अस्तित्वात महत्वाची भूमिका आहे. पृथ्वी विविध सजीव प्रजातींचे घर आहे. आपण सर्व अन्न, हवा, पाणी व अन्य गरजांसाठी पर्यावरणावर अवलंबून आहोत. म्हणूनच प्रत्येकाने पर्यावरणाचे रक्षण आणि संरक्षण करणे ही जबाबदारी नाही तर ते कर्तव्यच आहे. आपण पर्यावरणाचे रक्षण केले तर येणाऱ्या पिढ्यांचे, आपल्या मुलांचे भविष्य उज्वल व सुनिश्चित करू शकतो.

पर्यावरण ही एक मौल्यवान देणगी आहे. जी पृथ्वीवरील जीवन टिकून ठेवते. आपण श्वास घेत असलेली हवा, आपण पीत असलेलो पाणी, वनस्पतीचे पोषण करणारी माती आणि विविध प्रकारच्या प्रजातींना, सजीवांना आधार देणारी विविध परिसंस्थांचा यात समावेश होतो.

पर्यावरणाचा अर्थ :-

पर्यावरण या संज्ञेला इंग्रजीत Environmental म्हणतात. फ्रेंच भाषेत Environ म्हणजे To Surround म्हणजे सभोवताली असणे. म्हणूनच याला मराठीत पर्यावरण परि + आवरण म्हणजे सभोवतालचा परिसर म्हणजे पर्यावरण होय.

पर्यावरणामध्ये अशा गोष्टीचा समावेश होतो ज्यावर आपण जगण्यासाठी प्रत्यक्ष किंवा अप्रत्यक्ष अवलंबून असतो. पर्यावरणामध्ये सजीव वस्तू जसे प्राणी व वनस्पती तसेच निर्जीव वस्तू जसे पाणी, हवा, माती यांचा समावेश होतो.

पर्यावरण शास्त्र :-

निसर्गातील सजीव व निर्जीव घटकांचा परस्पर संबंध यांचा ज्या विषयांतर्गत अभ्यास केला जातो तो म्हणजे पर्यावरण शास्त्र होय.

पर्यावरणीय शिक्षण :-

पर्यावरणीय शिक्षण एक अशी प्रक्रिया आहे की जी व्यक्तींना पर्यावरणीय समस्यांचा शोध घेण्यास, समस्यांना सोडविण्यास व पर्यावरण सुधारण्यासाठी कृती करण्यास अनुमती देते. व्यक्तींना पर्यावरणीय समस्यांचे सखोल ज्ञान

प्राप्त होते, विकसित होते व माहितीपूर्ण जबाबदार निर्णय घेण्याचे कौशल्य प्राप्त होते. पर्यावरणीय शिक्षण शाश्वत भविष्यात सहभागी होण्यास सक्षम बनवते.

मानवाची उत्पत्ती पृथ्वीतलावर तीनदक्ष वर्षापूर्वीची आहे. सुमारे 12000 वर्षापूर्वी मानव शिकारी व जंगलातील उपजीविकेसाठी अन्नपदार्थ गोळा करत. तसेच जीवन जगण्यासाठी पुरेशा अन्न पाण्याच्या शोधामुळे स्थलांतरित होत होते. मानव भटके जीवन सोडून हळूहळू पृथ्वीवरील वेगवेगळ्या भागात स्थिर होऊ लागला. यातून जगातील मानवाच्या विविध संस्कृती उदयास आल्या उदाहरणार्थ सिंधू संस्कृती, चिनी संस्कृती, ग्रीस संस्कृती आदी. यातून तीन प्रकारचे बदल झाल्याचे दिसून येते. यात एक कृषी क्षेत्रातील क्रांती ही दहा ते बारा हजार वर्षापूर्वी झाली. दोन औद्योगिक क्रांती व तीन माहिती आणि जागतिकी कर्णातील क्रांती. जीची सुरुवात पन्नास वर्षापूर्वी झाली. वाढती लोकसंख्या, वाढत्या गरजा, वाढते कृषी क्षेत्र, वाढते निवास यातून नैसर्गिक संसाधनाचा वाढता वापर यामुळे प्रदूषण व पर्यावरणीय रूहास याचा पर्यावरणावर परिणाम झाला, वाढला.

वातावरणाच्या विविध घटकांमध्ये जसे वायू, जीवन, स्थळ व जलमंडळ यातील क्रिया प्रतिक्रिया सतत सुरू असतात. निसर्ग नियमाने यांचे निर्माण होत असते यातून अनेक प्रकारच्या रचना निर्माण होतात. यालाच परिसंस्था असे म्हणतात परंतु मानवाच्या हस्तक्षेपामुळे या पर्यावरणीय परिसंस्थांचा समतोल बिघडत चाललेला आहे.

मनुष्य नैसर्गिक, समाजशील व परावलंबी आहे. मनुष्य निसर्गामध्ये जन्म घेतो व त्याच्या मृत्यूपर्यंत निसर्गावर अवलंबून असतो. मानवी संस्कृतीच्या प्रारंभिक काळात मर्यादित लोकसंख्या, मानवाचे सभ्य व साधे जीवन होते. निसर्गाच्या सानिध्यात राहणे तसेच अल्प उत्पादनाची गरज असल्याने निसर्गाचे संतुलन होते.

परंतु लोकसंख्या जलद गतीने वाढत गेली. मानवाने विविध क्षेत्रात केलेली प्रगती, 17 व्या 18 व्या शतकात. मोठ्या प्रमाणात औद्योगिक क्रांती होऊन औद्योगिकीकरणाच्या माध्यमातून कच्च्या मालासाठी नैसर्गिक संसाधनाची लूट वाढली यातून मानव स्वस्वार्थासाठी निसर्गापासून दूर गेला. सतत होणारे संघर्ष पहिले व दुसरे जागतिक महायुद्ध, अणुबॉम्बचा वापर, शस्त्रास्त्र निर्मिती, विविध क्षेत्राचे विकासांमुळे अपरिमित पर्यावरणाची हानी होत आहे. यातूनच पर्यावरणाचा आणि पर्यावरण - मानव संबंधाचा शास्त्रीय अभ्यास करण्याची आवश्यकता निर्माण झाली. व यातूनच 1960 मध्ये पर्यावरण शास्त्र ही शाखा विकसित झाली. यातूनच पर्यावरण समृद्धीसाठी धोरण निर्मिती करण्यासाठी चळवळीची निर्मिती झाली. संयुक्त राष्ट्र संघटनेने मानवी पर्यावरण विषयक आंतरराष्ट्रीय परिषद स्टॉक होम येथे 5 जून ते 14 जून 1972 या कालखंडात भरली. या परिषदेत 114 देशांची प्रतिनिधी हजार होते. पर्यावरणाचा समतोल सांभाळण्यासाठी व भावी पिढ्यांसाठी त्यांचे संवर्धन करणारी 150 कृती योजना व 20 तत्वे या परिषदेत मान्य करण्यात आली. या परिषदेने पाच जून हा दिवस जागतिक पर्यावरण दिन म्हणून घोषित केला व अवघी पृथ्वी एक Only One Earth हे बोधवाक्य स्वीकारले

हिंदू धर्माचे महान संत बिश्नोई पंथाचे संस्थापक श्री जगमेश्वरजी महाराज (राजस्थान) यांना जगातील पहिले पर्यावरणाचे जनक मानतात.

रामदेव मिश्र (1908 ते 1998) भारतीय पर्यावरणवाद व वनस्पतीशास्त्रज्ञ होते. यांना भारतीय पर्यावरण विज्ञानाचे जनक म्हणून ओळखतात. भारतात 1980 मध्ये केंद्र सरकारने पर्यावरण विभागाची स्थापना केली. पर्यावरणामध्ये त्याच्याशी निगडित सभोवतारच्या सर्वच घटकांचा समावेश होतो. यामध्ये मानव प्राणी व वनस्पती इत्यादी परंतु मानवाचे स्वार्थामुळे कृतीमुळे पर्यावरणाची प्रचंड हानी झाली आहे. उदाहरणार्थ जंगल तोड आणि नैसर्गिक खनिजांचे साठे प्रचंड वापर यामुळे जल मृदा हवा इत्यादीचे प्रदूषण वाढले आहे.

पर्यावरणामध्ये मानव प्राण्यांशी निगडी सभोवतालच्या सर्वच घटकाचा समावेश होतो.यामध्ये मानव प्राणी व वनस्पती. मानवाच्या स्वार्थामुळे, कृतीमुळे पर्यावरणाची प्रचंड हानी झाली आहे. उदाहरणार्थ जंगल तोड, खाणी,नैसर्गिक खनिजांचे साठे, प्रचंड वापर यामुळे जल, मर्दा,हवा इत्यादींचे प्रदूषण वाढले आहे.

पर्यावरणीय प्रदूषण रोखणे, संवर्धन करण्यासाठी संयुक्त राष्ट्र संघाच्या माध्यमातून विविध परिषदांचे आयोजन करण्यात आले आहे. उदा. सरोवर संदर्भात परिषद- 1949,स्टॉक होम परिषद- 1972, पर्यावरण कार्यक्रम 1979,पाणी परिषद अर्जेन्टिना 1977,वसुंधरा परिषद 1972, न्यूयॉर्क पृथ्वी परिषद 1997,जपान क्युटो करार 1997 ते 2005, रिओ परिषद 1992 इत्यादी. तसेच विविध क्षेत्रीय संघटना, विविध राष्ट्रातील पर्यावरण संरक्षण - संवर्धन विषयक कार्यक्रम, धोरण स्वीकार तसेच विविध पर्यावरण विषयक चळवळीमुळे पर्यावरण संवर्धन प्रचार - प्रसार व जनजागृती करण्यात आली. युनोने 5 जून 2023 विश्व पर्यावरण दिवस निमित्त "ःप्लास्टिक प्रदूषण चे समाधान " ही थीम जाहीर केलेले आहे.

" आपल्या पृथ्वीचे रक्षण आपल्या भविष्याचे रक्षण " हा विश्व पर्यावरण दिवसानिमित्तचा नारा आपल्या आणि आपल्या येणार्या पुढील पिढ्यांच्या भविष्यासाठी आवश्यक आहेच. यामुळे आपण सर्वांनी पृथ्वीचे सर्वांगीण पर्यावरणीय संरक्षण व संवर्धन करणे काळाची गरज आहे.

पर्यावरण संरक्षण व संवर्धनाच्या दैनंदिन सोप्या पायऱ्या :-

1) शक्य असेल तेव्हा सार्वजनिक वाहतूक किंवा चालणे / बाईकचा वापर करणे -

कार चालविण्याऐवजी सार्वजनिक वाहतूक वापरणे. चालणे किंवा बाईक चालवणे हा पर्यावरणाचे रक्षण करण्याचा एक मार्ग आहे. यामुळे आपला कार्बन फुट प्रिंट कमी होईलच पण थोडा व्यायाम करण्यात आणि आरोग्य सुधारण्यास मदत होईल. आपण पर्यावरणाचे रक्षण करण्यासाठी आणि त्याचवेळी आपले आरोग्य सुधारण्यासाठी आपण कार्य करत असल्याची भावना निर्माण होते.

2) वृक्ष लावणे व त्याचे संवर्धन करणे -

आपण प्रत्येक वर्षाला एक झाड लावणे व त्याचे संवर्धन करून पर्यावरणाला हातभार लावण्याचा हा दुसरा सोपा मार्ग आहे. झाडे पर्यावरणातील कार्बन डाय-ऑक्साइड शोषून घेतात त्यामुळे हरितगृह वायु प्रदूषण कमी होते. हे सर्वांनाच माहिती नसेलही. झाडे सावली देतात, उन्हाळ्यात घर थंड होण्यासाठी झाड उपयोगी आहेत. यामुळे वृक्ष लागवड व संवर्धन करतेवेळी वृक्षाला पाणी व योग्य सूर्यप्रकाश मिळेल याची खात्री व काळजी घेणे गरजेचे आहे.

3) पर्यावरणाबद्दल मुलांना शिक्षित करणे -

कुटुंबातील मुलांना शाळेतील मुलांना पर्यावरणाविषयी शिक्षित करणे आवश्यक आहे. मुलांना बालपणापासूनच पर्यावरण संरक्षणाविषयीचे संस्कार शाश्वत भविष्य निर्माण करण्याच्या दृष्टिकोनातून महत्त्वपूर्ण आहेत.

4) पाणी वाचवण्यासाठी प्रयत्न करणे -

पाणी वाचवणे हा पर्यावरणाच्या रक्षण करण्याच्या दृष्टिकोनातून एक महत्त्वपूर्ण उपाय ठरू शकतो. पाणी गळती दुरुस्त करणे,लहानशावर घेऊन आणि कमी प्रवाही पाण्याचा वापर करणे तसेच पाण्याचा वापर कमीत कमी करणेव करण्यासाठी सतत प्रयत्न करणे हा पर्यावरण संवर्धन व संरक्षणाच्या दृष्टिकोनातून महत्त्वाचे आहे.

5) सिंगल यूज प्लास्टिक वस्तूचा वापर टाळणे -

प्लास्टिकच्या सिंगल युज वापरण्यात येणाऱ्या पिशव्या, पाण्याच्या बाटल्या, भांडी वापरणे टाळण्यात यावे. पुन्हा पुन्हा वापरात येण्याजोग्या शॉपिंग पिशव्या पाण्याच्या बाटल्या धातूची किंवा मातीची भांडी वापरण्यात यावी. युज अँड थ्रो या विचाराला व कृतीला विरोध करणे आवश्यक आहे. आज कचऱ्याने भूमी सागर महासागर आकाश सर्व व्यापले आहे. आपण आताच काळजी घेतली नाही तर आपले भविष्य अंधकारमय आहे. यामुळे आपण सिंगल न्युज प्लास्टिक टाळून पर्यावरणाचे संवर्धन व संरक्षण करणे गरजेचे आहे.

6) मांसाहार कमीत कमी करा -

मांसाहार कमी करून कार्बन फुट प्रिंट कमी करण्याचा आणि पर्यावरणाचे रक्षण करण्याचे एक महत्त्वपूर्ण मार्ग आहे. हरितगृह वायू प्रदूषणात पशुपालन महत्त्वपूर्ण योगदान देते हे वैज्ञानिक दृष्ट्या सिद्ध झालेले आहे. मांसाहारामुळे पर्यावरणास पोषक असलेल्या अनेक पशुपक्ष्यांची कत्तल होत असल्याने याचे पर्यावरणावर अनिष्ट परिणाम होत आहेत. पर्यावरण संवर्धन व विकासासाठी मांसाराचा विचार हा धर्माचा नसून पर्यावरणाचा आहे. यामुळे मांसाहाराचा वापर कमीत कमी करणे किंवा टाळणे हा एक पर्यावरण संवर्धन व विकासासाठीच एक प्रभावी उपाय होऊ शकतो.

7) विजेची बचत करणे -

विजेचा कमीत कमी वापर करणे हा पर्यावरणाच्या रक्षणाच्या दृष्टिकोनातून एक महत्त्वपूर्ण उपाय किंवा मार्ग आहे. गरज नसणारे दिवे बंद करणे, इलेक्ट्रॉनिक्स वापरात नसताना अनपलग करणे ऊर्जा कार्यक्षम बल्ब वापरणे, ऊर्जा कार्यक्षम बल्ब कमी ऊर्जा वापरतात आणि पारंपारिक इन्डेन्डेंसंट बल्ब पेक्षा जास्त काळ टिकतात. यामुळे विजेची काटकसर, बचत करणे पर्यावरण संवर्धनाच्या दृष्टीने महत्त्वाचे आहे.

समारोप -

पर्यावरण संरक्षण आणि पर्यावरण शिक्षण उज्वल भविष्यासाठी कुटुंबातील मुले, शाळेतील विद्यार्थी व संपूर्ण समाज यांच्यासाठी आवश्यक आहे. पर्यावरण वाचले तर आपण वाचणार आहोत पर्यावरणाचे शिक्षण घेणे काळाची गरज आहे.

संदर्भसूची :

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2. डॉ. ज.रा. शिंदे / डॉ. प्रशांत अमृतकर - समकालीन जागतिक राजकारणातील
3. प्रमुख समस्या, चिन्मय प्रकाशन, छत्रपती संभाजीनगर.
4. अभिजीत घोरपडे - गाथा पर्यावरणाची, राजहंस प्रकाशन प्रा. लि. सदाशिव पेठ, पुणे.
5. प्रा. संजय बी. महाजन / डॉ. अजय के. दीक्षित - जागतिक पर्यावरण :
6. बदलता आकृतीबंध व शाश्वत विकास, चिन्मय प्रकाशन, छत्रपती संभाजी नगर.

पर्यावरण बदल आणि शेतकरी आत्महत्या

प्रा. डॉ. भोसले एस. ई.

समाजशास्त्र विभाग गांधी महाविद्यालय कडा

प्रास्तावना :

शेती व्यवसाय आज अत्याधुनिक ज्ञान आणि तंत्रज्ञानाचा वापर करून केला जातो. असे असले तरी आजही शेती नैसर्गिक मुक्त वातावरणात केली जाते. वातावरणातील विविध बदलांचा परिणाम शेतीवर होत असतो. शेती व्यवसाय किंवा पिकांची व्यवस्थित वाढ व कमी खर्चात अधिक उत्पादन मिळवण्यासाठी पर्यावरण चांगले असणे आवश्यक असते. सध्या आपल्या देशातील पर्यावरण हे दिवसेंदिवस ढासळत आहे. पर्यावरणातील बदलामुळे शेती व्यवसायावर विपरीत परिणाम होऊन शेती करणाऱ्या शेतकऱ्यांची परिस्थिती दिवसेंदिवस वाईट बनत आहे आणि त्याच्याच परिणामातून इतर अनेक कारणांबरोबरच पर्यावरण बदलामुळे शेती व्यवसायाचे होणारे नुकसान हे शेतकरी आत्महत्येस कारणीभूत ठरत आहे.

हवामान बदलामध्ये प्रामुख्याने वाढते तापमान, पावसाचे असमान प्रमाण, दुष्काळ, अतिवृष्टी, समुद्र पातळी वाढ, चक्रीवादळे, पुर, शितलहर यामुळे शेती व्यवसायावर परिणाम होतो. हवामान बदल ही एक जागतिक समस्या असून त्यामुळे भारताबरोबरच जगातील अनेक देशात त्याचा परिणाम होऊन शेती व्यवसायाला फटका बसत आहे. परिणामी शेती व्यवसाय उध्वस्त होऊन त्यातून शेतकरी कर्जबाजारीपणा वाढून शेतकरी आत्महत्या सारखी समस्या भारतात वाढत आहे.

पर्यावरण बदलाचा शेतीवरील परिणाम आणि शेतकरी आत्महत्या :

भारत हा कृषिप्रधान देश असून येथील सुमारे 70% लोक प्रत्यक्ष किंवा अप्रत्यक्षपणे शेतीवर अवलंबून आहेत. सन 2017 मध्ये भारताच्या अर्थव्यवस्थेत कृषी क्षेत्राचा वाटा 15.4% आहे. भारत देश कृषी प्रधान देश असला तरी अर्थव्यवस्थेतील कृषी क्षेत्राचा वाटा हळूहळू कमी होत आहे. यासाठी अनेक घटक कारणीभूत आहेत. भारतात बहुसंख्य लोकांच्या उदरनिर्वाहाचे साधन शेती असले तरी शेतकऱ्यांची परिस्थिती हालाकीची झाली आहे. त्यासाठी इतर अनेक घटक जबाबदार असले तरी पर्यावरणातील बदल देखील शेतकऱ्यांच्या हलाखीच्या परिस्थितीला आणि आत्महत्येस जबाबदार आहे.

जागतिक तापमान वाढीचा शेतीवरील परिणाम :

ग्लोबल वॉर्मिंगचा पृथ्वीच्या हवामान प्रणालीच्या सर्व भागावर परिणाम होतो. IPCC या हवामान बदलाचा अभ्यास करणाऱ्या संस्थेने आपल्या अहवालात म्हटले आहे की जागतिक तापमान वाढ ही औद्योगीकरणानंतर 1.5 अंश सेल्सिअस पर्यंत झाली असून त्यामुळे अनेक नैसर्गिक आपत्तींना सुरुवात झाली आहे. हवामान बदलाचा सर्वात मोठा परिणाम मान्सून वर झाला आहे. अलनिनो आणि लानिना मुळे मान्सूनचे चक्र बिघडले आहे. दुष्काळ, अतिवृष्टी, ढगफुटी अशा नैसर्गिक आपत्तीत वाढ झाली आहे आणि याचा गंभीर परिणाम शेतीवर होत आहे. उन्हाळ्यातील तापमान काही ठिकाणी 45 ते 50 अंश सेल्सिअस पर्यंत जात आहे. त्यामुळे भारतातील पीक पद्धतीवर परिणाम होत आहे. कधी दुष्काळ तर कधी अतिवृष्टी मुळे शेतीतील पिकांचे प्रचंड नुकसान होत आहे. नापीकी मुळे शेतकऱ्यांच्या आत्महत्येचे प्रमाण वाढत आहे. तापमान वाढीमुळे हिमालयातील बर्फ वितळण्याचे प्रमाण वाढले असून

भविष्यात त्यातून अनेक गंभीर समस्या उदभवू शकतात. जागतिक तापमान वाढीमुळे ध्रुवीय प्रदेशातील बर्फ वितळण्याचे प्रमाण वाढले आहे. त्यामुळे समुद्र पातळी वाढून समुद्रकिनार्यावरील जमीन पाण्याखाली जात आहे.

भारतासारख्या उदयोन्मुख अर्थव्यवस्थेवर हवामान बदलाचा मोठा परिणाम झाला आहे. केंद्र सरकारच्या द सेंट्रल रिसर्च इन्स्टिट्यूट ऑफ ड्रायलॅंड ग्रिकल्चर च्या अहवालात असे म्हटले आहे की, हवामान बदल हा शाश्वत शेतीसाठी फार मोठा धोका आहे. या अहवालात देशातील 22 जिल्ह्यांना अति धोका, 171 जिल्ह्यांना मध्यम धोका असल्याचे नमूद केले आहे. या यादीत महाराष्ट्रातील तेरा जिल्हे तर मराठवाड्यातील सात जिल्ह्यांचा समावेश आहे. या अहवालात भारतातील ज्वारी गहू आणि कापूस या पिकांवर हवामान बदलाचा मोठा फटका बसण्याची भीती व्यक्त केली आहे.

जागतिक तापमान वाढ व हवामानातील बदलामुळे जगातील विविध देशांबरोबरच भारतातील शेती आणि शेतकऱ्यांवर परिणाम होऊन शेतकरी आत्महत्येची समस्या गंभीर बनली आहे. नॅशनल क्राईम रेकॉर्ड ब्युरो ऑफ इंडियाच्या अहवालानुसार भारतात सन 1995 ते 2014 दरम्यान 2,96,438 शेतकरी आत्महत्येच्या घटना घडल्या त्यापैकी 60,750 शेतकरी आत्महत्या महाराष्ट्रातील आहेत. भारतात सर्व आत्महत्यापैकी 11.2 टक्के शेतकरी आत्महत्या आहेत. भारतातील महाराष्ट्र, आंध्र प्रदेश, कर्नाटक, मध्य प्रदेश आणि केरळ या पाच राज्यात 2012 साली 76 टक्के आत्महत्या झाल्या. महाराष्ट्रात 2009 ते 2016 या कालावधीत 23,000 पेक्षा जास्त शेतकरी आत्महत्या केल्या आहेत.

शेतकरी आत्महत्येसाठी विविध घटक कारणीभूत आहेत. पर्यावरणीय घटकात जागतिक तापमान वाढ व त्यातून दुष्काळ, अतिवृष्टी, पूर, चक्रीवादळे इत्यादी घटकांबरोबरच इतर अनेक घटक कारणीभूत आहेत. यामध्ये सरकारचे आर्थिक धोरण हे देखील महत्त्वाचे ठरते. शेतकऱ्यांसाठी केंद्र सरकार आणि राज्य सरकार अनेक योजना आणि धोरण आखते याचा परिणाम शेतकऱ्यांवर होतो. भारतात शेतीमालास मिळणारा कमी भाव, शेतमालाचे आयात निर्यात धोरण हे शेतकरी विरोधात असल्यामुळे प्रचंड मेहनत करूनही शेतकऱ्यांना शेतमालाचा योग्य मोबदला मिळत नाही. तेव्हा शेतकरी आत्महत्या करतो याबरोबरच पिक विम्याची अयोग्य अंमलबजावणी व यातील भ्रष्टाचार यामुळे शेतकऱ्यांची आर्थिक स्थिती बिघडलेली आहे.

शेतकऱ्यांचा कर्जबाजारीपणा हे देखील शेतकरी आत्महत्येसाठी कारणीभूत आहे. शेतकरी कर्जबाजारीपणा साठी अनेक घटक जबाबदार आहेत. त्यातून शेतकरी आत्महत्या होत आहेत. जैवतंत्र ज्ञानाधारित बियाणे व कंपन्यांची मत्केदारी, खाजगी सावकारी, शेतकऱ्यांची व्यसनाधिनता, वाढत्या भौतिक गरजा, सिंचन व्यवस्थापनाचा अभाव, व्यावहारिक ज्ञानाचा अभाव, अज्ञान आणि दैववाद, शिक्षणाची कमतरता, मजुरीचे वाढते दर, व्यापारी दलालांकडून होणारे शोषण, जोड उद्योगाची कमतरता, शेतीचा वाढता खर्च आणि कमी उत्पादन, शेतीचे अत्यल्प प्रमाण, वाढती महागाई, शिक्षण आणि लग्नाचा खर्च इत्यादी अनेक कारणांमुळे शेतकरी आत्महत्येचे प्रमाण वाढत आहे. वरील विविध घटक जरी आत्महत्येसाठी कारणीभूत ठरत असले तरी मुख्य कारण पर्यावरणच आहे. हवामान बदल आणि शेतकरी आत्महत्या यांचा थेट संबंध आहे. 2014 ते 2021 या काळातील शेतकऱ्यांनी जीवन संपवण्याच्या घटना आणि पावसातील बदल यांचा अभ्यास केल्यानंतर ज्या वर्षी दुष्काळी स्थिती असते त्यावर्षी जास्त शेतकरी आत्महत्या करतात असे निष्पन्न झाले आहे. पर्यावरणीय बदलांमुळे शेती उत्पन्न कमी होऊन त्यातून शेतकरी कर्जबाजारी होतो. परिणामी व्यसनाधिनता वाढते, असे आर्थिक चक्रातून शेतकरी आत्महत्येचे प्रमाण दिवसेंदिवस वाढत आहे.

भारतातील सर्व राज्यांपेक्षा महाराष्ट्रात शेतकरी आत्महत्येचे प्रमाण जास्त आहे. महाराष्ट्रात मराठवाडा आणि विदर्भात इतर भागांच्या तुलनेत शेतकरी आत्महत्या जास्त होतात याला पर्यावरणीय घटक जास्त प्रमाणात जबाबदार ठरतात. महाराष्ट्रातील मराठवाडा, उत्तर महाराष्ट्र आणि पश्चिम महाराष्ट्रातील काही जिल्हे, पश्चिम विदर्भ या भागात वारंवार दुष्काळ पडतो. प्रत्येक दोन तीन वर्षांनंतर या भागात कमी पावसामुळे शेती व्यवसायाचे प्रचंड नुकसान होत आहे. दुष्काळी परिस्थितीमुळे शेती उत्पादनात घट, पिण्याच्या पाण्याची टंचाई, पशुधनाच्या चार्याचा प्रश्न यामुळे शेतकऱ्यांची आर्थिक परिस्थिती खालावत चालली आहे. वाढती महागाई आणि तोट्यात जाणारा शेती व्यवसाय या दुहेरी संकटात महाराष्ट्रातील शेतकरी भरडत आहे. त्यातूनच मुलीचे लग्न, मुलांचे शिक्षण, आजारपण यामुळे शेतकरी कर्जबाजारी होत आहे. अशा परिस्थितीत कर्ज फेडण्यास असमर्थ होणारा शेतकरी आत्महत्येचा मार्ग अवलंबत आहे. शेतकरी आत्महत्येचे प्रमाण मराठवाड्यात चिंताजनक आहे. 1 जानेवारी 2023 ते 31 ऑक्टोबर 2023 या दहा महिन्यांच्या काळात मराठवाड्यात 877 शेतकऱ्यांनी आत्महत्या केल्या आहेत. तसेच 2022 मध्ये मराठवाड्यात 1022 शेतकऱ्यांनी आत्महत्या केल्या. यामध्ये सर्वाधिक बीड जिल्ह्यातील 223 शेतकऱ्यांचा समावेश होता. दुष्काळग्रस्त म्हणून मराठवाड्याची ओळख होती. आता शेतकऱ्यांच्या आत्महत्या हा चिंतेचा विषय बनला आहे. अत्याधुनिक यंत्रांच्या वापराने उत्पादनात वाढ होते मात्र नैसर्गिक संकटापुढे शेतकरी हातबल होत आहे. मराठवाड्यात 2019 मध्ये 937 शेतकरी आत्महत्या, 2020 मध्ये ७७३ तर २०२१ मध्ये ८०५ शेतकऱ्यांनी आपले जीवन संपवले. यामध्ये सर्वाधिक प्रमाण बीड जिल्ह्याचे आहे आणि यासाठी नापिकी, निसर्गाचा लहरीपणाचा सर्वाधिक परिणाम शेतकरी आत्महत्येवर झाल्याचे दिसून येते. शेतकरी आत्महत्ये सारख्या मार्गाचा अवलंब करत असला तरी शासकीय पातळीवरून योग्य प्रकारे दखल घेतली जात नाही. याबरोबरच आत्महत्याग्रस्त शेतकऱ्यांच्या कुटुंबीयांना शासनाकडून योग्य प्रमाणात मदत केली जात नाही.

सारांश :

जागतिक पर्यावरण बदलाचा शेती व्यवसायावर परिणाम होऊन शेतकऱ्यांचे मोठ्या प्रमाणावर नुकसान होत आहे. कधी दुष्काळ, कधी अतिवृष्टी तर कधी चक्रीवादळ, कधी रोगराई अशा विविध नैसर्गिक आपत्तीला तोंड देत शेतकरी आपला शेती व्यवसाय करत आहे. नैसर्गिक आपत्तीमुळे मोठ्या प्रमाणात शेतीचे नुकसान झाले आणि झालेले नुकसान भरून काढण्यास जेव्हा शेतकरी असमर्थ ठरतो. तेव्हा त्यातील अनेक शेतकरी आत्महत्येचा मार्ग अवलंबतात.

संदर्भ :

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जागतिक हवामान व आदिवासी ग्रामीण भागातील कृषी क्षेत्रावर झालेला बदल

प्रा.भास्कर गोतीस

संशोधक विद्यार्थी

पद्मभूषण वसंतदादा पाटील महाविद्यालय

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मार्गदर्शक

बी.डी.हंबर्ड महाविद्यालय,आष्टी

प्रस्तावना :-

स्वातंत्र्य मिळून ५ दशके झाली आहे. तरीही आदिवासी क्षेत्रातील शेतकरी अजूनही व्कोसो दूर असल्याचे दिसून येते.औद्योगिक वाढ ही नोंद घेण्याजोगी झाली तरीही देशातील ६३ % जनता ही अजूनही जगण्यासाठी शेती उत्पादनावरच अवलंबून आहे. भुदास किंवा वेठबिगारी सारखी पद्धत पालघर जिल्ह्यातील आदिवासी भागात विसाव्या शतकाच्या ६ व्या दशकापर्यंत चालू होती. जमिनीची मालकी शेठ , सावकार, भांडवलदार व जमीनदार यांची होती. जमिनीच्या दिलेल्या तुकड्यावर पूर्वीचा ठाणे जिल्हा तथा नवनिर्मित पालघर जिल्ह्यातील आदिवासी आपल्या उदरनिर्वाहासाठी मिळालेल्या जमिनीवर विसंबून होते. शेतजमिनीच्या मालकी हक्कांच्या नियमावलीत बदल झाले आहेत. किसान सभेच्या माध्यमातून झालेल्या चळवळीतून जमिनीचा हक्क आदिवासी शेतकर्यांना मिळाला. तसेच भाडोत्री जमीन कसणारे मालकी हक्काची वाटचाल खाजगी करण्यात आली आहे.

१९६० सालापासून शेती उत्पादन हे मुख्यतः बाजाराच्या मागणीनुसार वाढीस लागले. शेती उत्पादनावर अवलंबून नसलेल्या आर्थिक चळवळी ग्रामीण भागात जोर धरू लागल्या. या कालावधीत शहरी आणि ग्रामीण यांची विभाजनरेषा अस्पष्ट झाली. एवढेच नव्हे तर ग्रामीण समाजाची रचना, त्यांची वर्गवारीचा सारासार विचार करण्याची वृत्ती यात विशेष फरक पडला.

शेती उत्पन्नावर अवलंबून असणाऱ्यांचीसुद्धा त्यांच्या शेतजमिनीशी असणाऱ्या मालकी हक्काच्या व कसणाऱ्या शेतकर्यांच्या संबंधानुसार वर्गवारी करण्यात आली. जसे की, फक्त जमीन- मालक, देखरेख करणारे, स्वतःची जमीन स्वतः कसणारे, करण्यासाठी घेणारे, जमीनमालक नसलेले शेत कामगार, स्थानिक बोलीमध्ये त्यांचा उल्लेख 'किसान' किंवा 'खेडूत' होतो. खेडूत म्हणजे जमीन कसणारा. एका बाजूने स्वतःची थोडी जमीन असणारे - एकत्र कुटुंबातले शेतकरी आणि स्वतः कष्ट करणारे - असे शेतकरी येतात; तर दुसऱ्या बाजूने पूर्णवेळ शेतीवर अवलंबून असणारे - यामध्ये मालकीची शेतजमीन नसणाऱ्यांचा तसेच देखरेख करणाऱ्या इतर शेत माजुराचाही समावेश होतो.

शेतीवरील ग्रामीण जनता आणि कामगार यांच्या एकत्रीकरणात काही अडचणी दिसतात. सध्याच्या काळात शेतमजूर हा एकाच मालकाचा सर्व काळ नोकर नसून काळाच्या ओघात बदलत्या वातावरणामुळे शेतीपुढे असंख्य समस्या असल्याने शेती अडचणीची ठरत आहे. आदिवासी बहुल भागामध्ये बदलत्या पर्यावरणीय परिस्थितीनुसार आणि औद्योगिकीकरण तसेच दळणवळणाच्या सुविधा नसल्याने शेती व्यवसायावर परिणाम झाला आहे.

महत्वाचे शब्द :- वेठबिगार, खेडूत, भुदास.

संशोधनाचा उद्देश :-

१] हवामान बदलाचा आदिवासी कृषी क्षेत्रावर झालेल्या परिणामांचा अभ्यास करणे.

२] आदिवासी भागातील शेतकऱ्यांच्या जीवनावर हवामान बदलच्या बाबींचा अभ्यास करणे.

३] पालघर जिल्ह्यातील आदिवासी कृषी जीवनाचा अभ्यास करणे.

संशोधनाचे गृहीतके :-

१]जागतिक हवामान बदलाचा आदिवासी भागातील कृषी क्षेत्रावर परिणाम झाला आहे.

२]आदिवासी शेतकरी अजूनही शेती विकासापासून दूर आहे.

१) भुदास कालीन शेती :-

भुदास पद्धत अर्थात वेठबिगर पद्धतच होती. आदिवासीच्या जमीन लुबाडल्यानंतर जमीनदारांनी त्यांना भुदास केले. त्या भागात भुदास मूळ वेठबिगर होते.जमीनदाराने त्यांच्या ताब्यातील लागवडीखालील जमिन दोन विभागली होती. सर्वात सुपीक जमीन वैयक्तिक कसण्यासाठी स्वतःकडे ठेवली होती. तर कमी प्रतीची जमीन आदिवासींना खंडाने दिली जात होती.शिवाय जमीनदाराने स्वतःसाठी राखून ठेवलेली जमीन आपल्या अवजारांनी व श्रमाने आदिवासींना फुकट कसावी लागत होती. कुळांना जमीनदाराच्या जमिनीत प्रथम नांगरणी, लावणी, कापणी व मळणी करण्याची जबरदस्ती केली जात होती. श्री सिमिंग्टन या भागातील कुळ पद्धतीचे प्रमाणे वर्णन करतात की, जमीनदार बहुतेक जमिनी त्यांच्या ताब्यात ठेवतात व कमी प्रतीची जमीन वेठबिगर यांच्या कडून करून घेत होती. अशा प्रकारे शेतीच्या हंगामाच्या महत्वाच्या काळात पारुस पडत असताना शेतकऱ्यांना जमीनदाराच्या जमिनीवर हजर राहणे भाग पाडले जाते होते. खंडाने घेतलेल्या त्यांच्या शेतावरील काम पुढे ढकलले जाते होते.त्यामुळे त्यांच्या पिकाचे मोठ्या प्रमाणावर नुकसान होते असे. या भागातील वेठबिगर पद्धतीमध्ये भुदास पद्धतीच्या शोषणाची सर्व वैशिष्ट्ये होती. शिवाय आणखी काही असे होते की, त्यामुळे भुदास पद्धतीपेक्षा वेठबिगर पद्धत ती फार भयानक बनली गेली”१.

भुदास पद्धतीच्या काळात शेती व्यवस्थेची मुख्य वैशिष्ट्ये होती की, कुळ शेतकरी जमीनदाराच्या जमिनीवर कोणत्याही मोबदल्या विना काम करित होता.आणि ते काम आदिवासींना करावे लागत होते. परंतु भुदास काळातील कुळ शेतकऱ्याला त्याच्या जमिनीतील जमिनीच्या तुकड्यासाठी जमीनदाराला खंड द्यावा लागत नसेल तर तिथे मात्र आदिवासींना खंड द्यावा लागत होता.साहजिक परिणाम असा झाला की आदिवासी कुळे स्वतःच्या अस्तित्वासाठी जमीनदारावर पूर्णपणे अवलंबून राहिली. श्री सिमिंग्टन या अवलंबत्वाचे वर्णन करताना या “विस्तीर्ण जंगल पट्ट्यातील मूळ शेतकरी जमीनदार व पूर्णपणे अवलंबून आहेत जमीन करण्यासाठी मिळाले नाही तर ते उपाशी मरतील पण वर्षातील किमान पाच महिने तरी स्वतःच्या खावटीसाठी ते जमीनदारावर पूर्णपणे अवलंबून आहेत. पावसाच्या सुरुवातीपासून नवीन हंगामापर्यंत आगाऊ खाऊटी हाच त्यांच्या जगण्याचा एकमेव आधार होता.त्यांनी जमीनदारांना आव्हान दिल्यास त्याचा परिणाम म्हणजे मारझोड हाकलून देणे, उपासमार हकलून देणे.अशाप्रकारे ते सतत जमीनदाराच्या भीतीने राहवे लागत होते.त्यांच्या नेहमीच्या मागण्याशी जुळून घेण्याशिवाय दुसरा पर्याय नव्हता. कधी कधी असे घडले की एखाद्या जमीनदाराच्या मागण्या नेहमीपेक्षा अधिक जुलमी असल्या तर कुळ शेतकरी जीवावर उदार होऊन पळून जात होता. मालकाच्या नेहमीच कठोर वागणूक व अर्ध उपासमारीपेक्षा दुसरीकडे उपासमारीचा धोका ते स्वीकारण्यापेक्षा सर्वसाधारण ते सर्व बाबतीत जमीनदाराच्या इच्छेपुढे मान झुकावीतात. २

काहींनी रोज जाऊन वेठीने काम करून दिले पाहिजे. प्रत्येकाचे हजेरी बरोबर लक्षात यावी म्हणून एक लोखंडी गज आदिवासी कुळ शेतकऱ्याकडे दिला जात होता. त्या शेतकऱ्याला वेठीचा आस असे म्हणतात. ज्याच्या घरी तो आस असेल तेथील सार्या माणसांनी आवारात जाऊन हुकुम होईल ते काम वेठीने करून घ्यायचे. असेल ते काम संपून घरी परत आल्यावर रात्री तो आस दुसऱ्या आदिवासी कुळ शेतकऱ्याकडे घ्यायचं होता. आस घरी आला की तेथील माणसांनी दुसऱ्या दिवशी सकाळपासून तर संध्याकाळपर्यंत वेठीने काम करून घ्यायचे अशा तऱ्हेने तो आस बारा महिने एकीकडून दुसरीकडे फिरत राहत होता. त्यामुळे वारली कुळ अशा तऱ्हेचे काम करत होते. आज आस आपल्याकडे येणार उद्या आपली पाळी येणार हे त्यांना सवयीप्रमाणे माहित होते. हंगामामध्ये सार्यांनीच शेतावर जाऊन शेताची कामे व इतर कामे विनामूल्य करून घ्यावी लागत होती. म्हणजेच पिढ्यानपिढ्या आदिवासी कुळ वेठीने काम करीत आले होते. प्रामुख्याने डहाणू तालुक्यातील बोर्डी व उमरगाव च्या पट्ट्यात ही पद्धत चालू होती. माणूस असून जनावरासारखे जीवन तो जगत होता. आणि ही सर्व कामे विनामूल्ये करून घ्यावी लागत होती.

२) भुदास बंदिनंतरची शेती अवस्था :-

१९४५ मध्ये भुदास प्रथेविरुद्ध बंडाचा लाल झेंडा उभारला तेव्हापासून भुदास मुक्ती लढा सुरु झाला. गाविगावी सभेला उधान आले. डहाणू तालुक्यातील भूदासाचा १०० वर्षे त्यांना गुलामगिरीत ठेवणाऱ्या बेड्या तोडण्यासाठी पालघर जिल्ह्यातील आदिवास्यानी केलेला लढा क्रांतिकारकाच ठरला.

भुदास प्रथा मुलापासून उखडून टाकली. जमीन दरांनी उठाव दडपण्यासाठी सर्व यंत्रणेचा वापर केला. परंतु त्याला अपयश आले. कसेल त्याची जमीन या उक्तीप्रमाणे त्याजमिनीवर आदिवासी शेतकऱ्यांचे वर्चस्व निर्माण झाले. पर्यायाने त्याजमिनीचा मध्ये असणाऱ्या वन जमिनीवरील झाड-झरोऱ्यावरही हक्क प्राप्त झाल्याने जंगल संपदेचाही मालक झाला. त्यामुळे त्याची आर्थिक परिस्थिती मध्ये मोठे परिवर्तन घडून आले. त्याच्या मर्जीनुसार जमिनीचे वहिवाट होऊ लागले.

खंडाचा प्रश्न सुटल्यानंतर आधुनिक बदलाप्रमाणे शेतीत परिवर्तन सुरु झाले. शेती तिला आदिवासी वारली भाषेत कणसरी या नावाने ओळखले जाते. शेतीची पूजा केल्याशिवाय म्हणजेच कानासरी मातेची पूजा करूनच पिकाची लागवड व कापणी करू लागला. आजही आदिवासी शेतकरी शेतीला आपल्या आईसारखेच सांभाळतो.

पालघर जिल्ह्यातील आदिवासींचे प्रमुख अन्न भात आहे. भातशेतीतून पिकणारे अन्न त्यांना वर्षभर पुरात नाही. त्यामुळे त्यांना आजही काही दिवस अपुर्या अन्नावर जीवन कंठावे लागते. अशा वेळी त्यांना तांदळाच्या कण्याच उपयोगी पडतात. शहापूर, जव्हार व मोखाडा या तालुक्यात डोंगराळ जमिनी असल्याने तेथील आदिवासी नाचणी या पिकाची लागवड करताना दिसून येते. आदिवासी वातावरणाच्या अनुषंगाने मांसाहारही करतात.

पावसाळ्यात शेतीबरोबरच नदी नाल्यात जेव्हा पाणी असते तेव्हा तेथे उपलब्ध होणारे मासे पकडणे हा त्यांचं छंद आहे. सोबत जंगलाची जोड असल्याने आपल्या उदार निर्वाहासाठी पर्यावरण अनुकूल रानभाज्या, कंदमुळे, फळे, यांची विक्री करून आपला उदरनिर्वाह करतात. म्हणजेच त्यांच्यासाठी जंगल संपत्ती अतिशय महत्वाची आहे. म्हणूनच जंगलाचे संवर्धन त्यांच्या हातून सहेतुक केले जाते. पर्यायाने शेती बरोबरच पर्यावरणाचे संवर्धन त्यांच्या हातून घडले जाते.

१९७२ साली स्टोक होम येथे झालेल्या मानवी पर्यावरण या विषयावर पर्यावरणाचा उहापोह करण्यात आला. परंतु प्रत्यक्ष पाणी जमीन सागरी संपत्ती, जंगल संपत्ती अशा पर्यावरणासाठी स्थानिक पातळीवर दाखल घेणे आवश्यक

वाटते. पालघर जिल्ह्यातील आदिवासी लोकांचे जीवनमान जमीन जंगल आणि त्यावरच्या साधनावर आधारलेले असते. यातूनच बऱ्याच वेळा संघर्ष झाल्याचेही दिसून आले आहे.

3) आधुनिक काळानुसार शेतीचे बदलते स्वरूप :-

शासनाच्या विविध योजनेचा लाभ पालघर जिल्ह्यातील आदिवासी शेतकऱ्यांना मिळत आहे. सन २००५-०६ च्या वनजमिनीचा हक्क मिळाल्याने व त्या वनजमिनीवरील असणाऱ्या वनाचाही हक्क मिळाल्याने आदिवासी समाजाच्या जीवनात सामाजिक, आर्थिक जीवनात अमुलाग्र बदल घडून आला आहे. आधुनिक तंत्रज्ञांच्या सहाय्याने फळबागा यांची निर्मिती करून आर्थिक स्रोत निर्माण केले आहे. त्यासाठी शासन, आदिवासी प्रकल्प कार्यालये, विविध सामाजिक संस्थांनी पुढाकार घेतला आहे. विविध तंत्रसहाय्य शासनाने शासकीय योजनेतून उपलब्ध करून दिल्याने हळद, मोगरा, काजू, चिक्कू, आंबा, यासारख्या फुले-फळ पिकाबरोबरच मस्त्य शेती, व त्याजोडीने विविध व्यवसाय उद्योग सुरु झाले आहे.

पूर्वीची पारंपारिक पद्धतीची असलेली भात शेती आज आधुनिक संकरीत बी बियाणाचा वापर करून केली जाते. त्यामुळे शेतीच्या उपन्नात मोठी वाढ झाली आहे. शेतीमध्ये विविध भाजीपाला, फुले, फळे.ई. पिकविले जातात. समाजाच्या मुख्य प्रवाहात आज शेतीची लागवड केली जात आहे. शेतीच अभ्यास करून त्याक्षेत्रात अनुकूल अशी पिके घेतली जात आहे.

आजच्या बदलत्या काळानुसार व बदलत्या हवामानानुसार शेतीची लागवड केली जात आहे. शेतीला जोडधंदा म्हणून पशुपालन हा व्यवसाय केला जातो आहे.

• सारांश :-

पिढ्यानपिढ्याची भुदास पद्धती नष्ट होऊन आदिवासी शेतकरी जमिनीचा मालक झाला. कसेल त्याची जमीन या उक्तीप्रमाणे त्याच्या इच्छेनुसार जमिनीची लागवड सुरु झाली आहे. पारंपारिक शेतीला छेद देत आधुनिक नवनवीन तंत्रज्ञानाच्या जोडीने आधुनिक शेती व्यवसायाकडे आदिवासी शेतकरी वर्ग वळला आहे. त्यातून त्याचा, त्याच्या कुटुंबाचा व पर्यायाने आदिवासी समुदायाचा विकास झाला आहे.

बदलत्या हवामान परिस्थितीचा आढावा घेऊन समाज माध्यमाच्या वापर करून हवामानाचा अंदाज घेऊ लागला आहे. त्यानुसार सुधारित बी बियाणे, व शासनाच्या सहकार्याने आर्थिक, सामाजिक तसेच शैक्षणिक परिवर्तन घडून आले आहे. वनसंपदा कायद्यामुळे वनसंपदेचे संवर्धन घडून येत आहे. आजही नैसर्गिक पर्यावरणीय स्रोत असल्याने पालघर जिल्ह्यातील आदिवासी समाजाला मोठा आधार आहे.

• निष्कर्ष व उपाय :-

- भुदास पद्धती बंद झाली आहे.
- वेठबिगारी पद्धत संपुष्टात आली आहे.
- आजही बहुतांशी आदिवासी पारंपारिक शेती करत आहे.
- बदलत्या हवामान परीस्तीतीनुसार शेतीचे सुधारित तंत्रज्ञानाचा वापर होताना दिसतो.
- आदिवासी शेतकरी आधुनिक शेती करू लागला आहे.
- शेती सुधारण्यास शासकीय धोरणे राबवली जाऊन आर्थिक सहकार्य मिळते.
- आदिवासी क्षेत्रात शेती विकास मार्गदर्शन शिबिरे घेण्यात यावी.

➤ आदिवासी शेतकर्यास जलासिंचानाच्या सुविधा मदत व मार्गदर्शन व्हावे.

• **संदर्भ :-**

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पर्यावरणातील प्रदुषणाचे समस्या एक समाजशास्त्रीय अभ्यास

प्रा.लक्ष्मण बापुराव नैताम

समाजशास्त्र विभाग

बॅ.बाळासाहेब खर्डेकर महाविद्यालय, वेंगुर्ला जि.सिंधुदुर्ग

प्रस्तावना -

पृथ्वीतलावर मानव आणि त्याच्या भोवतालची पर्यावरणीय अवस्था अनेक वर्षांपासून कार्यरत आहे. मानव आणि पर्यावरण याचा संबंध अतुट स्वरूपाचा आहे. परंतू आज मानव आपल्या वाढत्या गरजा भागविण्यासाठी निसर्गावर मात करीत आहे. मानवाच्या या अशा कृतीमुळे पर्यावरणामध्ये असंतुलन निर्माण होऊन मानवास अनेक समस्यांना तोंड द्यावे लागत आहे. पर्यावरणाच्या असंतुलनात निर्माण झालेली सर्वात गंभीर समस्या म्हणजे प्रदुषण होय.

कारखान्यातील कार्बन मोनॉक्साईड, कार्बनडायऑक्साईड, सल्फरडाय ऑक्साईड, विविध धातूंचे कण यासारखे अनावश्यक घटक पर्यावरणात जास्त जोडले जातात. या घटकांचे पर्यावरणातील प्रमाण वाढले आहे. इतर सजिवाप्रमाणे ते घटक मानवाला ही हानीकारक ठरतात. मानवनिर्मित त्याच्या पदार्थांमुळे पर्यावरणात सजीवांना अपायकारक जे बदल होतात त्यांना प्रदुषण असे संबोधले जाते. प्रदुषणामुळे अनेक प्रकारच्या समाजासमोर समस्या निर्माण झाल्या आहेत. पर्यावरणात प्रदुषण मोठ्या प्रमाणात होत आहे. औद्योगिक कारखाने, साखर कारखाने, वीज निर्मिती प्रकल्प अनेक मोठमोठ्या कारखान्यामधून सांडपाणी समुद्रात व नदीत सोडले जातात त्यामुळे जलप्रदुषण मोठ्या प्रमाणात होत आहे. प्लास्टीक कचरा याचा समस्या निर्माण झाला कारण प्लास्टीक कचर्यामुळे समुद्र, नदी, नाले प्रदुषित होत आहेत. प्लास्टीक कचर्याची विल्हेवाट पूर्ण लावली जात नाही त्यामुळे प्लास्टीक कचरा जनावरे खातात व मृत्यूमुखी पडतात. औद्योगिक कारखान्यातील उंच चिमण्याद्वारे विषारी वायू, धुर आकाशात सोडले जातात. त्यामुळे हवेचे प्रदुषण होते. दुरसंचार विभागाच्या उंच टॉवरमुळे चिमणी लहान पक्षी टॉवरच्या ध्वनी लहरीमुळे नष्ट होण्याचा मार्गावर आहे. काही पक्षी नष्ट झाले आहेत. मानवी समाजाचा विकास होताना शेती व वस्त्यांमध्ये वाढ झाली. त्यासाठी अधिक प्रमाणात जमिनीची गरज भासू लागली व त्यामुळे वनांची तोड मोठ्या प्रमाणावर झाली. पशु पक्ष्यांचा आसरा नष्ट झाला. जंगलातील प्राणी मानवी वस्तीमध्ये येऊ लागले. जंगलतोड मोठ्या प्रमाणात झाल्यामुळे जैवविविधता, नैसर्गिक ऊर्जा, अन्नसाखळी व पोषक घटकांवर परिणाम होतो. सध्याचा प्रमुख पर्यावरणीय समस्यांमध्ये हवामान बदल, प्रदुषण, पर्यावरणाचा र्हास आणि संसाधनांचा र्हास यांचा समावेश असू शकतो. पर्यावरणाचा समतोल राखण्यासाठी जनजागृती करणे, प्रशिक्षण देणे, सभा चर्चासत्रांचे आयोजन करणे, विविध प्रकारचा प्रदुषणावर नियंत्रण ठेवणे, वनसंवर्धन करणे हे सर्व करण्यासाठी जनजागृती करणे आवश्यक आहे.

अध्ययनाची उद्दिष्टे -

- मानवी जीवनाला पर्यावरणातील व जंगलातील विविध प्रकारचे प्राणी यांच्या जीवनावर असे अनेक प्रकारचे दुष्परिणाम करणारे पर्यावरणातील प्रदुषण याचे चिकित्सक अध्ययन करणे.

संशोधन आराखडा -

- प्रस्तुत संशोधनासाठी वर्णनात्मक संशोधन आराखड्याचा वापर करण्यात आला.

तथ्य संकलनाचे तंत्र -

- प्रस्तुत संशोधन हे दुय्यम साधनांवर आधारीत आहे. पुस्तके, नियतकालीके, इंटरनेट इत्यादी.

१. हवेतील प्रदुषण -

पृथ्वीच्या भोवतीच्या वातावरणात हवेचे अनेक महत्वाचे घटक असतात. नायट्रोजन, ऑक्सीजन, ओझोन, कार्बनडाय ऑक्साइड, पाण्याची वाफ इत्यादी घटकांचा समावेश होतो. हे सर्व वायु सजिवांचा अस्तित्वासाठी अत्यंत आवश्यक असतात. प्रत्येक मानवास एक दिवसासाठी १६ कि.गॅ. शुध्द हवेची गरज असते. परंतू लोकसंख्यावाढीमुळे औदयोगिकरण, वाहतुकीची साधने, भौतिक सुखाच्या वस्तुंचा वाढता वापर धुलीकरण इत्यादीमधून हवेचे प्रदुषण होते. १२ ते १५ % हवेचे प्रदुषण हे मानवनिर्मित धुलीकरणांनी घडून येते. पृथ्वीचा ठराविक उंचीवर असणाऱ्या ओझोनच्या थरामुळे सुर्यापासून निघणाऱ्या अतिनील किरणापासून संरक्षण होते. परंतू मानवाच्या भौतिक सुखाचा अट्टाहासामुळे रेफ्रिजरेटर्स, प्लास्टीक, हेअर ड्रॉयर, सौंदर्य प्रसाधने यामधून पडणारा क्लोरोफ्लूरोकार्बन, सुपरसॉनिक जेट विमानातून बाहेर पडणारा नायट्रोजन ऑक्साइड यांचा प्रभाव ओझोनच्या थरावर होऊन त्यास भगदाडे पडतात. व अतिनील किरण पृथ्वीवर सरळ येतात. परिणामी पृथ्वीवरील तापमानात वाढ होते व बर्फाच्छदीत प्रदेश आणि हिमनद्या वितळतात व पुरपरिस्थिती निर्माण होते. पुरांमुळे जमिनीची धुप होते व पिकांचे नुकसान होते. मानवाच्या वाढत्या गरजा पूर्ण करण्यासाठीच औदयोगिकरणातून विविध उत्पादने बाहेर पडतात व प्रदुषणाची गंभीर समस्या निर्माण होते.

२. वाहनातून वायु उत्सर्ग -

मोटर, ट्रक, स्कुटर, रेल्वे, विमान इत्यादी वाहतुकीच्या साधनासाठी इंधन वापरले जाते. त्यातून वायुचे उत्सर्ग होते व हवा प्रदुषित होते. प्रवासी, मालवाहतूक यात प्रचंड वाढ झालेली आहे. विकसनशील देशात ही वाढ मोठ्या प्रमाणात झाली आहे. वाहतूक साधनांचा वृध्दीमुळे हवेत विषारी वायुचा प्रसार जास्त होतो. हवेतील प्रदुषणात ९५% शिसांचा अंश असतो. या विषारी प्रदुषकामुळे हवा अत्यंत अपायकारक बनते. अप्रगत किंवा विकसनशील देशात मोटर गाड्यांची स्थितीत खराब असते. इंधन ही हलक्या प्रतीचे वापरले जाते. म्हणून प्रदुषण जास्त प्रमाणात होते.

३. औदयोगिकरण उत्पादने -

औदयोगिक कारखान्यातून वेगवेगळ्या विषारी वायुंचे उत्सर्जन होत असते. त्यामुळे हवेचे प्रदुषण होते. कारखान्यातील इंधन ज्वलन क्रियेमुळे धुर बाहेर पडतो. त्यामुळे ही हवा प्रदुषित होते. वाढती लोकसंख्या, शहरीकरण, औदयोगिकरण इंधनांचा वापर अधिक होत असल्याने हवा प्रदुषण मोठ्या प्रमाणात होत असते.

४. रासायनिक खतामुळे जलप्रदुषण-

रासायनिक खतांचा उपयोगामुळे जलप्रदुषणाची नवीन समस्या निर्माण झाली आहे. व या समस्येला हरितक्रांतीपासून सुरुवात झाली आहे. जमिनीची उत्पादन क्षमता वाढविण्यासाठी रासायनिक खतांचा मोठ्या प्रमाणात केला जातो. खतातील काही रासायनिक द्रव्य विशेषतः नायट्रोजन जमिनीमध्ये पूर्ण एकरूप होत नाही व वाहत्या पाण्याबरोबर नदी, सरोवरे, तलाव इत्यादी जाऊन मिळतो व काही नायट्रोजन भुमिगत पाण्यात मिसळून भुमिगत पाणी दुषित होत असते.

५. जलवाहतुक -

जलवाहतुकीमुळे होणारी इंधन गळती, घातकद्रव्ये व धनरूपी पदार्थाची गळती, अपघात रासायनिक स्फोट इत्यादी क्रियाद्वारे पाण्यात अपद्रव्यांचा समावेश होऊन पाणी प्रदुषित होते. ग्रामीण भागात अंबाडी, ताग यांच्या पेंढ्या बांधून त्यांची साल कुजविण्यासाठी नदीचा डोहात टाकतात. त्यामुळे नदीचे पाणी दुषित होते. गंगा, ब्रम्हपुत्रा, महानदी, दामोदर नद्यांचा त्रिभूज प्रदेशात तागाच्या पेंढ्या पाण्यात कुजत ठेवतात त्यामुळे ही मोठ्या प्रमाणात पाण्याचे प्रदुषण होते. आंधोळ करताना साबणांमुळे त्याचप्रमाणे कपडे धुताना वापरलेल्या डिटर्जन्तमुळे पाण्यात रसायने मिसळून पाणी दुषित होते.

६. भू - प्रदुषण -

भारतात १९५०-५१ च्या पहिल्या पंचवार्षिक योजनेपासून शेती विकासावर भर देण्यात आला. वाढत्या लोकसंख्येमुळे निर्माण होणारी अन्न समस्या सोडविण्यासाठी आणि औद्योगिक क्षेत्रास कच्चा माल मुबलक प्रमाणात उपलब्ध करण्यासाठी शेती क्षेत्राच्या विकासावर भर दिला. उत्पादकता आणि अन्नधान्य उत्पादन प्रचंड प्रमाणात वाढले पण यातून अमुल्य अशा जमिनीचे प्रदुषण घडून आले आहे. जमिनीची विभागणी प्रामुख्याने पिकाखालील, जंगलाखालील आणि कुरणाखालील प्रकार पडतात, भारतात जमिनीचे प्रदुषण केवळ दुर्लक्षीमुळे घडून आले आहे. जमिनीचे प्रदुषण हे औद्योगिकरणातील प्रगती, नवीन शहरीकरण, विस्तार, नागरीकरण, जंगलतोड आणि मानवाचा इतर आक्रमणातून जमिन प्रदुषित होत आहे.

७. जंगलतोड -

मानवी वसाहतीसाठी व शेतीसाठी मोठ्या प्रमाणात जंगलतोड होत आहे. मोठमोठे औद्योगिक कारखाने, उदयोगधंदे, शहरीकरण यामुळे जंगलाचा मोठ्या प्रमाणात र्हास होत आहे. लोकसंख्यावाढीमुळे मानवी वसाहत उभारण्यासाठी रस्ते उदयोगधंदे शहरांची वाढती संख्या यामुळे जंगलतोड मोठ्या प्रमाणात केले जाते. शेतीसाठी लागणारी जमीन मानवी वसाहतीसाठी वापरली जात असल्याने शेत जमिन कमी होत आहे. त्यामुळे जंगल वने नष्ट होत आहे. जंगलापासून ग्रामीण भागातील लोकांना इंधन, जनावरांना चारा, डिक, मध, जळाऊ लाकूड आणि इमारतीशिवाय औद्योगिक क्षेत्रात लागणारा कच्चा माल उदा. पेपर, प्लायवूड, इमारतीसाठी लाकूड इत्यादींसाठी जंगलातील वने झाडे, उत्पादनासाठी गरजेची असतात. जंगलापासून मृदुसंधारण होते व पर्यावरणाचा समतोल राखला जातो. ग्रामीण भागात राहणार्या ७०% लोकसंख्येकडून होणारी जळाऊ लाकडाची मागणी जंगलाकडून होणारी जळाऊ लाकडाची जंगलाकडूनच पूर्ण केली जाते. पर्यावरणाचा समतोल राखण्यासाठी ३३% जंगलक्षेत्र असणे अत्यावश्यक असते.

८. नागरीकरण -

रोजगाराच्या अपेक्षेने, शैक्षणिक सुविधा, आरोग्य सेवा व इतर सेवा ग्रामीण भागात उपलब्ध नसल्यामुळे ग्रामीण भागातील लोक शहराकडे येऊ लागले त्यामुळे शहरात लोकांची गर्दी होऊ लागली. एवढ्या मोठ्या प्रमाणात लोकांना नागरी सोयी सुविधा पुरविणे अशक्य झाले व याचा परिणाम पर्यावरणावर मोठ्या प्रमाणात झाला. हवेचे प्रदुषण पाण्याचे प्रदुषण व आवाजाचे प्रदुषण या लोकसंख्यावाढीमुळे वाढले.

९. जागतिक तापमान वाढ -

२० व्या शतकापासून पृथ्वीचा तापमानात सातत्याने वाढ होत आहे. पृथ्वीवरील सजीवांना आपले अस्तित्व टिकविण्यासाठी ठराविक तापमानाची गरज असते. परंतू या तापमानात वाढ झाल्यास अनेक संकटकांना तोंड द्यावे लागते. प्रदुषणामुळे हे तापमान सतत वाढत आहे.

निष्कर्ष -

जागतिक तापमानवाढीमुळे मानवाला अनेक प्रकारचे प्रदुषणाला सामना करावा लागतो. हवेचे प्रदुषण, जलप्रदुषण, वाहन रहदारीचे प्रदुषण, नागरीकरण, औदयोगिकरणातून होणारे प्रदुषण, जंगलातून वृक्षतोड मोठ्याप्रमाणात केला जातो त्यामुळे जंगल नष्ट होऊन मानवी जीवनाबरोबरच जंगलातील प्राण्यांचे अस्तित्व धोक्यात आले आहे. यामुळे मानवाबरोबरच पर्यावरणाचा र्हास होत आहे. अशा अनेक प्रकारचे पर्यावरणात प्रदुषणाचे समस्या दिसून येत आहे.

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बीड जिल्ह्यातील स्थलांतरीत ऊसतोड कामगार कुटुंबाचा समाजशास्त्रीय अभ्यास

प्रा. डॉ. यादव घोडके

समाजशास्त्र विभाग प्रमुख
संचालक, समाजशास्त्र संशोधन केंद्र,
वसंतराव पाटील महाविद्यालय पाटोदा जि. बीड.

1) प्रस्ताविक :

जगातील इतर देशाचा विचार केला असता भारतात ऊसतोड कामगाराचे प्रमाण जास्त आहे. आपल्या देशाचा अभ्यास केला असता असे दिसते की, बीड जिल्ह्यात स्थलांतरीत ऊसतोड कामगाराचे प्रमाणे सर्वाधिक आहे. स्थलांतरीत ऊसतोड कामगाराच्या अनेक समस्या निर्माण होताना दिसतात. भारतातील स्थलांतरीत कामगाराबाबत संशोधन होणे आवश्यक आहे.

स्थलांतरीत ऊसतोड कामगारांना अर्धवेळ काम तर अर्धवेळ रिकामे राहावे लागते. म्हणून यापैकी बरेच स्थलांतरीत ऊसतोड कामगार शेतीलगत व्यवसाय, कारखान्यात काम, महिन्यांनी तर सालगडी म्हणून यांना काम करावे लागते. यातून मिळालेल्या उत्पन्नावर आपल्या कौटुंबिक गरजा भागवतात.

“आपला देश कृषीप्रधान आहे.” हा मंत्र लहान मुलापासून देशाचे कायदे तयार करणाऱ्या संसदेतील सदस्य समृद्धीची स्वप्ने रंगवित आहेत. परंतु त्याच वेळी देशाच्या पहिल्या पंचवार्षिक योजनेच्या एकूण रक्कमेपैकी फक्त 14.9 टक्केच ग्रामीण भागासाठी खर्च केला ते प्रमाण दहाव्या योजनेत फक्त 5.2 टक्के झाले. यावरून सरकार दरबारी “शेतीप्रधान देश” या मंत्राची कशी खिल्ली उडविली जाते याचा अंदाज सहज बांधता येईल.

2) गृहितके :

बीड जिल्ह्यातील स्थलांतरीत ऊसतोड कामगार कुटुंबाचा समाजशास्त्रीय अभ्यास करण्यासाठी खालील गृहितके निश्चित केली आहेत.

- 1) ऊसतोड कामगाराची आर्थिक स्थिती चांगली नसते.
- 2) ऊसतोड कामगाराची घरे राहण्यालायक नाहीत.
- 3) शेतीचे क्षेत्र कमी असते.
- 4) बऱ्याच ऊसतोड कामगाराकडे शेतीजोडधंदे नाहीत.

3) उद्देश : बीड जिल्ह्यातील स्थलांतरीत ऊसतोड कामगार कुटुंबाचा समाजशास्त्रीय अभ्यास करण्यासाठी खालील उद्देश निश्चित केले आहेत.

- 1) ऊसतोड कामगाराच्या आर्थिक परिस्थितीचा अभ्यास करणे.
- 2) शेती जोडधंद्याचा अभ्यास करणे.
- 3) ऊसतोड कामगाराच्या शैक्षणिक स्थितीचा अभ्यास करणे.

4) शेती उत्पन्नाचा थोडक्यात आढावा घेणे.

4) **संशोधन पद्धती :** या विषयाचा अभ्यास करण्यासाठी सहेतूक नमुना निवड पद्धतीचा अवलंब करण्यात येणार आहे. या संशोधन पद्धतीमध्ये संशोधकाला कोणत्याही उत्तरदात्याची निवड सहजरित्या करता येते. आपल्याला जो सहज उपलब्ध होईल, जवळपासचा असेल आणि योग्य माहिती देऊ शकत असेल अशा उलटदात्याची निवड संशोधकाला करता येते. म्हणून या विषयाचा अभ्यास करण्यासाठी मी सहेतूक नमुना निवड पद्धतीचा अवलंब केला आहे.

5) **कौटुंबिक माहिती :**

संयुक्त कुटुंब पद्धती ही हजारो वर्षांपासून सुरू आहे. आजच्या व्यक्तिप्रधान व स्वार्थकेंद्रित युगातही ती ग्रामीण समाजात बऱ्याच प्रमाणात टिकून आहे. संयुक्त कुटुंबात एकाच पूर्वजापासून निर्माण झालेल्या रक्त संबंधित अनेक नातेवाईकांना समावेश होतो. सर्वांचा निवास व भोजन एकत्र असते. सर्वजण कुटुंबासाठी आपुलकीने व अभिमानाने कष्ट उपसण्यात आनंद मानतात. संपत्तीवर संपूर्ण कुटुंबाची मालकी असते. सण, समारंभ, व धार्मिक विधी एकत्र येतात. जगातील अन्य समाजात ही कुटुंबपद्धती आढळत नाही व कौटुंबिक स्नेह व अभिमानही आढळत नाही. कुटुंब हेच अर्थोत्पादनाचे केंद्र असते. सण, समारंभ व धार्मिक विधी एकत्र येतात. जगातील अन्य समाजात ही कुटुंबपद्धती आढळत नाही व कौटुंबिक स्नेह व अभिमानही आढळत नाही.

तक्का क्र. 1

ऊसतोड काम करताना आपली दैनंदिन धावपळ होते काय?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	होय	117	58.50
2.	नाही	83	41.50
	एकूण	200	100.00

स्रोत : मुलाखत अनुसूची.

वरील तक्त्यावरून असे दिसून येते की, ऊसतोड काम करताना आपली धावपळ होते असे नमुद करणाऱ्या स्थलांतरीत ऊसतोड कामगाराचे प्रमाणे 58.50 टक्के आहे. दैनंदिन धावपळ होत नाही असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगाराचे प्रमाण 41.50 टक्के आहे.

कुटुंबामध्ये लहान मुले असल्यामुळे आणि सर्व कामे पती-पत्नीच करत असल्यामुळे ऊसतोड काम करताना दैनंदिन धावपळ होते.

ऊसतोड काम करताना आपली दैनंदिन धावपळ होत नाही असे मत मांडणारे स्थलांतरीत ऊसतोड कामगार शेतकामाचे पूर्व नियोजन करतात. कुटुंबातील इतर सदस्य मदत करण्याचे प्रमाण जास्त आहे. ऊसतोड विशिष्ट दिवसांमध्ये काम असते. ऊसतोड काम करताना धावपळ होणाऱ्या स्थलांतरीत ऊसतोड कामगाराचे प्रमाण जास्त असल्याचे दिसून येते.

तक्ता क्र. 02

दैनंदिन ऊसतोड कामामुळे येणारा थकवा घालविण्यासाठी काही प्रयत्न करतात का?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	होय	165	82.50
2.	नाही	35	17.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, ऊसतोड कामामुळे येणारा थकवा घालविण्यासाठी प्रयत्न करतात असे करणाऱ्या स्थलांतरीत कामगारांचे प्रमाण 82.50 आहे. थकवा घालविण्यासाठी काहीच प्रयत्न केला जात नाही असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 17.50 टक्के आहे.

टी.व्ही. पाहणे, थोडी विश्रांती घेतात आणि कुटुंबातील इतर सदस्यांबरोबर थोडावेळ गप्पा मारतात, थकवा घालविण्यासाठी काहीच प्रयत्न करत नाही असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगारांची कारणे असे की, भरपूर कामामुळे विश्रांतीची मानसिकता नसते आणि दुसऱ्या दिवशीच्या कामाचे नियोजन करावे लागते असे मुलाखती अंती दिसून आले. ऊसतोड कामामुळे येणारा थकवा घालविण्यासाठी प्रयत्न करणाऱ्या वयस्कर स्थलांतरीत ऊसतोड कामगारांचे प्रमाण जास्त आहे.

तक्ता क्र. 3

आपला मुलगा ऊसतोड कामासाठी मदत करतो काय?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	होय	123	61.50
2.	नाही	77	38.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची :

उपरोक्त तक्त्यावरून असे दिसून येते की, आपला मुलगा स्थलांतरीत ऊसतोड कामगारांच्या कामासाठी मदत करतो असे म्हणणाऱ्या स्थलांतरीत कामगारांचे प्रमाण 61.50 टक्के आहे. तर 38.50 टक्के ऊसतोड कामगार कुटुंबातील मुले शेती कामासाठी मदत करत नाहीत असे मत स्थलांतरीत ऊसतोड कामगारांनी मांडले आहे.

होय म्हणणाऱ्या स्थलांतरीत ऊसतोड कामगार कुटुंबातील मुले शेतीतील सर्व कामे करताना दिसून येतात तर नाही म्हणणाऱ्या कुटुंबामध्ये मुलगा नाही, मुलगा लहान आहे आणि शाळेतील अभ्यासामुळे मुलगा काम करत नाही असे मत स्थलांतरीत ऊसतोड कामगारांनी मांडले. स्थलांतरीत ऊसतोड कामगार कुटुंबातील मुलगा ऊसतोड कामासाठी मदत करतात याचे प्रमाण जास्त आहे.

तक्का क्र. 4

आपणास ऊसतोड कामाविषयी कुटुंबातील सदस्य प्रोत्साहन देतात काय?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	होय	123	61.50
2.	नाही	77	38.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून आपणास असे दिसून येते की, ऊसतोड कामाविषयी कुटुंबातून प्रोत्साहन देणाऱ्या स्थलांतरीत ऊसतोड कामगाराचे प्रमाण 51.00 टक्के आहे. तर 49.00 टक्के शेतकरी कुटुंबामधून ऊसतोड कामाविषयी प्रोत्साहन दिले जात नाही.

स्थलांतरीत ऊसतोड कामगाराच्या उत्पन्नावर कौटुंबिक खर्च अवलंबून असतो. शेतीतून योग्य आणि मुबलक आहार मिळतो, म्हणून ऊसतोड कामाविषयी कुटुंबातून प्रोत्साहन दिले जाते. शेती परवडत नाही, पाऊस वेळेवर पडत नाही, उत्पन्न कमी मिळते आणि शेतीचे क्षेत्र कमी असल्यामुळे कुटुंबातील सदस्य मदत करत नाहीत. यामुळे शेती कामाविषयी कुटुंबातून प्रोत्साहन दिले जात नाही असे दिसून येते. स्थलांतरीत ऊसतोड कामगाराच्या कामाविषयी कुटुंबातून प्रोत्साहन देण्याचे प्रमाण जास्त आहे.

तक्का क्र. 5

कुटुंबामध्ये निर्णय घेत असताना सर्व सदस्यांची मते विचारात घेतात काय?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	होय	87	43.50
2.	नाही	113	56.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, स्थलांतरीत ऊसतोड कामगाराच्या कुटुंबामध्ये निर्णय घेत असताना सर्व सदस्यांची मते विचारात घेतात असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगाराचे प्रमाण 43.50 टक्के आहे. स्थलांतरीत ऊसतोड कामगाराच्या कुटुंबातील कोणाचे ही मत विचारात घेतले जात नाही असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगाराचे प्रमाण 56.50 टक्के आहे.

ऊसतोड कामगार कुटुंबात वाद, भांडण, तंटे होत असले, तरी होतात असे कोणीही सांगितले नाही.

तक्का क्र. 6

आपल्या कामाची तुलना इतर ऊसतोड कामगारांशी केली जाते काय?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	होय	107	53.50
2.	नाही	93	46.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, कामाची तुलना इतर स्थलांतरित ऊसतोड कामगारांशी केली जाते असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 53.50 टक्के आहे. तर 46.50 टक्के स्थलांतरीत ऊसतोड कामगारांने इतर ऊसतोड कामगारांशी तुलना करत नाहीत असे दिसून येते.

तक्का क्र. 7

आपण कुटुंबासाठी काही विशेष करण्याचा प्रयत्न करतात काय?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	होय	117	58.50
2.	नाही	83	41.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, आपण कुटुंबासाठी काही तरी वेगळे आणि विशेष करण्याचा प्रयत्न करणारे स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 58.50 टक्के आहे. तर 41.50 टक्के स्थलांतरीत ऊसतोड कामगार कुटुंबासाठी विशेष करण्याचा प्रयत्न करत नाही असे दिसून येते.

जे स्थलांतरीत ऊसतोड कामगार कुटुंबासाठी विशेष काहीतरी करण्याचा प्रयत्न करतात. त्यांची आर्थिक परिस्थिती चांगली असून ऊसतोडनीचे उत्पन्न जास्त आहे. जे स्थलांतरीत ऊसतोड कामगार विशेष करण्याचा प्रयत्न करत नाहीत. त्यांच्याकडे शेतीचे प्रमाण कमी आहे, शेती उत्पन्न कमी मिळते, जोडधंदा नाही काही ऊसतोड कामगारांकडे शेती व जोडधंदे असून नसल्यासारखे आहेत. कुटुंबासाठी विशेष काहीतरी वेगळे करण्याचा प्रयत्न करणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण जास्त आहे.

तक्का क्र. 8

आपणास कोणकोणत्या करमणूकीच्या साधनांची आवड आहे ?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	चित्रपट	26	13.00

2.	नाटक	33	16.50
3.	तमाशा	58	29.00
4.	भजन-कतीर्तन	83	41.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, चित्रपट या करमणुकीच्या साधनाची आवड असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 13.00 टक्के आहे. नाटक या करमणुकीच्या साधनाची आवड असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 16.50 टक्के आहे. तमाशा या करमणुकीच्या साधनाची आवड असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 29.00 टक्के आहे. भजन-कतीर्तन या करमणुकीच्या साधनाची आवड असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 41.50 टक्के आहे.

चित्रपट या करमणुकीच्या साधनाची आवड असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण सर्वात कमी आहे. तर भजन-कतीर्तन या करमणुकीच्या साधनाची आवड असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण जास्त आहे.

तक्का क्र. 9

आपणाकडे कोणकोणती करमणुकीची साधने उपलब्ध आहेत?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	रेडिओ	100	50.00
2.	टी.व्ही.	64	32.00
3.	टप	03	1.50
4.	उपलब्ध नाही	33	16.50
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, रेडिओ असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 50.00 टक्के आहे. दूरदर्शन असणाऱ्या स्थलांतरीत कामगारांचे प्रमाण 32.00 टक्के आहे. 1.50 टक्के स्थलांतरीत ऊसतोड कामगारांकडे टप आहे. यापेकी एकही करमणुकीचे साधन नाही असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 16.50 टक्के आहे. रेडिओ आहे असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगारांकडे प्रत्यक्षदर्शनी रेडिओ नाही. परंतु मोबाईलवरून ते आकाशवाणीचा पूर्ण लाभ घेतात.

थोडक्यात स्थलांतरीत ऊसतोड कामगारांकडील करमणुकीच्या साधनांचा अभ्यास केला असता रेडिओ हे करमणुकीचे साधन उपलब्ध आहे. अशा स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 50.00 टक्के असून ते सर्वात जास्त तर टप असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण सर्वात कमी आहे असे असल्याचे दिसून येते.

तक्ता क्र. 10

आपल्या घरी स्वयंपाकासाठी कोणत्या इंधनाचा वापर करतात ?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	चुल (जळण)	188	94.00
2.	स्टोव्ह आणि चुल (जळणा)	08	04.00
3.	गॅस आणि चुल (जळण)	04	02.00
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, कुटुंबात स्वयंपाक बनविण्यासाठी चुलीचा (जळण) वापर करणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 94.00 टक्के आहे. स्टोव्ह आणि चुल (जळण) या दोन्हीचा वापर करणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 04.00 टक्के आहे. गॅस आणि चुल (जळण) या दोन्हीचा वापर करणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 02.00 टक्के आहे. म्हणजेच ग्रामीण भागात चुलीचा वापर स्वयंपाकासाठी करणाऱ्यांचे प्रमाण सर्वात जास्त आहे. तर गॅस आणि चुल (जळण) या दोन्हीचा वापर करणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण सर्वात कमी आहे असे असल्याचे दिसून येते.

तक्ता क्र. 11

आपणाकडे संपर्काची कोणती साधने आहेत ?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	मोबाईल	116	58.00
2.	साधन नाही	84	42.00
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, मोबाईल हे संपर्काचे साधन उपलब्ध असणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 58.00 टक्के आहे. एक ही साधन उपलब्ध नाही असे मत मांडणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 42.00 टक्के आहे. मोबाईल वापरणाऱ्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण सर्वात जास्त आहे.

तक्ता क्र. 12

आपण आतापर्यंत कोणत्या योजनांचा लाभ घेतला आहे?

अ.क्र.	दैनंदिन धावपळ	संख्या	टक्केवारी
1.	राजीव गांधी घरकूल योजना	07	03.50
2.	इंदिरा गांधी घरकूल योजना	48	24.00

3.	संजयगांधी निराधार योजना	03	01.50
4.	श्रावणबाळ योजना	30	15.00
5.	लाभ मिळाला नाही	112	56.00
	एकूण	200	100.00

स्त्रोत : मुलाखत अनुसूची.

उपरोक्त तक्त्यावरून असे दिसून येते की, राजीव गांधी घरकुल योजनेचा लाभ घेणार्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 03.50 टक्के आहे. तर इंदिरा गांधी घरकुल योजनेचा लाभ घेणार्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण 24.00 टक्के आहे. संजय गांधी निराधार योजनेचा लाभ 01.50 टक्के स्थलांतरीत ऊसतोड कामगारांने घेतला आहे. 15.00 टक्के स्थलांतरीत कामगारांने श्रावणबाळ योजनेचा लाभ घेतला आहे. इंदिरा गांधी घरकुल योजनेचा फायदा स्थलांतरीत ऊसतोड कामगारांने घेतल्याचे प्रमाण सर्वात जास्त आहे. कोणत्याही योजनेचा लाभ घेणार्या स्थलांतरीत ऊसतोड कामगारांचे प्रमाण सर्वात जास्त 56.00 टक्के आहे.

6) सारांश : अनुसूचित जाती, नवबौद्ध घरकुल योजनेअंतर्गत 2011 साली 334 घरकुले मंजूर झाली होती. त्यापैकी 159 घरकुले पूर्ण झाली. 146 घरकुले अपूर्ण आहेत. 21 घरकुलाचे काम अद्याप सुरु झालेले नाही. 2012 मध्ये 475 घरकुलांना मंजूरी मिळाली. त्यापैकी 164 घरकुले पूर्ण झाली. 243 घरकुले अपूर्ण आहेत. 68 घरकुलांचे काम सुरु झाले नाही. पाच वर्षांनंतरही लाभार्थी घरांचे प्रतिकेत आहेत.

प्रत्येकाला स्वतःला मालकीचे घर असावे असे वाटते. यासाठी शासनाकडून बेघर कुटुंबाना घरे उपलब्ध करून देण्यात येणार असून आजच 62 कोटी रूपयाच्या घरकुलाचे अनुदान वाटप करण्यात आले.

7) निष्कर्ष :

- 1) शासनाने मागेल त्या स्थलांतरीत ऊसतोड कामगारांना मोफत शेततळे द्यावे.
- 2) शासकीय अनुदानात विहीरीच्या अनुदान दृष्टीत वाढ करावी.
- 3) शेतमालाला हमी भाव देण्यात यावा.
- 4) शेतीला कायम स्वरूपी पाण्याची व्यवस्था करावी.
- 5) शेतीजोड धंद्याला शासकीय अनुदान द्यावे.
- 6) स्थलांतरीत ऊसतोड कामगारास शासनाने मोफत रासायनिक खते व बी-बीयाने द्यावेत.
- 7) स्थलांतरीत ऊसतोड कामगारास ऊसतोडणी अनुदान व वाहतूक खर्च वाढवून द्यावे.

संदर्भ ग्रंथ सूची :

- 1) डॉ. दग्वे एस.के. "भारतीय आणि जागतिक आर्थिक विकास" के.एस. पब्लिकेशन, पुणे -2011.
- 2) वोफरे दिवाकर, शेतकऱ्यांच्या आत्महत्या थांबवायच्या कथा ? के.एस. पब्लिकेशन, पुणे

2011.

- 3) सेंद्रीय शेतीतच पुढच्या पिढीचे भवितव्य, दैनिक दिव्यमराठी दि. 23/01/2015.
- 4) बीड जिल्हा आर्थिक व सामाजिक समालोचन 2012 अर्थ व सांख्यिकीय संचालनालय
महाराष्ट्र शासन मुंबई.
- 5) एकत्र कुटुंब पद्धती महत्वाची दै. दिव्य मराठी दि. 18/07/2012.
- 6) जिल्ह्यात 18 हजार घरकुले दि. 05/03/2011.
- 7) गटपिठीने कर्जाचा डोंगर वाढला दै. दिव्यमराठी दि. 25/03/2014.

जागतिक हवामान बदलाचा आदिवासींच्या विकासावरील परिणाम

प्रियंका जालिंदर चव्हाण

संशोधक विद्यार्थी
राज्यशास्त्र संशोधन केंद्र
व्ही. पी. महाविद्यालय पाटोदा
ता. पाटोदा, जि. बीड.

डॉ. चंद्रशेखर काशिनाथ तळेकर,

संशोधक मार्गदर्शक
(राज्यशास्त्र विभाग)
एस के गांधी महाविद्यालय कडा
ता. आष्टी, जि. बीड.

प्रस्तावना :-

भारतीय प्राचीन शास्त्रानुसार सृष्टी ही अग्नी, वायू, पृथ्वी, हवा आणि जल या पंचमहाभूतांपासून बनली असे सांगितले जाते. या पाच घटकांचा एकमेकांशी अतूट संबंध आहे. यातील एक जरी घटक कमी किंवा जास्त झाला तरी त्याचा विपरीत परिणाम जीवसृष्टीवर होत असतो. बऱ्याचदा तापमान वाढ ही नैसर्गिक कारणांमुळे झाली होती. परंतु अलीकडच्या काळात मात्र तापमान वाढीला पूर्णपणे मानवच जबाबदार आहे. औद्योगिक क्रांतीची सुरुवात आणि मानवाची विकासाकडे वाटचाल यांचा परिणाम वातावरणावर झाला. त्यामुळे निसर्गाचे चक्र बिघडण्यास सुरुवात झाली. परिणामी विकसित देशांबरोबर अविकसित देशांनाही विपरीत परिणाम भोगावे लागत आहे. याचा सर्वात जास्त फटका विकसित देशातील मागास जमातींना बसतो. त्यांचा उदरनिर्वाह निसर्गावर अवलंबून आहे. अशा आदीम जमाती याला बळी पडतात.

महत्त्वाचे शब्द :- विकास, पंचमहाभूते, करार.

उद्देश :-

- १) वाढत्या जागतिक तापमानाचा निसर्गावरील परिणाम स्पष्ट करणे.
- २) वाढत्या तापमानामुळे जंगल संपत्तीच्या धोक्यांचा आढावा घेणे.
- ३) जंगलावर जीवन जगणाऱ्या आदीमांचे विकासावर होणारे परिणाम अभ्यासणे.
- ४) जागतिक तापमान वाढीचा जागतिक राजकारणावरील परिणाम अभ्यासणे.

गृहीतके :-

- १) जागतिक तापमान वाढीचा निसर्गावर विपरीत परिणाम दिसून येतो.
- २) बदलत्या वातावरणामुळे नैसर्गिक साधन संपत्तीचा रूहास होत आहे.
- ३) जंगलावर जीवन जगणाऱ्या जमातींचा विकासापेक्षा त्यांच्या जगण्यात तापमान वाढीचे विपरीत परिणाम होऊ लागले आहे.
- ४) वाढते तापमान थांबवण्यासाठी आंतरराष्ट्रीय पातळीवर विविध करार केले जात आहे.

संशोधन पद्धती :-

विक्षेपण पद्धतीचा वापर करण्यात आला आहे.

वाढत्या तापमानाचा निसर्गावर परिणाम :-

वाढत्या तापमानात सर्वात चिंताजनक असा परिणाम म्हणजे पृथ्वीवरील हवामान बदल हा झपाट्याने होत आहे. तापमानाचा परिणाम नद्या, समुद्र, जंगल, हिमालय, जीव, जंतू, प्राणी, वनस्पती सर्वांवरच होत आहे.

१) हीम नद्याचे वितळणे :-

पृथ्वीवरचे तापमान वाढल्याने हिमनद्या वितळू लागल्या आहे. त्यामुळे पाणीटंचाई कमी भासू लागली. परंतु यामुळे पूर सदृश्य परिस्थिती निर्माण होत आहे. लोकांचे जीवन विस्थापित होत आहे. जो समाज मुळातच निसर्गावर जीवन जगतो, भटके जीवन जगतो अशा मागास समाजाला याचा त्रास सहन करावा लागत आहे. त्यांचा विकास होण्यापेक्षा तो आणखी मागास होण्यास याची भर पडत आहे. नद्यांच्या वितळण्यामुळे विस्थापनाची समस्या वाढत आहे.

२) समुद्राच्या पाणी पातळीत वाढ :-

वाढत्या तापमानामुळे बर्फ वितळून पाण्याची पातळी वाढत जाते. त्याचा परिणाम समुद्राच्या जलसाठ्यात वाढ होते. जगातील बहुतेक विकसनशील देश समुद्रावरील मासेमारीच्या व्यवसायातून आपले आर्थिक चक्र चालवतात. यामध्ये आघाडीवर असतात ते भटके जीवन जगणारा मानवी समूह. वाढत्या पाणी पातळीचा परिणाम मासेमारीवर होत असतो.

३) जंगलाचा रूहास :-

निसर्ग ही मानवाला मिळालेली विनामूल्य देणगी आहे. हवामान बदलाचा परिणाम हा जंगल संपत्तीवर होत असतो. दुर्मिळ असणाऱ्या औषधी वनस्पती वाढत्या तापमानामुळे संपुष्टात येत आहे. जंगलावर उदरनिर्वाह करणाऱ्या आदिम जमातींचा मात्र यामुळे चरितार्थ धोक्यात येऊ लागला आहे.

४) समुद्राच्या तापमानात वाढ :-

वाढत्या तापमानाचा परिणाम हा समुद्राच्या पाण्यावरही होत आहे. समुद्री पाण्याचे तापमान वाढ झाल्याने बाष्पीभवन प्रमाणापेक्षा जास्त होऊ लागले. त्याचा विपरीत परिणाम पर्जन्यमानावर होऊन पावसाचे प्रमाण फारच कमी किंवा अधिकच जास्त वाढले आहे.

जंगल संपत्तीला वाढता धोका :-

झपाट्याने होणाऱ्या औद्योगीकरणाचा परिणाम वनांवर सर्वाधिक होत आहे. जमिनीची कमतरता भरून काढण्यासाठी अमर्याद वृक्षतोड केली जाते. यामुळे सूर्याची प्रखर किरणे प्रत्यक्ष जमिनीवर पडतात. जमिनीच्या तापमानात वाढ होऊन मोठ्या प्रमाणात जमिनीची धूप होते. या सर्व घटकांचा एकमेकांवर विपरीत परिणाम होतो. मानवाने स्वतःच्या स्वार्थासाठी मोठ्या प्रमाणात जंगलतोड केल्याने काही वनस्पती या नामशेष होत चालल्या आहेत.

१) औषधी वनस्पतींचा तुटवडा :-

जंगलतोडीमुळे औषधी वनस्पती कमी होत चालल्या आहे. जंगल आधारित जीवन जगणाऱ्या आदिम समाजासाठी या वनस्पती महत्त्वपूर्ण आहे. विविध आजारांवर आदिम समाज रुग्णालयात जाण्यास तयार नसतो. परंतु जंगली औषधांचा वापर मात्र सर्रासपणे करतो. वाढत्या तापमानामुळे बऱ्याचशा जंगली औषधी वनस्पती संपत

चालल्या आहेत. सूर्याच्या अती उष्णतेचा परिणाम या दुर्मिळ औषधी वनस्पतींवर होत आहे. या सर्वांचा एकंदरीत दुष्परिणाम आदीमांच्या जीवनाला हादरा बसवितो.

२) आदीमांचे जंगल उद्योग धोक्यात :-

वाढत्या तापमानाचा परिणाम आता प्रत्यक्ष आदिवासींच्या जीवनावर होऊ लागला आहे. त्यांच्या विकासाची ध्येय साध्य करण्याऐवजी त्यांच्या समोरच्या अडचणीत आणखी भरच पडत आहे. जंगलातील फळे, रानभाज्या, लाकूड विकून ही जमात आपला उदरनिर्वाह करते. लाकडांचे उपयोग इंधन म्हणून करते. परंतु जंगलातील याच गोष्टी संपुष्टात येऊ लागल्या आणि पोट भरण्याचा प्रश्न त्यांच्यापुढे आ वासून उभा आहे.

जंगल आधारित जीवन जगणाऱ्या आदिवासींच्या विकासावरील परिणाम :-

वाढत्या तापमानाचा परिणाम हा सर्वात जास्त जंगलावर उपजीविका करणाऱ्या आदिम जमातीवर होतो. जंगलातून मिळणारे फळे, फुले, डिक, भाज्या, लाकडे, औषधी वनस्पती विकून ते आपली गुजरान करतात. परंतु वाढत्या तापमानाचा परिणाम जंगलावर झाल्याने या सर्व सामग्री मिळण्याचे प्रमाण कमी होऊ लागले आहे. काही घटक तर संपत चालले आहेत. आदिमांच्या विकासात हातभार लागण्याऐवजी त्यांच्या समस्यांमध्ये भर पडत आहे.

राष्ट्रीय स्तराबरोबरच जागतिक स्तरावर देखील आदीमांचा प्रश्न महत्वाचा मानला जातो. त्यासाठी विविध प्रकारच्या उपाययोजना आखल्या जातात जात आहे. आदिमांना मुख्य मानवी प्रवाहात आणण्याचे ध्येय शाश्वत विकासात स्पष्ट केले आहे. परंतु या उपाययोजना अमलात येईपर्यंत आदीमांच्या जंगल संपत्तीचे मोठ्या प्रमाणात भरून न काढण्याजोगे नुकसान होत आहे. आदिम जमातींमुळे जंगल संपत्तीचे संवर्धन होते. त्यांना जंगलाचे रक्षक मानले जाते. परंतु वाढत्या तापमानापासून मात्र जंगलाचा राजा देखील सुरक्षित नाही.

तापमान वाढ रोखण्यासाठी विविध आंतरराष्ट्रीय राजनैतिक करार :-

वाढत्या तापमान धोका लक्षात घेता पर्यावरणाची हानी थांबवणे जागतिक स्तरावर सर्वाधिक महत्वाची गरज वाढू लागली. जीवसृष्टीच्या रक्षणासाठी तापमान वाढ थांबवणे गरजेचे झाले. यास कारणीभूत असणारा सर्वात महत्वाचा घटक म्हणजे मानवनिर्मित उष्णता होती. यासाठी आंतरराष्ट्रीय स्तरावर विविध करार केले गेले.

१) स्टॉक होम परिषद १९७२ :-

स्वीडन मधील स्टॉक होम येथे जागतिक पर्यावरणाच्या संरक्षणासाठी ही परिषद आयोजित केली होती. पर्यावरणीय मुद्द्याला अनुसरून आंतरराष्ट्रीय स्तरावर सर्वात पहिली आंतरराष्ट्रीय परिषद स्टॉक होम भरली होती.

२) मॉट्रीयाल प्रोटोकॉल १९८७ :-

सूर्याच्या अतिनील किरणांमुळे ओझोन थराला छिद्र पडलेले आढळून आले. ओझोन थर हा सूर्याची अतिनील किरणे पृथ्वीवर पडण्यापासून रोखतो. परंतु याच्या क्षयामुळे ही किरणे प्रत्यक्ष पृथ्वीवर पडतात. त्यामुळे पृथ्वीचे तापमान वाढत जाते. हा करार ओझोनच्या संरक्षणासाठी आंतरराष्ट्रीय स्तरावर केला गेला होता.

३) रियो दि जनेरियो / पृथ्वी शिखर संमेलन १९९२ :-

ही हवामान व्यवस्थेमधील धोकादायक मानवी हस्तक्षेपाचा सामना करण्यासाठी ही परिषद आयोजित केली होती. आंतरराष्ट्रीय स्तरावर विकासाच्या मुद्द्यावर सहकार्य करण्यासाठी या परिषदेचे आयोजन केले होते. यामध्ये

हरितगृह वायूचे प्रमाण स्थिर करणे हा प्रमुख मुद्दा होता. स्थानिक लोकांच्या जमिनीवर पर्यावरणाच्या हानीचा विपरीत परिणाम टाळणे हा देखील यामागचा प्रमुख हेतु होता.

४) पॅरिस करार २०१५ :-

हा करार संयुक्त राष्ट्रांनी जागतिक वातावरण बदला संदर्भात केला आहे. हरितगृह वायूचे वाढते उत्सर्जन, त्यावर उपाय आणि त्यासाठी विविध आर्थिक तरतुदी या करारात केल्या आहेत. या कराराचे प्रमुख ध्येय हे औद्योगिक क्रांतीच्या आधीच्या तापमानाच्या तुलनेत २° सेल्सियस तापमान कमी करणे हे आहे.

सर्व प्रकारचे करार जागतिक तापमान नियंत्रित करण्यासाठी केले गेले आहे. यासोबत मानवी विकास साधने हे देखील ध्येय आंतरराष्ट्रीय स्तरावर समोर ठेवले गेले आहे.

सारांश :-

वाढते जागतिक तापमान ही कायमस्वरूपाची समस्या बनली आहे. तापमानाचा विपरीत परिणाम संपूर्ण मानवी समूहावर होतो. बदल निसर्गाच्या बदलाचा फटका हा श्रीमंत वर्गापेक्षा गरीब वर्गाला जास्त सहन करावा लागतो. शेतकरी, मजूर व आदिवासी या मानवी समूहाला याचा सर्वाधिक परिणाम भोगावा लागतो. पावसाचे प्रमाण कमी-जास्त होणे, अनियमित पर्जन्य, अमलावृष्टी यांचा परिणाम सामान्य मानवी समूहाच्या विकासावर होतो. अति मागास असणारा आदिवासी समाज तर या कुठल्याही घटकात सहभागी नसताना देखील सर्वाधिक विपरीत परिणाम आदिवासींवरच होतो. आदिवासींच्या अर्थव्यवस्थेवर हवामान बदलाचा मोठा दुष्परिणाम झालेला दिसून येतो.

निष्कर्ष :-

- १) आंतरराष्ट्रीय स्तरावर असणाऱ्या सत्ता स्पर्धेचे परिणाम संपूर्ण मानवी जीवनावर होत आहे.
- २) हवामान बदलामुळे सर्व जीवसृष्टी धोक्यात येत आहे.
- ३) वातावरण बदलाचा स्थानिक लोकांच्या अर्थव्यवस्थेवर विपरीत परिणाम होत आहे.
- ४) आंतरराष्ट्रीय स्तरावर तापमान वाढ रोखण्यासाठी विविध करार केले आहेत.

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बदलत्या हवामानानुसार बदलते आदिवासी लोकजीवन

संशोधक:-श्री. दत्तात्रय गणपत शिंदे.

मार्गदर्शक :- प्राचार्य डॉ. भाऊसाहेब विठ्ठलराव गमे.

म. गांधी विद्यामंदिर संचालित कला व वाणिज्य महाविद्यालय
येवला, जि. नाशिक .

के. टी. एच. एम. महाविद्यालय, नाशिक.

▪ प्रस्तावना

बदल हा निसर्गचा नियम आहे. या निसर्ग नियमानुसार पृथ्वीच्या पाठीवर पहिले सजीव निर्माण झाल्यापासून आजतागायत अनेक प्रकारचे बदल घडत चालले आहेत. आजचे एकविसावे शतक तर विज्ञान तंत्रज्ञानाचे युग आहे. **Nothing is permanent under the sun** या वाक्यातच बदलाचे सगळे सार सामावलेले आहे. काळाचा माहिमा अगाध आहे. काळचक्र सतत गतिमान असते. या काळाच्या चक्रातून आदिवासी समाज कसा सुटू शकेल?

काळाच्या ओघात पृथ्वीवर अनेक बदल झाले. जसजसा काळ बदलत गेला तसतसे मानवी जीवन देखील बदलत गेले. बदलत्या काळानुसार मानवाने आपल्या सामाजिक, भौतिक, पर्यावरणीय, सांस्कृतिक बाबतीत बदल स्वीकारले आहेत. कालचक्राबरोबर हे बदलाचे चक्र देखील सतत गतिमान आहे. या कालचक्रातून आदिवासी समाज देखील सुटलेला नाही. आदिवासी समाज जीवनातील बदलांचा शोध घेण्याचा प्रयत्न सदर शोधनिबंधात केला आहे.

▪ आदिवासी म्हणजे नेमके कोण?

भारतीय पुराण व स्मृतीग्रंथात आदिवासी जमातीचा उल्लेख सापडतो. रामायण, महाभारतात देखील आदिवासीचे उल्लेख आले आहेत. शबर, किरात, निषाद या नावांनी रामायणात आदिवासींना संबोधले आहे . त्यातील किरात हे बेटावर तर निषाद हे जंगलात राहणारे आदिवासी असा उल्लेख आढळतो. हिमालय पर्वतात राहणारे आदिवासी म्हणजेच पुलिंद, किरात असा महाभारतात उल्लेख आढळतो.

“ , , , , , चिरात, चिलात इत्यादी नावाने ओळखल्या जाणाऱ्या पर्वताश्रयी जमातींच्या विभिन्न प्रदेशातील वसाहती किरात देश या सामान्य नावाने प्रसिद्ध होत्या. केदार पुराणात खसमंडळ, स्कंद पुराणात किरात मंडळ, वाल्मिक रामायणात प्राच्य किरात लोकसमुह असा उल्लेख आढळतो. रांची येथील शिलालेखातही किराताचा उल्लेख सापडतो. ^१

मानववंशशास्त्रज्ञ व अभ्यासकांनी आदिवासी समाजाच्या पुढीलप्रमाणे व्याख्या केल्या आहेत-

- **डब्लू जे. पेरी-** समान बोली बोलणाऱ्या व एकाच समान भूप्रदेशावर वास्तव्य करणाऱ्या समुहाला आदिम समाज असे म्हणतात.
- **गिलीन व गिलीन** - एका विशिष्ट भूप्रदेशावर राहणारा, समान बोली भाषा बोलणारा व समान सांस्कृतिक जीवन जगणारा पण ओळख नसलेल्या स्थानिक गटांच्या समुच्चयाला आदिवासी समाज म्हणतात.
- **बोगार्डस-** सुरक्षिततेची जरूरी, रक्तसंबंधाचे बंध, समान धर्म, यावर आदिवासी समूह आधारलेला होता.^२

वरील सर्व व्याख्यावरून सोप्या शब्दात आदिवासी समाज म्हणजे आदिपासूनच वास करणारा विशिष्ट भूप्रदेश, समान बोलीभाषा, मर्यादित गरजा, साधी राहणी, समान सांस्कृतिक जीवन जगणारा, देवभोळा, लाजरा बुजरा पण राष्ट्राच्याप्रती देशभक्तीचा बाणा जपणारा समाज म्हणजे आदिवासी समाज अशी व्याख्या करणे जास्त संयुक्तीक वाटते.

▪ **संशोधनाची उद्दीष्ट्ये -**

- आदिवासी समाजाची ओळख करून घेणे.
- आदिवासी समाज जीवनातील बदलाचा शोध घेणे.
- आदिवासी समाज जीवनातील बदल निदर्शनास आणणे.

▪ **गृहीतकृत्ये -**

- आदिवासी समाजजीवन विविधतेने नटलेले आहे.
- आदिवासी समाजजीवनात सातत्याने बदल घडत आहेत.
- आदिवासी समाजाने काळानुरूप होणारे बदल स्विकारलेले आहेत.

▪ **आदिवासी भौतिक संस्कृतीबदल :-**

पूर्वेची सहयाद्री पर्वतराजी ते पश्चिमेची अरबी समुद्रकिनारपट्टी यांच्या दरम्यान पसरलेल्या विविधतेने नटलेल्या निसर्गराजीच्या सहवासात आदिवासी समाज आपले जीवन कंठीत आहे. आपल्या अनोख्या जीवन शैलीने हा समाज नटलेला आहे.

- **घरे** - आदिवासी डोंगराळ प्रदेश, जंगलझाडीत राहत असल्याने जंगलातून सहज उपलब्ध होणारी साधनसामुग्री हीच घर बांधणीची साधने असतात. घराच्या भिंती कारवी वनस्पतीपासून बनवलेल्या असून त्या शेणामातीने सारवून घेतात. घराच्या भिंती आकाराने लहान व विटांच्या असतात. छपरावर झाडांच्या फांदया, पाला, भाताची पावली, गवत यांनी शाकारलेली असतात. घरांचे दरवाजे लाकडी असतात. घराची जमीनदेखील शेणामातीने सारवलेली असते. घरात स्वतंत्र स्वयंपाकघर नसते. कुडाच्या आधाराने घराचे भाग पाडले जातात. गोठा देखील स्वतंत्र नसल्यास गुरांनाही घराच्या एका भागात ठेवतात. पुरुष अंधोळीसाठी शक्यतो नदीवर अथवा विहिरीवर जातात. स्त्रीया मात्र घराजवळच ठेवलेल्या चपट्या दगडांभोवती केलेल्या आडोशात स्नान करतात. हल्ली मात्र सिमेंट, लोखंड, दगड, विटा,वाळू यांचा वापर करून अत्याधुनिक घरे बांधली जात आहेत. या घरात सर्व सोयीसुविधा असतात. कौलाच्या छपराची जागा पत्रे, स्लॅब यांनी घेतली असून शेणामातीने सारवलेल्या जमिनीच्या जागी आता टुमदार फरशीने घेतली आहे. अत्याधुनिक सोयी सुविधांनीयुक्त अशी घरे आजकाल पहायला मिळतात. विविध शासकीय अनुदानाचा वापर करून सरकारी घरकुल योजनेच्या आधारे पक्की घरे बांधलेली आढळतात.
- **भांडी**- आदिवासीच्या घरामध्ये मातीची, अॅल्युमिनिअमची भांडी आढळतात. यात स्वयंपाकसाठी मडके, खापर, लाकडीचमचे इत्यादी वस्तु आढळतात. पाणी पिण्यासाठी मातीचा रांजण, मडके असतात. काही घरामध्ये पितळी किंवा तांब्याची भांडी, जेवणासाठी कास्याच्या ताटल्या आढळत असत. हल्ली मात्र या सर्व भांड्याची जागा स्टेनलेस स्टीलच्या भांड्यानी घेतलेली आहे.
- **अन्न**- बहुतेक आदिवासी बिनदुधाचा चहा पितात त्याच्या रोजच्या जेवणात तांदूळ किंवा नागली, ज्वारी, उडीद व तूर,चना यांच्या डाळीचा वापर अधून मधून आढळत असे. सण उत्सव प्रसंगी तसेच विवाहप्रसंगी

मांसाहार व गोडधोड जेवणाचा वापर होत असे. रोजच्या जेवणात भाज्यांचा वापर होतोच असे नाही. ताडी, दारू यांचा सर्रासपणे वापर असतो.

हल्ली मात्र आर्थिक प्रगतीमुळे रोजच्या जेवणात नवनवीन भाज्या, डाळ, चपाती, भाकरी असा सुधारीत समाजाप्रमाणे अन्नाचा वापर होताना दिसतो. तसेच पाहुंचार म्हणून ताडी, दारू यांच्या सोबतीला थंडा व गोडधोड जेवणाचा वापर होताना दिसतो.

- **पोशाख** - आदिवासी समाजाचा पोशाख म्हणजे अंगात सदरा, कोपरी तर धोतर किंवा लंगोट वापरतात. डोक्याला पांढऱ्या रंगाचे फडके म्हणजे रुमाल बांधतात. तर स्त्रीया अंगात चोळी किंवा पोलके आणि गुडघ्यापर्यंत कंबरेला घट्ट नेसलेले लुगडे व मुली लेहंगा, परकर वापरतात. अलीकडे मात्र पुरुष शर्ट, पॅन्ट तसेच तरुण, तरुणींचा पोशाख अतिशय आधुनिक दिसून येतो. स्त्रिया नऊवारी साडी, लुगडे, सहावार गोल साडी नेसतात. तर तरुण, तरुणी सलवार कुर्ती, पंजाबी ड्रेस तसेच आधुनिक स्वरूपाच्या पोशाखात वावरताना दिसतात. पूर्वी फक्त लग्नकार्यात सणवारी विशेष पोशाख केला जात असे. हल्ली मात्र दररोज टापटीप पोशाखात वावरताना दिसतात. शाळकरी मुलांना शासनातर्फे मोफत गणवेश मिळू लागल्याने पोशाख पद्धतीत नाविन्यपूर्णता आढळून येते.
- **स्वच्छता व आरोग्य** - आदिवासी समाजात पूर्वी रोज अंधोळ करणे, नियमित केस कापणे, दाढी करणे या गोष्टी क्वचित करत. त्यामुळे अस्वच्छता, आजारपण या समस्या जाणवत. हल्ली मात्र टापटीप राहणी व स्वच्छतेच्या आरोग्यदायी सवयीमुळे आजारपणाचे प्रमाण कमी होताना दिसून येते.
- **दागिणे** - आदिवासी समाजात काचेचे मणी, रंगीत दगड यांच्या जागी तांब्या, पितळेचे, चांदीचे दागिणे वापरत. हातात बांगड्या, कडे, कानात/नाकात सोन्या चांदीचे कडे, रिंग घालतात. पायात तोडे, साखळ्या असे जुन्या बनावटीचे दागिणे असत. मात्र हल्ली जुन्या जाडजूड दागिण्याऐवजी नाजूक व सोन्या, चांदीचे दागिणे वापरताना दिसतात. काळ्या मण्याच्या माळेबरोबरच मंगळसूत्र वापरू लागले आहेत.
- **आदिवासी सामाजिक बदल -**
 - **जन्म**- बहुतेक आदिवासी समाजात बाळाचा जन्म घरीच होतो. बाळंतपण करण्यासाठी सुईण (दाई) नावाची जाणकार स्त्री बोलावण्यात येते. ती बाळाच्या जन्मानंतर बाळाची नाळ बांबूच्या धारदार पात्याने अथवा ब्लेडने कापते. बाळ व आई यांची पहिली पाच, सहा दिवस तीच काळजी घेते. तिला मोबदला म्हणून धान्य रूपाने तसेच हल्ली पैशाच्या रूपात मोबदला दिला जाई. पाचवी/छटी पूजन विधी तिच्या हातून होतो.³ हल्ली मात्र बदलत्या आरोग्य सुविधा तसेच सरकारी योजना यासारख्या बदलांमुळे सरकारी हॉस्पिटल किंवा खाजगी हॉस्पिटलमध्ये डॉक्टरांच्या देखरेखीखाली बाळंतपण करण्याकडे कल वाढत आहे.
 - **डाव देणे** - आदिवासीमध्ये सर्रासपणे डाव देण्याची प्रथा होती. पूर्वी डाव नाही असा आदिवासी असणे दुर्मिळ समजले जाई. दुखणाऱ्या भागावर तापवलेली तार अथवा सुईच्या साह्याने जानकार व्यक्ती डाव(भाजणे) देत असत. त्यामुळे पोटदुखी सारखे आजार निश्चितपणे बरे होतात किंवा होत नाहीत अशी आदिवासींची श्रद्धा असल्याने ही प्रथा होती. हल्ली मात्र बदलत्या आरोग्य सुविधामुळे डाव देण्याची प्रथा जवळजवळ बंद होण्याच्या मार्गावर आहे.
 - **विवाह** - आदिवासी समाजात पूर्वी बालवयात किंवा १२ ते १४ वर्ष वयोगटात लग्न करण्याची प्रथा होती. मात्र अलिकडे शासकीय ध्येय धोरण व शैक्षणिक प्रगतीचे वारे वाहू लागल्याने लग्नाचे वय कायदयानुसार ठरत आहे. पूर्वापार तीनचार दिवस व पारंपारिक पद्धतीने भगत, सवासीण यांच्यामार्फत लग्न लावत. पूर्वी पारंपारिक वाद्यांच्या संगतीत पारंपारिक जंगली वनस्पतींचा वापर करून पर्यावरणपूरक लंगमंडप पाहायला

मिळत असे. हल्ली मात्र याची जागा आधुनिक कापडी मंडप कचचित ठिकाणी पुरोहिताना आंमत्रित केले जाते. आधुनिक वाद्यांच्या वापरांकडे वाढता कल दिसतो.

- **कुपोषण** - पूर्वी आदिवासी समाजात अल्पवयात लग्न, पुरेशा पोषणा अभावी भूकबळी, कुपोषण यासारख्या समस्या मोठ्या प्रमाणात भेडसावत असत. हल्ली मात्र आश्रमशाळा, बालवाडी, अंगणवाडी, शालेयपोषण आहार यांमुळे कुपोषण व भूकबळी यांचे प्रमाण कमी होऊन सशक्त नवी आदिवासी पिढी तयार होताना दिसून येते.
- **समाज संघटन**- आदिवासी समाजात जमात पंचायत मार्फत समाज नियंत्रण होताना दिसून येते. यात घटस्फोट, घरगुती भांडणे, आदी बाबतीत न्यायदान केले जाते. अलिकडे विविध बाह्य संघटनांच्या मदतीने आदिवासी समाजात सांस्कृतिक, धार्मिक सुधारणा होताना दिसतात. आदिवासी संस्था सामुहिक विवाह लावणे जुन्या पद्धतीना फाटा देत नवीन पद्धतीने विवाहोपयोगी साहित्य देऊन विवाह लावताना दिसून येतात.
- **आदिवासी समाजातील सांस्कृतिक बदल-**
 - **राहणीमान**- आदिवासी समाजाची आपआपली स्वतंत्र वैशिष्ट्यपूर्ण सांस्कृतिक रचना आहे. समाजाची स्वतंत्र धर्मकल्पना, नितीकल्पना व नियमव्यवस्था असून त्या नियमांचे पालन संपूर्ण समाजाकडून काटकोरपणे केले जाते. असे असले तरी शिक्षण, रोजगार, व्यवसायानिमित्त झालेल्या स्थलांतरामुळे तसेच इतर सांस्कृतिक संपर्कामुळे बदलाचे वारे आदिवासी समाजात देखील वाहू लागल्याचे चित्र स्पष्ट नजरेत भरते. याचा परिणाम लग्नविधी, जन्म, मृत्यू प्रसंगी तसेच राहणीमान, पोशाख यांत बदल होताना दिसतात.
 - **विधीतील सांस्कृतिक बदल**- सुरुवातीच्या काळापासून आदिवासी समाज आपल्या जमातीबाहेर जाऊन लग्न करण्यास तसेच आपल्यापेक्षा कमी समजल्या जाणाऱ्या अन्य जमातीशी विवाहसंबंध जोडत नसत. अलिकडे मात्र समाजाबाहेरील असे रोटीबेटी विवाह होताना दिसत आहेत. हा सांस्कृतिक बदल दिसून येतो. शेजारील आदिवासी समाजाच्या मृत्यूविधी प्रसंगी अन्य भगतांना आमंत्रित करून विधी पूर्ण केले जातात. एकीकडे काही सुधारित समाजबांधवाकडून गृहप्रवेश, श्राद्ध अशा विधिना ब्राह्मण पद्धतीचे विधी केले जाऊ लागले आहेत. तर दुसरीकडे काही समाज बांधवाकडून मुद्दाम आपल्या पुरातन विधीचे जतन कले जात आहे. वारली समाजातील प्रसिद्ध तारपा वादक, धोडिया समाजातील तुरवादक, भगत यांची संख्या दिवसेंदिवस कमी होताना दिसते. पारंपारिक वाद्यांच्या जागा आज आधुनिक बँजो सारख्या वाद्यांनी घेतलेली दिसते. लग्नातील पारंपारिक ताडी या पेयाची जागा थंडा, दारू यांनी घेतली असून मटणाच्या जेवणाची जागा गोडधोड जेवणासह विविध पदार्थांची रेलचेल व बुफे पद्धतीने जेवणाकडे कल वाढत चालला आहे. धवलेरी गीताच्या जोडीला ब्राह्मण विधी करण्याकडे कल वाढत चालला आहे. तर काही सुशिक्षित कुटुंबांकडून देखील पारंपरिक प्रथा परंपरा जतन करण्याचा अटोकाट प्रयत्न नव्याने होताना दिसत आहे.
 - **वाङ्मयाचे जतन** - कोरोना काळात आदिवासी समाजाचे मौखिक वाङ्मय तरुण पिढीकडून विविध सोशल माध्यमांच्या मदतीने संवर्धन व जतन करण्याचे भरपूर प्रयत्न होताना दिसून आले. यात नृत्ये गीत, यांच्या माध्यमातून मौखिक वाङ्मय शब्दसंपत्ती जपण्यासाठी प्रयत्नशील असलेली नवी पिढी झटताना दिसून आली. त्यामुळे संस्कृतीचा विसर पडलेल्या नवीन पिढीला संस्कारांची व संस्कृतीची नव्याने ओळख होण्यास निश्चितच मदत होईल.
 - **वारली पेटिंग** - ही आदिवासी वारली समाजाची ओळख असलेली चित्रकला जगभर पसरली असून तिने जीवनाच्या सर्वांगांना स्पर्श करत आपल्या मूळ स्वरूपात बदल स्विकारलेले दिसतात. सुरुवातीला तांदळाचे

पीठ, गेरु यांनी कुडाच्या भिंतीवर पारंपारिक पद्धतीने रंगवली जाणारी वारली चित्रकला ऑइल पेंटने, भिंती, कॅनव्हास इतकेच नव्हे तर शरीरावरील टॅटू अशा नवविध रूपाने सिद्ध होताना दिसते. आधुनिकतेकडे झुकलेली ही पेटिंग कोरोना महामारी, रामायण कथा, शहरीकरण, स्त्रीभ्रूण हत्या, राष्ट्रीय उत्सव हे आधुनिक विषय घेऊन चितारली जाऊ लागली आहे.

▪ समारोप

परिवर्तन हा निसर्गाचा नियम आहे. आदिवासी माणूस देखील या नियमाला अपवाद असू शकत नाही. स्वाभाविकपणे परिवर्तनाच्या लाटेत आदिवासी माणूस भूतकाळ विसरून भविष्याकडे मोठ्या जोमाने मार्गक्रमण करू लागला आहे. आधुनिक काळातील डॉगर-दर्यांच्या आणि जंगलांच्या आश्रयाने वास्तव्यास असलेला आजचा आदिवासी बांधव त्याला अपवाद कसा असेल ? त्यानेही आता परिवर्तनाच्या वाटेवर मार्गक्रमण सुरू केले आहे. मात्र आदिवासी समाज, आपली भाषा, आपली संस्कृती, आपले साहित्य यातील वेगळेपण आणि आपली मूल्ये टिकवून ठेवण्यासाठी झटत आहे. ही अतिशय समाधानाची बाब आहे.

▪ निष्कर्ष-

- १) वाढत्या शहरीकरणाबरोबरच आदिवासी समाजाच्या पारंपारिक घरे, कपडे, अन्न या सामाजिक जीवनात कमालीचे बदल स्विकारलेले दिसतात.
- २) कुडाच्या घरांच्या जागी सिमेंट काँक्रीटची घरे व अत्याधुनिक पोशाख यांनी जागा घेतली आहे.
- ३) सण उत्सवाच्या पद्धती देखील हळूहळू बदलत जाताना दिसून येतात.
- ४) आदिवासी पुढारलेल्या समाजाच्या संपर्कात आल्याने व आर्थिक प्रगती झाल्यामुळे अत्याधुनिक पद्धतीने विधी पार पाडले जाऊ लागले आहेत.
- ५) एकंदरीत विविध सामाजिक, सांस्कृतिक बदलाचे वारे आदिवासी समाजात वाहू लागले आहेत.

संदर्भ ग्रंथ सूची-

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नयी शिक्षा नीति तथा आत्मनिर्भर भारत

शेळके जगदीश भाऊसाहेब

संशोधक विद्यार्थी इतिहास विभाग

डॉ. जोशी राधाकृष्ण लक्ष्मीकांत

एस के गांधी आर्ट्स कॉलेज

कडा ता.आष्टी जि.बीड

प्रस्तावना :

भारतीयता की महान विरासत से युक्त महात्मा गांधी के विजन से अनुप्राणीत डॉ. बाबासाहेब आंबेडकर के दिए संविधान के प्रति प्रतिबद्ध नई राष्ट्रीय शिक्षा नीति 2020 प्रधानमंत्री के आत्मनिर्भर भारत के स्वप्न को साकार करने की दिशा में एक ठोस कदम है। देर आए पर दुरुस्त आए इस नई राष्ट्रीय शिक्षा नीति में एक और जहाँ शिक्षा नीति (NEP) में एक और जहाँ शिक्षा व्यवस्था की वर्तमान खामीयों को दूर करने की प्रावधान है, तो दुसरी ओर 21 वीं सदी के बदलते हुए भारत की आंतरिक और वैश्विक चुनौतियों का सामना करने की तैयारी भी। एक अन्य परिवर्तन है की NEP 2020 की घोषणा साथ ही मानव विकास संसाधन प्रबंधन मंत्रालय का नाम बदलकर शिक्षा मंत्रालय कर दिया गया है। जो सर्वथा उचित है। जब की शिक्षा अभिधान मनुष्य के भौतिकवादी पहलू के साथ साथ सांस्कृतिक, चारीत्रीक और मनोवैज्ञानिक सभी पक्षों को समाहित करता है, जो भारतीय चिंतन पद्धती का प्रतिबिम्बन है। मानव संसाधन से ध्वनीत होता है की मानवीय भावो संस्कारों से रहीत इंसान जैसे एक भौतिक संसाधन मात्र हो, जो पश्चिम के भौतिकवादी चिन्तन से प्रेरित है। शिक्षा का अर्थ सिखने और सिखाने की प्रक्रिया से है। राष्ट्रीय शिक्षा नीति 2020 विशेष रूप से आत्मनिर्भर भारत के उद्देश्यों के साथ शिक्षा द्वारा ज्ञान एक कौशल में वृद्धीकर मनुष्य को योग्य एवं कुशल मनुष्य बनाने की पहल है। 1

भारत की नई शिक्षा नीति के जनक इसरो प्रमुख रह चुके डॉ. के. कस्तुरीरंगन की अध्यक्षता में तैयार किया गया है। राष्ट्रीय शिक्षा नीति NEP 2020 को प्रधानमंत्री की अध्यक्षता में केंद्रीय मंत्रीमंडल द्वारा मंजूरी मिलने पर इसे लागू कर दिया गया है। 2

उद्देश्य :-

नई राष्ट्रीय शिक्षा नीति पहुँच, समानता, गुणवत्ता, सामर्थ्य और जबाब देही के स्तंभों पर आधारित है। इस नीति का उद्देश एक ऐसी शिक्षा प्रणाली विकसित करना है जो सभी नागरीकों को उच्च गुणवत्ता वाली शिक्षा प्रदान करके और भारत को एक वैश्विक ज्ञान महाशक्ती के रूप में विकसित करके देश के परिवर्तन में सिधे योगदान दे। 3

नयी शिक्षा प्रणाली में आत्मनिर्भर भारत की संकल्पना :

शिक्षा का अर्थ सिखने और सिखाने की प्रक्रिया से है। राष्ट्रीय शिक्षा नीति 2020 विशेष रूप से आत्मनिर्भर भारत के उद्देश्यों के साथ शिक्षा द्वारा ज्ञान एवं कौशल में वृद्धी कर मनुष्य को योग्य एवं कुशल मनुष्य बनाने की पहल है। हमारे प्रधानमंत्री ने 2015 स्किल इंडिया मिशन की शुरुआत कर इसकी पहल की थी। जिसका उद्देश युवाओं का कौशल विकास कर उन्हें रोजगार का अवसर प्रदान करना था। इसी क्रम में उन्होंने आत्मनिर्भर भारत का ऐसा मंत्र दिया जिससे युवाओं के आत्मविश्वास को गती प्रदान कि। मूल्य आधारित शिक्षा, मातृभाषा में शिक्षा, शिक्षा कि स्वायत्तता और भारतीय ज्ञान प्रणाली को बढ़ावा देना ही वर्तमान समय की माँग है और इस दिशा में नई राष्ट्रीय शिक्षा नीति भगीरथ प्रयास करती हुई नजर आती है। इस इस

निती का मुख्य उद्देश एक छात्र को कुशल बनाने के साथ साथ उसी क्षेत्र में उसे प्रशिक्षित करना है जिस क्षेत्र में छात्र रुची रखता हो | इस प्रकार सिखने वाले अपने उद्देश और अपनी क्षमताओं का पता लगाने में सक्षम हो सकते हैं |

राष्ट्रीय शिक्षा निती 2020-21 वी की पहली शिक्षा निती है जिसका लक्ष हमारे देश का विकास के लिए महत्वपूर्ण तथा अनिवार्य आवश्यकताओं की पूर्ती करना है | भारत की परंपरा और सांस्कृतिक मूल्य का आधार लेते हुए 21 वी सदी की शिक्षा के लिए आकांक्षात्मक लक्ष्यों, जिनमें एसडीजी भी शामिल है, के संयोजन में शिक्षा सुधार व्यवस्था उसके नियमन और गवर्नेंस सहीत, सभी पक्षों के सुधार और पुनर्गठन का प्रस्ताव रखती है | राष्ट्रीय शिक्षा निती प्रत्येक व्यक्ति में निहित रचनात्मक क्षमताओं के विकास पर विशेष बल देती है | यह निती इस सिद्धांत पर आधारित है की शिक्षा से न केवल साक्षरता और संख्या ज्ञान जैसी बुनियादी क्षमताओं का विकास हो, अपितु उच्चतर स्तर कि तार्किक और समस्या समाधान संबंधी सज्ञानात्मक क्षमताओं का भी विकास होना चाहिए|

चूंकी 34 वर्ष के लंबे अंतराल के बाद देश में नई राष्ट्रीय शिक्षा निती लागू हुई है जिसका उद्देश नवोन्मेषी लोकतांत्रिक एवं विद्यार्थी केंद्रीत शिक्षा व्यवस्था को प्रमुखता देना है | ऐसे में शिक्षा निती के विभिन्न पहलुओंपर विमर्श की आवश्यकता है | सच्चे अर्थों में आज हमारे समाज को आत्मनिर्भर बनने की आवश्यकता है और यह रास्ता कही नई शिक्षा व्यवस्था में से होकर आगे बढ़ सकता है | वर्तमान समय में ज्ञान के परिदृश्य से पुरा विश्व तीव्र गती से परिवर्तन के दौर से गुजर रहा है | बीग डेटा, मशीन लर्निंग और आर्टिफिशियल इंटेलीजेंस जैसे क्षेत्रों में हो रहे अनेक वैज्ञानिक तकनीकी विकास के चलते एक और विश्वभर में अकुशल कामगारों के स्थान पर मशीने कार्य करने लगी है | दुसरी और डेटा सायन्स, कम्प्युटर सायन्स और गणित के क्षेत्रों में ऐसे कुशल कामगारों की आवश्यकता और माँग बढ़ रही है जो विज्ञान, सामाजिक विज्ञान और मानवों के विविध विषय में दक्ष हो |

जलवायु परिवर्तन, बढ़ते प्रदूषण और घटते प्राकृतिक संसाधनों के कारण हमें ऊर्जा, भोजन, पाणी, स्वच्छता आदी की आवश्यकताओं को पूरा करने के लिए नये आयामों पर विचार विमर्श करने की महती जरूरत है और इसी कारण जीव, विज्ञान, रसायन, विज्ञान, भौतिक विज्ञान के क्षेत्र में कुशल कामगार की आवश्यकता होगी | महामारी और महामारी के बढ़ते हुए संक्रमण, रोग प्रबंध और टिकों के विकास में सहयोगी अनुसंधान और परिणामी सामाजिक पहलू बहु विषयक अधिगम की आवश्यकता को बढ़ाते है | मानवी की और कला की माँग बढ़ेगी, क्योंकि भारत एक विकसीत देश बनने के साथ साथ दुनिया की तीन सबसे बड़ी अर्थव्यवस्था में से एक बनने के की ओर अग्रसर है | इसलिए रोजगार और वैश्विक परीस्थीती में तीव्र गती से आ रहे हे परिवर्तनो के कारण यह आवश्यक हो गया है कि छात्रों को जो कुछ नूतन परिदृश्य में सिखा जाये उसे तो वे सिखे ही साथ में वे सतत सिखते रहने की कला में भी निपुणता परिलक्षीत करे |

नई राष्ट्रीय शिक्षा निती से आत्मनिर्भर भारत की आस को मजबुती मीलती है | क्योंकि इस निती का एक अहम पहलू इसका बहु विषयक दृष्टिकोन है | जिसकी प्रासंगिकता इस बात पर केंद्रीत है कि छात्रों का सर्वांगीण विकास हो | जबकी पहले की शिक्षा प्रणाली मुल रूप से सिखने और परिणाम देणे पर केंद्रीत विद्यार्थीयों का आकलन प्राप्त अंको के आधार पर किया जाता था और विकास के लिये एकल दिशा वाला दृष्टिकोन था | प्रधानमंत्री के संकल्प आत्मनिर्भर भारत अभियान का स्वप्न है कि आगे आनेवाले काल में हर भारतीय को आत्मनिर्भर बनाना है और तभी संभव हो सकता है |

भारत देश जब अपना पुरातन गौरव पुनः हासिल कर लेगा | यह किसी से छिपा नहीं है की हमारी पुरातन परंपरा और मूल्य कितने उच्च कोटी के थे | कुटीर उद्योग और हस्तशिल्प कला की बदौलत एक समय हमारा डंका वैश्वीक परिदृश्य पर बजता था | ऐसे मे अंततोगत्वा हमे इस राष्ट्रीय शिक्षा नीती के तहत परिष्कृत होते हुए अपने मूल्यों को पुनः आत्मसात करने की आवश्यकता है | कुटीर उद्योगों की पुर्नस्थापना, हस्तशिल्प, कला तथा आयुर्वेदिक उत्पादो को बढ़ावा देना हमारी दिनचर्या का हिस्सा बनाना चाहिए | इससे होगा की हमारा ग्रामीण अंचल आत्मनिर्भरता की दिशा में आगे बढेगा और यही रास्ता है देश की समृद्धी का | जब लोकल फॉर वोकल की मुहीम को हम गती प्रदान करेंगे तो निश्चित ही एक दिन ग्लोबल विलेज का हिस्सा बनेंगे | प्रधानमंत्रीने जब खादी खरीदने का आग्रह किया है, तभी से खादी एवं हँडलुम की बीक्री देश में रिकॉर्ड स्तर पर पहुँच गई है और आप उसे ग्लोबल बनाने का कार्य, हम लोगो का है | आत्मनिर्भरता तथा वोकल फॉर लोकल दोनो मंत्र एक दुसरे से जुडे हुए है अनुरूप है जिसे शिक्षा निती के तहत युवाओं तक पहुँचना है | अपितू जब विभीन्न क्षेत्रों के लोग एक मंच पर होंगे फिर शिक्षा किस तरीके से दी जाए और कैसे दी जाए जो आत्मनिर्भर भारत का खाका खींच सके | यह निर्णय लेने मे आसानी होगी |₄

संदर्भ :

- 1) www.google.com नयी शिक्षा निती तथा आत्मनिर्भर भारत 02/01/2024
12.20 p.m.
- 2)) www.google.com नयी शिक्षा निती तथा आत्मनिर्भर भारत 02/01/2024
03.00 p.m.
- 3) www.google.com नई शिक्षा प्रणाली और आत्मनिर्भर भारत की संकल्पना
03/01/2024 11.00 A.M.
- 4) www.google.com नई शिक्षा प्रणाली और आत्मनिर्भर भारत की संकल्पना
04/01/2024 2.00 P.M.

नयी शिक्षा नीति तथा आत्मनिर्भर भारत

प्रा. डॉ. गुलाबराव विठोबा मंडलिक

हिन्दी विभाग,

आनंदराव धोंडे ऊर्फ बाबाजी महाविद्यालय, कडा

ता. आष्टी जि. बीड महाराष्ट्र ४१४ २०२

गुरु की महिमा अपरंपार है। जब बात गुरु की होगी, तब बात शिक्षा की होगी और जब बात शिक्षा की होगी तब बात आज के विशेष संदर्भ में नयी शिक्षा नीति की भी होगी। नयी शिक्षा नीति २०२० भारत सरकार द्वारा लांच की गई जिसे इसरो के प्रमुख डॉ. कस्तूरीरंगन की अध्यक्षता में तैयार किया गया। १९६८ और १९९२ में जारी की गई शिक्षा नीति के बाद यह तीसरी राष्ट्रीय शिक्षा नीति है जो २०२० में लागू की गयी। राष्ट्रीय शिक्षा नीति २०२० सतत विकास के एजेंडा २०३० के अनुकूल है जो २१ वीं सदी की जरूरत के अनुसार शिक्षा को अधिक समग्र और लचीला बनाते हुए भारत को ज्ञान आधारित वैश्विक महाशक्ति के रूप में विराजित करने में कारगर साबित होगी।

शिक्षा ही एक ऐसा सशक्त माध्यम है जिसमें कोई भी समाज वर्ग, राष्ट्र सकारात्मक दिशा में अग्रसित होकर परिवर्तन लाकर भविष्य की समृद्धशाली संकल्पना को साकार कर सकता है और इसके विपरीत समर्थ शिक्षा के अभाव में अवनिती के ग्रत में जा सकता है। शिक्षा के द्वारा ही रहन-सहन, सकारात्मक सोच व मानवीय नैतिकता को पीढ़ी दर पीढ़ी पहुँचा सकते हैं। जो कि आगे चल कर, यही पीढ़ियाँ ही राष्ट्र की दिशा तय करती है। अर्थात् प्रदान की जाने वाले शिक्षा संग्रता, सर्वांगीणता और संस्कार युक्त होनी चाहिए न कि किसी निश्चित दायरे में सिमटी संकुचित आधुनिक समय में सामाजिक, राजनैतिक, वैचारिक परिवर्तन होने तो स्वाभाविक है। परन्तु आने वाली पीढ़ियों को एक सकारात्मक राह दिखाना शोधार्थी का प्रमुख दायित्व है।

सकारात्मक परिवर्तन एक ऐसा परिवर्तन है जो मानव, प्रकृति और पर्यावरण के वर्तमान एवं भविष्य के लिए सार्थक के साथ-साथ तीनों में सांमजस्य स्थापित करने में समर्थ हो । परिवर्तन तो आवश्यभावी है सिर्फ परिवर्तन हो जाना ही पर्याप्त नहीं है परन्तु परिवर्तन के साथ-साथ हमारी मानवता, नैतिकता और भौतिकता समग्र के रूप में अग्रसित होनी चाहिए।

नयी राष्ट्रीय शिक्षा नीति से आत्मनिर्भर भारत की आस को मजबूती मिलती है। क्योंकि, इस नीति का एक अहम पहलू इसका बहु विषयक दृष्टिकोण है। जिसकी प्रासंगिकता इस बात पर केन्द्रित है कि छात्रों का सर्वांगीण विकास हो। जबकि पहले की शिक्षा प्रणाली मूल रूप से सीखने और परिणाम देने पर केन्द्रित थी।

युवा किसी भी देश का भविष्य होते हैं उस देश की भावी पीढ़ी, इनकी शिक्षा ही इनके व्यक्तित्व, सोच, क्षमता को प्रभावित और निर्धारित करती है। नयी शिक्षा नीति २०२० का उद्देश्य देश दोनों ही क्षेत्रों का बड़े स्तर पर रूपांतरण करना जिसे समानता, आसान पहुँच, गुणवत्ता और जवाबदेही जैसे आधार स्तंभों से निर्मित किया गया है। भारत में शिक्षा का सार्वभौमीकरण कर शिक्षा की गुणवत्ता को उच्च किया जाना ही इसका मुख्य उद्देश्य है। बच्चों को तकनीकी तथा रचनात्मक शिक्षा के साथ-साथ शिक्षा के महत्व को समझाना और भविष्य के लिए पूर्ण रूप से तैयार कर उनके अंदर सशक्तिकरण व मनोबल प्रतिष्ठित करना है। नयी शिक्षा नीति २०२० के अंतर्गत यह तो ज्ञात

हो गया है कि हमारी शिक्षा व्यवस्था क्या सोचना है पर फोकस थी, जबकि नयी शिक्षा नीति २०२० हमें कैसे सोचें पर अपनी मानसिकता को बढ़ाने पर जोर देगी। भविष्य में हम कितना आगे बढ़ जाएंगे, कितनी उंचाई प्राप्त करेंगे इस बात पर निर्भर करता है कि वर्तमान में युवाओं को कैसी शिक्षा दी और यह कहने में कोई अतिशयोक्ति नहीं होगी कि भारत की नयी - शिक्षा नीति राष्ट्र निर्माण के महायज्ञ में एक बड़े फैक्टर्स के रूप में कार्य करेगी।

आधुनिक आत्मनिर्भर भारत :-

शिक्षा का कार्य व्यक्ति की आवश्यकता की पूर्ति करने के अतिरिक्त उसे समाज के अन्य व्यक्तियों के साथ सामाजिक सम्बन्ध स्थापित करने में मदद देना तथा ऐसे अवसर प्रदान करना है जिससे कि वह उन्नति कर सके।

आत्मनिर्भरता की संकल्पना हमारे देश में कोई नयी बात नहीं है यह तो गांधीजी की जीवन दृष्टि का सार तत्व रहा है। कोरोना महामारी के संकट ने विश्व पटल पर आत्मनिर्भरता को ध्यान बिंदु के रूप में पुनः हमारे समक्ष खड़ा कर दिया है। और यह पूर्णतः कारगर हुआ है नयी शिक्षा नीति २०२० में जिसके अंतर्गत व्यवसायिक शिक्षा, कौशल शिक्षा, हस्तकला, लोक विद्या, विद्यार्थियों के चरित्र निर्माण एवं व्यक्तित्व के विकास में बल देने की बात कही गई जो आत्मनिर्भरता की ओर बढ़ने का कदम है।

हम दशकों से देखते आ रहे हैं अच्छी पढाई के लिए विद्यार्थी विदेश जाते रहे परंतु नयी शिक्षा नीति २०२० एक ऐसा प्लेटफार्म लाई जिसमें विदेश से विद्यार्थी भारत आने की चाह रखेंगे, इसके लिए एक कदम दुनिया से आगे रखना पड़ेगा। हेल्थ, डिफेंस, इंफ्रास्ट्रक्चर, टेक्नोलॉजी हो जो देश को हर दिशा में समर्थ और आत्मनिर्भर बनाती हो।

'STARS' योजना आत्मनिर्भर भारत का ही एक हिस्सा है जिसमें पीएम विद्या, शैक्षणिक ढांचा, फाउंडेशन लिटरेसी एण्ड न्यूमेरसी मिशन आदि को शामिल किया गया है। साठ के दशक से हर शिक्षा नीति में सरकार स्किल डेवलपमेंट, वोकेशनल एजुकेशन, हस्तशिल्प को बढ़ावा देने की बात कहती है जो कुछ पायदान तक सफल रही परंतु नयी शिक्षा नीति २०२० के तहत शिक्षा स्तर को व्यावसायिक कौशल से जोड़ दिया गया है जिससे गांव-गांव, शहर आत्मनिर्भर बनने में जुट जाएं। इंजीनियरिंग से लेकर स्टार्टअप सभी स्तर पर स्कॉलरशिप की योजनाए देकर, वोकल फॉर लोकल, मेक इन इंडिया, आत्मनिर्भर भारत के स्वप्न को पूर्ण किया जा रहा है जिसका सबसे बड़ा अस्त्र नयी शिक्षा नीति २०२० रही।

नयी शिक्षा प्रणाली और आत्मनिर्भर भारत की संकल्पना :-

शिक्षा का अर्थ सीखने और सिखाने की प्रक्रिया से है। राष्ट्रीय शिक्षा नीति - २०२० विशेष रूप से आत्मनिर्भर भारत के उद्देश्यों के साथ शिक्षा द्वारा ज्ञान एवं कौशल में वृद्धि कर मनुष्य को योग्य एवं कुशल मनुष्य बनाने की पहल है। २०१५ में स्किल इंडिया मिशन की शुरुआत कर इसकी पहल की थी। जिसका उद्देश्य युवाओं का कौशल विकास कर उन्हें रोजगार के अवसर प्रदान करना था। इसी क्रम में उन्होंने आत्मनिर्भर भारत का ऐसा मंत्र दिया जिसने युवाओं के आत्मविश्वास को गति प्रदान की। मूल्य आधारित शिक्षाए मातृभाषा में शिक्षा, शिक्षा की स्वायत्तता और भारतीय ज्ञान प्रणाली को बढ़ावा देना ही वर्तमान समय की मांग है और इस दिशा में नयी राष्ट्रीय शिक्षा नीति भगीरथ प्रयास करती हुई नजर आती है। इस नीति का मुख्य उद्देश्य एक छात्र को कुशल बनाने के साथ-साथ उसी क्षेत्र में उसे प्रशिक्षित करना है जिस क्षेत्र में छात्र रुचि रखता हो। इस प्रकार सीखने वाले अपने उद्देश्य और अपनी क्षमताओं का पता लगाने में सक्षम हो सकते हैं।

ज्ञान के क्षेत्र में महाशक्ति :-

देखा जाए तो समग्र शिक्षा के लिए लंबे समय से चली आ रही आवश्यकता को स्वीकार करते हुए नयी शिक्षा नीति शिक्षा के सार्वभौमिकरण और व्यावसायिक अध्ययन के अवसर प्रदान करने पर ध्यान केंद्रित करती है। जहां पहले शिक्षा का फोकस - लोगों को साक्षर बनाना और उन्हें सुरक्षित नौकरियां दिलाने में मदद करना था, वहीं नयी नीति गुणवत्ता, नवाचार और अनुसंधान पर आधारित है, जिसका उद्देश्य भारत को ज्ञान के क्षेत्र में महाशक्ति बनाना है।

निष्कर्ष :-

नयी शिक्षा नीति २०२० पारंपरिक शिक्षा से एक आदर्श बदलाव, शिक्षा को बदलने, छात्रों और शिक्षकों को सशक्त बनाने, २१वीं सदी के भारत की आकांक्षाओं के अनुरूप एक शिक्षा प्रणाली को बढावा देने के लिए एक मार्गदर्शक दर्शन के रूप में हैं। नयी शिक्षा नीति २०२० महज एक सर्कुलर नहीं, बल्कि भारत के वर्तमान और भविष्य को बनाने के लिए एक महायज्ञ जिसमें हम सभी भारतवासियों को योगदान देना है।

अनुसंधान की संस्कृति को प्रोत्साहन देने के लिए एक नए राष्ट्रीय अनुसंधान फाउंडेशन का गठन ठोस प्रमाण है कि भारत संपूर्ण पीढ़ी को सक्षम बनाने की दिशा में काम करेगा जो देश को सही मायने में - आत्मनिर्भर बनाने में सहायक साबित होगा। राष्ट्रीय शैक्षिक नीति सामर्थ्य, गुणवत्ता और जवाबदेही के आधारभूत स्तंभों पर आधारित है। बोर्ड परीक्षाओं और स्नातक पाठ्यक्रमों के मूल्यांकन, समीक्षा और विश्लेषण के लिए नयी मूल्यांकन प्रणालियों का इस्तेमाल किया जाएगा। वर्तमान शिक्षा प्रणाली में नौकरी प्राप्त करने की दिशा में ही अधिकतम जोर दिया जाता है, इसमें छात्र के बहुआयामी विकास के साथ चरित्र निर्माण पर भी जोर दिया जाएगा।

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वैश्वीकरण और हिन्दी

प्रो. महमूद पटेल

अध्यक्ष एवं शोध निदेशक

हिन्दी विभाग, आनंदराव धोंडे ऊर्फ बाबाजी महाविद्यालय, कडा, बीड, महाराष्ट्र.

वैश्वीकरण अर्थात् संपूर्ण विश्व में स्थित मनुष्य जाति का अपने क्षेत्र, जाति, धर्म, संस्कृति तथा राष्ट्र के सीमित दायरे से निकलकर 'विश्वमानव' के रूप में विस्तार। वैश्वीकरण को 'विश्ववाद' भी कहा जा सकता है। भारतीय संस्कृति में 'वसुवैध कुटुंबकम' को एक आदर्श माना गया था। जिसके कारण राष्ट्रीयता से बढ़कर अंतरराष्ट्रीयता को बल मिल रहा है। आज विविध भेदों को त्यागकर मनुष्य परस्पर बंधुभाव रखकर उन्नति कर रहा है, जिसके कारण विश्व के कोने में घटित छोटी सी घटना का असर भी दुसरे कोने में बैठे व्यक्ति, समाज या राष्ट्रपर होता है। अर्थात् मानवता का विस्तार ही वैश्वीकता है। इस प्रक्रिया में देश एक दुसरेपर निर्भर हो जाते हैं। और लोगों के बीच की दुरियाँ घट जाती हैं।

आज 'वैश्वीकरण' हमें भले ही आकर्षित कर रहा है, किन्तु यह उसका यथार्थरूप नहीं है। वैश्वीकरण नवपूँजीवाद का ही नामकरण है। जिसे आर्थिक उदारीकरण या नीजिकरण भी कह सकते हैं। वर्तमान संदर्भ में वैश्वीकरण का अर्थ व्यापक तौर पर बाजारीकरण ही है। यह एक आर्थिक प्रक्रिया भी है, जिसके अभाव में इक्कीसवीं सदी में मनुष्य जाति का कल्याण असंभव है। मुक्त बाजार की अर्थव्यवस्था के कारण ही अमेरिका जैसे देश संपन्न हो चूके हैं और अन्य देशों में संपन्न होने की होड़-सी लगी है। इस प्रकार वैश्वीकरण को 'बाजारीकरण' के ही रूप में देखा जा रहा है। आज वैश्वीकरण पश्चिमी देशों विशेषकर अमेरिका के आर्थिक साम्राज्यीकरण की नीति है।

वैश्वीकरण भारत के लिए एक सांस्कृतिक आक्रमण भी है। विश्वबाजार के साथ एक नयी उपभोक्ता संस्कृति का प्रचार-प्रसार बड़ी तीव्र गति से हो रहा है। जिसका सीधा प्रभाव अपने देश की संस्कृति, समाज, भाषा आदिपर देखा जा सकता है। वैश्वीकरण का सबसे बड़ा खतरा भारतीय संस्कृति को है। पहले आधुनिकता के नामपर भारतीय संस्कृति का पाश्चात्यीकरण हुआ, अब वैश्वीकरण के नामपर अमेरिका की उपभोक्तावादी संस्कृति से संस्कारित एक नयी सभ्यता का विकास देखा जा रहा है। वैश्वीकरण की असलियत स्पष्ट करते हुए डॉ. लोकेशचंद्र लिखते हैं, "वैश्वीकरण का अर्थ विश्वविजय है। इसके लिए मनुष्य जाति की आर्थिक लिप्सा और विलासिता की मोहमाया का उपभोक्तावाद, उदारीकरण और फैशन की लुभावनी नग्नता, उपयोगिता और उदारता के आकर्षक शब्दों से भडकाया जा रहा है।"

वैश्विकता के इस दौर में भाषा की भूमिका महत्वपूर्ण है। भारत विश्व का सबसे बड़ा बाजार का देश है, और इस बाजार की माध्यम भाषा हिन्दी है। वैश्वीकरण के इस नाटकीय दौर में जहाँ तक हिन्दी भाषा के प्रयोग का सवाल है, वहाँ तक हिन्दी के भविष्य को भी देखना जरूरी होता है।

वैश्वीकरण के दौर में आज हिन्दी भाषा बाजार और व्यापार की भाषा बन गई है। कोई भी बड़ी विदेशी कंपनी हिन्दी जाने बिना मध्य एशिया में व्यापार नहीं कर सकती। आज अपने माल के प्रचार-प्रसार, पैकिंग, गुणवत्ता कंपनियों की विवशता है तथा उनकी विवशता हिन्दी की शक्ति और सामर्थ्य की परिचायक है। मल्टीमीडिया के इस्तेमाल के लिए, अविष्कार के अनुरूप, विज्ञापन, एस. एम. एस., कप्युटिंग सॉफ्टवेयर आदि के

अनुरूप हिन्दी भाषा में यह परिवर्तन उनके लिए कितना उचित और अनुचित है, क्योंकि 'भूमंडलिकरण तो वह बिजली है, जिसमें आपका घर रौशन भी हो सकता और आपके घर में आग भी लग सकती है।'

विश्व में हिन्दी का प्रयोग करनेवालों की संख्या चीनी से अधिक है। हिन्दी आज करोड़ों लोगों की भाषा है। प्रो. हरमहेंद्र बेदी के अनुसार 'वैश्वीकरण के इस दौर में हिन्दी बहुत बड़ी भूमिका निभाने जाने रही है। यह भूमिका सार्क देशों की एकमात्र भाषा बनकर उभरने में छुपी हुई है। सार्क देश अगर किसी एक भाषापर भविष्य में निर्भर कर सकते हैं, तो वह हिन्दी ही होगी। क्योंकि बांग्लादेश, भूटान, नेपाल, श्रीलंका, पाकिस्तान इस भाषा को सहज ही अपना सकते हैं।' प्रवासी भारतीय भी हिन्दी भाषा के प्रचार-प्रसार में योगदान दे रहे हैं। फिजी, सूरीनाम, गियाना, मॉरिशस, त्रिनिदाद जैसे देशों में भी हिन्दी का प्रयोग किया जा रहा है। विश्व में शायद ही कोई ऐसा देश हो, जहाँ पर प्रवासी भारतीय और हिन्दी भाषा विद्यमान न हो।

आज विश्व के लगभग 150 विश्वविद्यालयों में तथा सैकड़ों केंद्रों में शोध तथा अध्ययन-अध्यापन की व्यवस्था हुई है। साहित्य की दृष्टि से देखा जाए तो 'कविता, कहानी, नाटक, संस्मरण एवं ज्ञान-विज्ञान की सबसे जादा किताबें हिन्दी भाषा में ही छपती हैं। आज हिन्दी भाषा एवं साहित्य की गरिमा को आलोकित करने के लिए 500 पत्र-पत्रिकाएँ छप रही हैं। विभिन्न विषयों पर हिन्दी में हररोज 20 किताबें छपकर बाजार में आ जाती हैं। दुनिया का कोई ऐसा विषय नहीं, जिसपर हिन्दी भाषा में दो-चार मानक पुस्तके उपलब्ध न हो।' तुलसीदासजी के 'रामचरितमानस' की सारी दुनिया में करोड़ों प्रतियाँ बिक चुकी, उतनी हेरी पॉटर की नहीं बिकी है। अगर चीन, जापान, रूस, फ्रान्स, इटली, अमेरिका आदि देश अपनी भाषा में ज्ञान-विज्ञान की शिक्षा प्राप्त कर सकते हैं, तो हम भी अपनी भाषा में ही शिक्षा प्राप्त कर सकते हैं। लेकिन उसके लिए उदारवादी दृष्टिकोण को अपनाकर क्लिष्ट शब्दावली के त्यागने की आवश्यकता है।

हिंदी का आंतरराष्ट्रीय विकास बीसवीं शती के आखिर में तीव्र गती से हुआ है। वेब, विज्ञान, सिनेमा और बाजार के क्षेत्र में हिन्दी की मांग अन्य भाषाओं की तुलना में तेजी से बढ़ी है। सूचनाक्रांति का सीधा सम्बन्ध कंप्यूटर से जुड़ा है। आज हिन्दी में 'वर्डप्रेस', 'पेब्ल', 'इंडिकजमुला', 'आइजूमल', 'स्कटल' आदि सॉफ्टवेयर मौजूद हैं। आज हिन्दी में कंप्यूटर के क्षेत्र में अंग्रेजी का वर्चस्व भंग कर दिया है। आज संसार में कंप्यूटर टायपिंग के सर्वाधिक फॉन्ट हिन्दी में ही हैं। हिन्दी पोर्टल, ई-पत्र, ई-वार्ता, बहुभाषिय ई-मेल सेवा, हिन्दी सर्च इंजन आदि 'वेब' दुनिया में प्रवेश कर चुके हैं। अब तो मोबाईल में भी एस.एम.एस. हिन्दी में किये जाते हैं।

अगर सिनेमा जगत और दूरदर्शन की बात की जाय तो दूरदर्शन का जन्म ही अंग्रेजी कार्यक्रमों के साथ हुआ था, किन्तु अंग्रेजी कार्यक्रमों के साथ दूरदर्शन अपना सालगिरह भी नहीं मना सका। देखते ही देखते तीन चौथाई कार्यक्रम हिन्दी में बदल गये। उपभोक्ता संस्कृति का सृजन विज्ञापन के माध्यम से होता है और विज्ञापन संस्कृति संचार-माध्यम का परिणाम है। आज टिवी चैनलों एवं मनोरंजन की दुनिया में हिन्दी सर्वाधिक मुनाफे की भाषा है। कुछ विज्ञापनों का लगभग 75 प्रतिशत हिन्दी माध्यम है। दर्शक या श्रोता पहले विज्ञापन की भाषा से ही आकर्षित होता है। जिसे भाषा के प्रति, आकृष्ट होना भी कह सकते हैं। अतः कहा जा सकता है कि आज मिडिया और संचार जगत में हिन्दी का बाजारभाव सर्वाच्चतापर है। "आज भी एक अभिनेता जीता भले ही अंग्रेजी में लेकिन उसकी रोटी, हिन्दी ही चलाती है। एक राजनेता गाता भले ही अंग्रेजी की लेकिन उसको 'वोट' हिन्दी ही दिलाती है।"

भाषा संस्कृति की संवाहिका होती है। अतः हिन्दी ही भारतीय संस्कृति से परिचित करा सकती है। क्योंकि 'हिन्दी केवल भाषाही नहीं, वह संस्कृति एवं धर्म की भी सवाहक है।' भारतीय उपमहाद्वीप में हिन्दी भाषाने ही सबसे अधिक लोगों को प्रभावित किया है। हिन्दी के माध्यम से ही भारत की छवि शताब्दियों से बरकरार है। एशिया के देशों की ज्यादातर जानकारियाँ संस्कृत, हिन्दी एवं अन्य भारतीय भाषाओं में सुरक्षित हैं। इस दृष्टि से एशिया के भूभाग की सबसे बड़ी जबान हिन्दी ही है। किसी भी संस्कृति को पाने के लिए उसकी भाषा के रास्ते से ही पहुंचा जा सकता है।

चाहे किसी भी भाषा का विकास व्याकरण के नियमों में बंधकर नहीं हो पाता। उसका विकास जनता और बाजार में होता है। हरिशंकर परसाईजी के शब्दों में "भाषा वह होती है। जिसे लोग बोलते हैं। भाषा वह होती है जो विश्वविद्यालय और हिन्दी के दर्जनो संस्थाएँ बनाती हैं।" महत्वपूर्ण बात तो यह है कि, आज हमने विज्ञान के पारिभाषिक और तकनीकी पदों का अनुवाद तो कर लिया किन्तु उसकी क्लिष्टता बढ़ गयी अतः हमें अनुवाद में हिन्दी की सहजता का ध्यान रखना होगा।

समय और समाज की आवश्यकता के अनुसार आज हिन्दी के स्थानपर इंग्लिश की प्रधानता बढ़ रही है। जो हमारे वाचन-लेखन में स्पष्ट दिखाई पड़ती है। समाचार पत्र के होर्डिंग देखिए 'प्लानिंग से खोले जॉब के द्वार', 'अच्छा पेंकेज भरपूर रिस्पैक्ट', 'एज्युकेशन में एंट्री के लिए जरूरी कोर्स', 'पढे, पढाएँ लाईफ बनाये।' आदि हिन्दी को इन नये आक्रमणों से बचाने के लिए नयी क्रान्ति करनी होगी और हमें नए सिरे से खड़ा होना होगा। यदि हम सुविधाभोगी बने रहेंगे, तो हमारी हिन्दी नहीं रहेंगी।

आज के वैश्वीकरण के युग में हिन्दी की मात्र वर्तनी, उसका वाक्य-विन्यास और उसका व्याकरण ही प्रभावित नहीं हुआ है, बल्कि उसकी लिपि देवनागरी भी प्रभाव से अछुती नहीं है। इलेक्ट्रॉनिक माध्यमों में हिन्दी का रोमन लिपि में जाना एक संकट अवश्य है, किन्तु आवश्यकता यह भी है कि हम हिन्दी को फैलने दे, पसरने दे। क्योंकि जो भाषाएँ समय के साथ परिवर्तनशील नहीं होती, वे समाप्ति को कगारपर होती हैं। आज हिन्दी भाषा सुचना उपकरणों की भाषा बनकर जनसंचार माध्यमों के द्वारा अपने चहुँमुखी विकास की ओर अग्रेसर है। आधुनिक कहे जानेवाली वर्तमान परिवेश में हिन्दी भाषा का जो परिवर्तित रूप हमारे सामने है, इसे विद्वान अलग-अलग नाम दे रहे हैं। विद्वान इसे नई हिन्दी, इंग्लिश, अच्छी हिन्दी, मिश्रित भाषा और खिचडी भाषा की संज्ञा दे रहे हैं। 'जैसे - 'यही है राईट चॉइस बेबी', 'इंडिया के ऑल टाईम ग्रेट स्टार', 'अचानक लॉन में बैठ-बैठे लेखक के माइंड में एक कहानी का आयडिया आया' आदि वाक्य इंग्लिश के हैं। किन्तु भाषा में परिवर्तन सकारात्मक हो या नकारात्मक, भाषा विज्ञानियों की दृष्टि में यह भाषा का विकास है, अन्य विदेशी भाषाओं के शब्दों को ग्रहण कराके ही हिन्दी वैश्विक भाषा बन सकती है।

निष्कर्षतः कहा कहा जा सकता है कि वैश्वीकरण के युग में आज संपूर्ण विश्व ही एक बाजार के रूप में बदल गया है। इस विश्वबाजार में हिन्दी भी बाजार की भाषा बन गई है। यह ठीक है कि वर्तमान की जरूरत के अनुरूप हिन्दी को बनाने-सँवरने की आवश्यकता है। क्लिष्ट शब्दावली का त्याग आवश्यक है, लेकिन अंग्रेजी या अन्य भाषाओं के अपरिचित शब्दों का अंधानुकरण आवश्यक नहीं। हम सब का उद्देश्य हिन्दी को मानक भाषा के रूप में स्थापित करना होगा। साथ ही हम यह भी ध्यान में रखें कि हमारा बच्चा तथा छात्र 87 (एटीसेवन) के साथ 'सतासी' भी अवश्य जाने। हमें यह भी सोचना चाहिए की शिक्षा प्राप्ति के लिए भाषा के साथ-साथ ज्ञान बोध भी महत्वपूर्ण है।

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संगीत विषयात होणारे बदल आणि साहित्य

सहा.प्रा.राहुल सोनवणे

संगीत विभाग

नवगण कला व वाणिज्य महाविद्यालय,परळी.वै

प्रस्तावना:- बदल हा विश्वातील शास्वत नियम आहे. विश्वातील प्रत्येक विषयामध्ये अपनास बदल दिसून येतो. मग तो बदल मोबाईलचा आसो की टी.व्ही चा असो की गाडीचा आसो. त्याच पध्दतीने संगीतातील काळानुरूप वाद्यातील बदल गायकीतील बदल, हा आपणास दिसून येतो.

धार्मिक दृष्टीकोनातून संगीताचे निर्माण हे वेदाचे निर्माता ब्राह्मजीने केले. ब्रम्हाने ही कला शिव यांना दिली, शिवाने सरस्वतीस तर सरस्वतीने नारदमुनीस तसेच त्यांनी, गंधर्व किन्नर, अप्सरास संगीतचे शिक्षण दिले.

ऐतिहासिक दृष्टीने संगीताचे निर्माण हे वेदामधून झाले आहे. तसेच ओम शब्द वेदांचा ब्रिज मंत्र आहे. काळानुरूप संगीत विषयातील बदल आम्हास दिसून येतात.

आमच्या प्राचीन संगीत तज्ञाने भारतीय संगीताचे अस्तित्व हे मार्गी संगीत व देशी संगीताच्या माध्यमातून दिसून येते. साहित्यातील असो की सांगतीक परिवर्तन हे व्यक्तीस सुखकारकतेचा भाग दिसून येतो. मानव हा इतर विषयापेक्षा कलेवर जास्त प्रेम केलेला दिसून येतो.

भारतीय संगीतामध्ये आम्हास निश्चित काळानुरूप परिवर्तन झालेले दिसून येते. बुजुर्ग पंडितांनी अतिशय सुक्ष्मतेने बदल घडवत घडवत एक समक्ष व प्राबल्य संगीत साहित्य आम्हास दिसून येते.

संगीत साहित्यामध्ये पं.भरतमुनी ,पं.अहोबल, पं. व्यकरमखी, पं. भातखंडे तसेच, पं. विष्णू दिगंबर पलुस्कर यांचे मोलाचे योगदान दिसून. तसेच बंगालचे रविंद्र संगीताची विशेषता दिसून येते. कर्नाटक संगीत पध्दतीस दक्षिण संगीत पध्दती म्हटले जाते. कर्नाटक संगीताचा आधार ग्रंथ शारंगदेव रचित 'संगीत रत्नाकर' होय.

भारतीय संगीताज्ञाने अभ्यासपूर्वक व प्रॅक्टिकल संगीतातील बदल व आयडीयल सांगतीक साहित्याची निर्मिती ही परिवर्तनाची व आधुनिकतेची घातलेली सांगड आहे.

भारतीय संगीताचा ढाचा कायम ठेऊन त्यामध्ये विस्तार करणे वेगळे पण वेगवेगळी बदल करण्याच्या पाठीमागे लागलेले साहित्यीक तज्ञांकडून 'संगीतास' धोका होण्याची दाट शक्यता दिसून येते.

आज वर्तमान काळामध्ये संगीतामध्ये अनेक बदल झालेले दिसून येतात. प्रदुषण झालेले दिसून येते. याचे महत्त्वाचे कारण असे आहे की, भारतीय संगीतावर पडलेला पाश्चात्य संस्कृतीचा प्रभाव दिसून येतो.

आज आपण मुळ सांगतीक साहित्यापासून दूर दूर चाललेलो दिसून येते. माझे गुरुवर्य पं. शांतारामजी चिगरी गुरुजी सांगतात की 'शास्त्राला थकवा शास्त्राला धोक्यात आनुनका शास्त्राला थकवणे म्हणजे मुळ साहित्य, मुळ संगीतास धक्का न लावता त्यामध्ये विस्तृतपणा करणे हाच सांगतीक क्षेत्रातील मुळ विचार आम्हास दिसून येते.

संशोधन पद्धती - सदरील संशोधन लेखासाठी विश्लेषणात्मक व निरीक्षणात्मक पध्दतीचा अवलंब करण्यात येणार आहे. ग्रंथालयीन अध्ययनाच्या आधारे संशोधन लेखनाची मांडणी करावयाची आहे.

विषयाची उद्दिष्ट्ये -

1 भारतीय संगीतामध्ये निर्माण होणाऱ्या परिवर्तनाचा आढावा घेणे.

2- वर्तमान काळात संगीतामध्ये होणारे बदले.

भारतीय संगीत पध्दती- भारतीय संगीतामध्ये आनंत काळापासून दोन सांगतीक प्रवाह दिसून येतात.

1- शास्त्रीय गायन

2- सुगम गायन

शास्त्रीय संगीत हे अतिशय नियमबद्ध व तंतोतंत गायकी असत. नियमाचे पालन करून गायने वाजवले जाणारे संगीत म्हणजे शास्त्रीय तर सुगम संगीत हे परिवर्तनशील दिसून येते. ते कानास ऐकण्यास हलके फुलके असते. सामान्य श्रोता सुध्दा ही गायकी ऐकू शकतो. भावगीत, भक्तीगीत, गजल, फिल्म साॅगचा प्रयोग केला जातो.

भारतीय संगीताची वर्तमान स्थिती:-

भारतीय संगीत हे संविदनशिल आहे. सुगम संगीतामध्ये शब्दास न्याय देण्याचे काम संगीततज्ञ करत असतात.आज आज वर्तमान काळामध्ये प्रत्येक कलावंत नवनिर्मितीच्या शोधात चालत आहे. शास्त्रीय संगीत व सुगम संगीतामध्ये हे प्रयोग सर्रास चाललेले दिसून येतात. भारतीय संगीतावर पाश्चात्य संगीताचा प्रभाव जास्त प्रमाणात दिसून येतो. अर्थहीन धुन बनवून मनोरंजनाच्या नावाने संगीतामध्ये बदले केलेले दिसून येतात. पण काही साहित्यीक संगीताचा अभ्यास करून शास्त्रीय कंसेप्ट समोर ठेवून पुढील पिढीसाठी सलगता निर्माण करत आहेत.

आज वर्तमान काळामध्ये दिसून येत असलेले सांगतीक परिवर्तन हे पुढील काळातील संगीत साधकांसाठी एक पर्वणी साहित्य त्यासाठी तज्ञ संगीत तज्ञांची गरज आहे.

संदर्भ:-

1- डॉ. सुधा पटवर्धन - स्मरण संगीत प्रकाशन 1 जून 2013 पृष्ठ क्र -84

2- संगीत कला विहार - सन 1995 पृष्ठ क्र-

नई शिक्षा नीति और आत्मनिर्भर भारत

डॉ. टाळके ए. बी.

(सहयोगी प्राध्यापक तथा हिंदी विभागाध्यक्ष)

भगवान महाविद्यालय, आष्टी। (जि. बीड- 414203)

सीखने और सिखाने की प्रक्रिया को शिक्षा कहा जाता है। मनुष्य के सर्वांगीन विकास के साथ, आदर्श समाज का निर्माण और राष्ट्रीय विकास को बढ़ाने के लिए शिक्षा की मूलभूत आवश्यकता होती है। विकसित भारत की मांग के अनुसार 34 वर्षों के लंबे अंतराल के बाद हमारे देश में नई राष्ट्रीय शिक्षा नीति-2020 लागू हुई है। 21वीं शताब्दी की यह पहली शिक्षा नीति है जिसका उद्देश्य देश के विकास के लिए अनिवार्य आवश्यकताओं को पूरा करना है।

अगले दशक में हमारा देश दुनिया का सबसे युवा जनसंख्या वाला देश बनेगा। देश के उज्ज्वल भविष्य के लिए इन युवाओं को उच्चतर गुणवत्तापूर्ण शैक्षिक अवसर प्रदान करने होंगे। नई राष्ट्रीय शिक्षा नीति में आत्मनिर्भर भारत के उद्देश्यों के साथ शिक्षाद्वारा ज्ञान एवं कौशल में वृद्धि कर मनुष्य को योग्य तथा कुशल मनुष्य बनाने का प्रयास है। सन 2015 में 'स्किल इंडिया मिशन' के माध्यम से हमारे देश के प्रधानमंत्री नरेंद्र मोदी ने इसकी पहल की थी। युवाओं का कौशल विकास कर उन्हें रोजगार के अवसर प्रदान करना इस मिशन का उद्देश्य था। जिसके कारण युवाओं के आत्मविश्वास को गती मिलने में सहायता मिली। "आत्मनिर्भरता का विचार किसी बहिष्करण या अलगाववादी रणनीतियों का प्रतीक नहीं है बल्कि इसमें पुरी दुनिया के लिए मदद की भावना शामिल है। यह अभियान 'स्थानीय' उत्पादों को बढ़ावा देने के महत्व पर केंद्रित है।" आत्मनिर्भर भारत योजना का उद्देश्य इस संदर्भ से स्पष्ट हो जाता है, "कोरोना काल में भारत के प्रधानमंत्री नरेंद्र मोदीद्वारा आत्मनिर्भर भारत अभियान की सुरुवात 12 मई 2020 को की गई। यह अभियान कोरोना काल के दौरान भारत को इस संकट से लड़ने के लिए तैयार करने के लिए बनाया गया था। इस अभियान के तहत छोटे वर्ग के लोग जो कोई बिजनेस करना चाहते हैं उन्हें सस्तेदर पर लोन उपलब्ध कराया जायेगा। विद्यार्थियों को ऐसी शिक्षा दी जायेगी जिससे उनके अंदर कौशल का विकास हो ताकि वो रोजगार प्राप्त कर सकें।" अन्य उद्देश्यों के साथ शिक्षा के माध्यम से युवाओं का कौशल विकास कर उन्हें रोजगार के अवसर प्रदान करना भी आत्मनिर्भर भारत अभियान का महत्वपूर्ण उद्देश्य है।

नई शिक्षा नीति हमारे देश की परंपरा और सांस्कृतिक मूल्यों के आधार को बरकरार रखते हुए 21 वीं सदी की शिक्षा के लिए आकांक्षात्मक लक्ष्यों के पुनर्गठन का प्रस्ताव रखती है। नई शिक्षा नीति का सिद्धांत इस पर आधारित है, "शिक्षा से न केवल साक्षरता और संख्याज्ञान जैसी 'बुनियादी क्षमताओं' के साथ-साथ 'उच्चतर स्तर' की तार्किक और समस्या-समाधान संबंधी संज्ञानात्मक क्षमताओं का विकास होना चाहिए बल्कि नैतिक, सामाजिक और भावात्मक स्तर पर भी व्यक्ति का विकास होना आवश्यक है।"³

वर्तमान समय की मांग है-मातृभाषा में शिक्षा, शिक्षा की स्वायत्तता, मूल्य आधारित शिक्षा और भारतीय ज्ञान प्रणाली को बढ़ावा देना-इस दिशा में नई शिक्षा नीति भरसक प्रयास करती हुई दिखाई देती है। इस नीति का मुख्य उद्देश एक छात्र को कुशल बनाने के साथ-साथ उसी क्षेत्र में उसे प्रशिक्षित करना है जिस क्षेत्र में छात्र रुची रखता हो।"⁴ इस प्रकार छात्र अपनी क्षमताओं का पता लगाने में सक्षम हो सकते हैं।

ज्ञान के संदर्भ में पुरा विश्व तेजी से परिवर्तन के दौर से गुजर रहा है। रोजगार और वैश्विक परिस्थिति में तीव्र गति से परिवर्तन हो रहा है। इसके कारण, यह आवश्यक हो गया है, कि छात्रों को जो सिखाया जा रहा है, उसके साथ ही निरंतर सीखते रहने की कला भी वे सीखें। शिक्षा में जोर इस बात पर होना चाहिए कि, "बच्चे समस्या-समाधान और तार्किक एवं रचनात्मक रूप से सोचना सीखें, विविध विषयों के बीच अंतर्संबंधों को देख पायें, कुछ नया सोच पायें और नई जानकारी को नए और बदलती परिस्थितियों या क्षेत्र में उपयोग में ला पायें।"⁵ आज की शिक्षा प्रणाली विद्यार्थी-केंद्रित हो; जिसमें विद्यार्थियों के जीवन के सभी पक्षों और क्षमताओं का संतुलित विकास कर उनका चरित्र निर्माण, उनमें नैतिकता, तार्किकता, करुणा और संवेदनशीलता विकसित होनी चाहिए और उन्हें रोजगार के लिए सक्षम बनाना चाहिए। नई राष्ट्रीय शिक्षा नीति से इन सभी की उम्मीद की जा सकती है।

वास्तव में आज हमारे समाज और देश को आत्मनिर्भर बनने की आवश्यकता है। कोरोना महामारी के दौरान इस की शुरुआत हमने की है। जो चीजे हमें पहले विदेश से मंगवानी पड़ती थी, उसका उत्पादन हमारे देश में शुरू किया गया; जैसे-पीपीई किट, वेंटिलेटर, सेनेटाइजर मास्क आदि। इस प्रकार हमारा देश आत्मनिर्भरता की ओर आगे बढ़ रहा है। लेकिन पूरी तरह से आत्मनिर्भर बनने का रास्ता कहीं न कहीं नई शिक्षा व्यवस्था से होकर गुजरता है। "नई राष्ट्रीय शिक्षा नीति से आत्मनिर्भर भारत की आस को मजबूती मिलती है। क्योंकि इस नीति का एक अहम पहलू इसका बहु विषयक दृष्टिकोण है। जिसकी प्रासंगिकता इस बात पर केंद्रित है कि छात्रों का सर्वांगीण विकास हो।"⁶ पिछली शिक्षा नितियों के केंद्र में सीखना और उसके परिणाम देना था। छात्रों का आकलन प्राप्त अंकों के आधार पर किया जाता था और यह विकास की दृष्टि से एकल दिशा थी।

प्रधानमंत्री श्री नरेंद्र मोदीद्वारा संकल्पित 'आत्मनिर्भर भारत' अभियान का सपना है, कि भविष्य में प्रत्येक भारतीय को आत्मनिर्भर बनाना है। इसके लिए उन्होंने पाँच महत्वपूर्ण बातें बताई हैं-जिसमें, इरादा (इंटेंट) करना, समावेश (इन्क्लूजन) करना, निवेश (इन्वेस्टमेंट) करना, सार्वजनिक ढाँचे को (इन्फ्रास्ट्रक्चर) मजबूत करना तथा नई चीजों की खोज करना; शामिल है। यह सपना तभी साकार होगा, जब हमारा देश अपना पुरातन गौरव पुनः हासिल करेगा। "भारत की कला और संस्कृति को देखते हुए यह बात स्पष्ट होती है, कि भारत प्राचीन काल से ही आत्मनिर्भर रहा है।"⁷ हमें मालूम है, कि कुटीर उद्योग और हस्तशिल्प कला के माध्यम से एक समय हमारा डंका विश्व स्तर पर बजता था। भविष्य में इस राष्ट्रीय शिक्षा नीति के द्वारा परिष्कृत होते हुए अपने मूल्यों को पुनः स्थापित करने की आवश्यकता है। प्राचीन और सनातन भारतीय ज्ञान तथा विचार की समृद्ध परंपरा के आधार पर यह नीति तैयार की गई है। "प्राचीन भारत में शिक्षा का लक्ष्य सांसारिक जीवन अथवा स्कूल के बाद के जीवन की तैयारी के रूप में ज्ञान अर्जन नहीं बल्कि पूर्ण आत्म-ज्ञान और मुक्ति के रूप में माना गया था।"⁸ इस प्रकार की शिक्षा, अपनी संस्कृति और दर्शन का विश्व में बड़ा प्रभाव रहा है। नई शिक्षा नीति के माध्यम से इस प्रभाव को पुनर्जीवित करना होगा।

निष्कर्ष रूप में हम कह सकते हैं, कि 'नई शिक्षा नीति-2020' में समाहित सभी महत्वपूर्ण बिंदुओं के माध्यम से हम देश के नागरिकों को हर तरह से स्वतंत्र एवं आत्मनिर्भर बनाने में तथा अपने देश को विकसित देशों की सूची में शामिल करते हुए, दुनिया की तीन सबसे बड़ी अर्थव्यवस्थाओं में से एक बनाने में निकट भविष्य में सफल सिद्ध होंगे।

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हवामान बदल : आदिवासी संस्कृती, वारसा समस्या

नारायण यमाजी तुवर

संशोधक विद्यार्थी

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महाविद्यालय खुल्दाबाद

▪ प्रस्तावना :-

हवामान बदल आणि मानवी संस्कृती व वारसा यावर होणारे परिणाम हे एकमेकांशी पूरक असणारे दोन घटक आहेत. इतिहासाची पाने चाळतांना इसवी सनापूर्वी सुमारे १२०००ते ११०००वर्षापूर्वी शेवटचे हिमयुग संपुष्टात येऊन उबदार आणि आर्द्र हवामानाचा एक नवा कालखंड सुरू झाला. त्याला होलोसीन कालखंड असे म्हणतात. या काळात हिमखंड वितळल्यामुळे जलाशयांमधील पाण्याचे साठे वाढले. त्यामुळे या कालखंडात अन्नासाठी तसेच उत्पन्नासाठी उपयुक्त अशा प्राणी आणि वनस्पती यांची उपलब्धता वाढली. त्याचबरोबर हिमयुगाच्या शेवटी मॅमोथ सारख्या विशालकाय प्राण्यांच्या अनेक प्रजातीही नष्ट झाल्या होत्या. हवामान बदलामुळे जलाशयांमधल्या माशांच्या अनेक प्रजाती तसेच शेळी, मेंढी, हरीण यासारखे आकाराने लहान आणि चपळ अशा वन्य पशुचा उदय झाला.

हवामान बदलामुळे एखाद्या मूळच्या घटकात बदल होतो किंवा र्हासही होतो. तर दुसरीकडे बदलत्या हवामानाच्या अनुषंगाने नवीन घटकाचा उदय होत असतो. म्हणजेच पूर्वीच्या जीवसृष्टी मध्ये झालेल्या विकासावर हवामानाचा नैसर्गिक परिणाम होऊन त्यांच्यात बदल, र्हास पुनर्निर्मिती ही प्रक्रिया सुरू होते. यावरून असे म्हणता येईल की, जसे हवामान बदलाचे चक्र सुरू असते त्याच चक्राप्रमाणे पृथ्वीवरील प्रत्येक जीवसृष्टीचा र्हास, उदय व विकास हे चक्र निरंतर सुरू राहते. या निरंतर चक्राचाच मानव सृष्टी एक महत्त्वाचा भाग म्हणता येतो.

• **महत्त्वाचे शब्द :** हवामान बदल, आदिवासी, संस्कृती, वारसा.

▪ **उद्देश :**

➤ हवामान बदलाचा आदिवासी संस्कृतीवरील प्रभाव अभ्यासणे.

➤ आधुनिक विकास व आदिवासी संस्कृती, वारसा अभ्यासणे

▪ **गृहीतके :**

➤ आदिवासी संस्कृती आजही टिकून आहे.

➤ आदिवासी संस्कृती आधुनिक विकासांमुळे लोप पावण्याच्या मार्गावर आहे.

• **संशोधन पद्धती :-** विश्लेषणात्मक संशोधन पद्धतीचा वापर संबंधित संशोधन लेखात करण्यात आला आहे.

• **हवामान व हवामान बदल :**

एखाद्या विशिष्ट प्रदेशातील, विशिष्ट कालावधीसाठी निर्धारित ऊन, वारा, पाऊस, थंडी याची स्थिती म्हणजे 'हवामान' होय. तर या विशिष्ट प्रदेशातील कालावकाशाने ऊन, वारा, पाऊस, थंडी यात जो कमी अधिक असा निश्चित बदल होतो त्यास 'हवामान बदल' असे म्हणतात. थोडक्यात जागतिक स्तरावरील हवामानाच्या आकृतीबंधात सातत्याने होणाऱ्या बदलास 'हवामान बदल' असे म्हणतात.

▪ **आदिवासी व आदिवासी संस्कृती :**

अनेक मानवशास्त्रांनी आदिवासी समुदायावर संशोधन केल्यानंतर आदिवासी विषयी आपापली विविध मते मांडली आहेत. त्यानुसार आदिवासी म्हणजे अगदी मागासलेला समाज किंवा प्राचीन किंवा 'मूळ रहिवासी' असे संबोधले जाते. अभ्यासकांनी विविध निष्कर्ष काढले आहेत, की पूर्वी सभ्य समाजापेक्षा आदिवासी समाज रानटी, मागासलेला होता. असे असले तरी देखील त्यांची समाज व्यवस्था टिकून होती.

▪ **आदिवासींच्या व्याख्या :**

- **बोर्गार्डस-सुरक्षिततेची** जरूरी, रक्त संबंधाचे बंध, समान धर्म यावर आदिवासी समूह आधारलेला होता.
- **मदन व मुजुमदार-** समान भाषा व समान संस्कृती असणाऱ्या व आर्थिक दृष्टीने परस्पर संबंधित असणाऱ्या ग्रामीण समुदायाला नेहमी आदिवासी समाज म्हणून संबोधले जाते.

▪ **हवामान व संस्कृती :**

संस्कृती ही बाब इतकी गुंतागुंतीची, बहुआयामी आणि विविध पैलू व अंगे-उपांगे असलेली आहे की तिची सर्व समावेशक व सर्वमान्य अशी व्याख्या करणे कठीण आहे. ढोबळमानाने संस्कृतीचा पुढील अर्थ काढता येतो. 'संस्कारमय जीवन जगण्याची स्थळ, काळ, विशिष्ट पद्धती म्हणजे संस्कृती होय'. विश्लेषणात्मक दृष्टीने मांडणी केल्यास मनुष्य आपल्या जीवनाच्या प्रगतीला अनुकूल असे बदल भोवतालच्या निसर्गात व पर्यावरणात घडवून आणतो. त्यावर संस्कार करून आपले जीवन अधिकाधिक सुलभ, सुरक्षित, विकसित, सुखमय व समृद्ध करण्यासाठी सतत प्रयत्नशील असतो. त्यासाठी तो स्वतःचे बुद्धी, मन, विचारशक्ती यांच्यावरही संस्कार करून त्याचा सर्जनशील वापर करतो. स्वतःच्या भौतिक, मानसिक व भावनिक गरजा पूर्ण करण्यासाठी विचारकल्पनेने व नवोपक्रमाने जी नवनिर्मिती करतो. या सर्व बाबींना साधारणपणे संस्कृती म्हणता येते. म्हणून संस्कृती व हवामान बदल या एकमेकांशी निगडित आशा बाबी असल्याचे समजते.

सांस्कृतिक बदल, ज्ञान, दृष्टिकोन, वर्तन, कल्पना, समाज व समाजरचना, धार्मिकश्रद्धा, विचार, दृष्टी हे व्यक्तीच्या नैतिक सिद्धांतामधील बदल म्हणजे सांस्कृतिक बदल होय.

▪ **सांस्कृतिक बदल घडवून आणणारे घटक :**

सांस्कृतिक बदल घडवणारे अनेक घटक आहेत त्यात विशेषत्वाने

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| १) सरकार मार्फत सुधारणा विकासात्मक केलेल्या उपाययोजना. | २) दळणवळणाच्या सुविधा. |
| ३) शिक्षणाचा प्रचार व प्रसार. | ४) नागरिकरणाची प्रक्रिया. |
| ५) नव समाज माध्यमांची उपलब्धता व वापर तसेच प्रभाव. | ६) व्यावसायिक गतिशीलता. |
| ७) समाज सुधारणावादी घटकांकडून मिळालेले प्रोत्साहन व प्रेरणा. | ८) आधुनिक आरोग्य सुविधा. |
| ९) जागतिकीकरण. | १०) सुधारणावादी चळवळी. |

• वारसा :

कोणत्याही समाजाच्या संस्कृतीचा वारसा मागील पिढीकडून पुढील पिढीकडे दिला जातो. आपल्याकडील कला, कल्पना, गुण-अवगुण, श्रद्धा, धर्म या बाबी विविध समाजिक संस्थांच्या माध्यमातून औपचारिक तसेच अनौपचारिक शिक्षण पद्धतीने हस्तांतरण होत राहते.

या हस्तांतरण प्रक्रियेतून जात असताना मानवी संस्कृती प्रवाही असल्यामुळे सतत मात्र कळत - नकळत थोडी - थोडी बदलत राहते. हे बदल आक्रमक, प्रबळ, मानव समूहाची संस्कृती दुर्बल मानव समूहावर लादली जाते. संप्रेषण - तंत्रज्ञानातील सुधारणेने भिन्न संस्कृतीचा एकमेकांशी संपर्क येऊन संस्कृती देश, काल, परिस्थितीनुसार तयार होत असते. व ती सापेक्ष असते.

संस्कृती प्रत्येक व्यक्तीच्या आयुष्याला दिशा देऊन तिचे जीवन घडविते. तर प्रत्येक व्यक्ती - देश - काळाला अनुसरून संस्कृतीचा प्रवाह हळूहळू नकळत बदलत असतो. हाच ठेवा वारसा रूपाने एका पिढीकडून पुढील पिढीकडे कमी अधिक प्रमाणात संक्रमित होत राहतो.

▪ हवामान बदलाचा आदिवासी संस्कृतीवरील प्रभाव :

१) हवामान बदलातील घटक-

अ) पुरांची वारंवारता आणि तीव्रता यात झालेली वाढ -

गेल्या काही कालावधीचा आढावा घेता, पुरांच्या संख्येत व कालावधीत वाढ झालेली आहे. त्यामुळे ढगफुटी भूस्खलन व पूर यात वाढ झाली.

ब) दुष्काळ चक्रीवादळ -

तापमानाच्या वाढीमुळे १९७० पासून पृथ्वीवर दुष्काळाच्या क्षेत्रात दुपटीने वाढ झाली आहे. जागतिक तापमान वाढीमुळे सागरी आवर्त व प्रत्यावर्ताची निर्मिती व तीव्रतेत वाढ होते. त्यातून चक्रीवादळे व दुष्काळ निर्माण होतात.

क) पीकवाढीच्या कालावधीत व कृषी उत्पन्नात बदल होणे -

वातावरणातील वाढत्या कार्बनडायऑक्साइड मुळे हवामान, कृषी, वायू व मानवी आरोग्यावर परिणाम होत आहे.

ड) वर्षावने आणि हवामान बदल -

वने ही पृथ्वीचे तापमान कमी ठेवण्यास मदत करतात. मात्र मोठ्या प्रमाणात या वनांची तोड किंवा ही वने जाळल्याने तेथील हवा उष्ण व कोरडी होऊ लागते. वने जाळल्याने तेथे कार्बनडायऑक्साइड वातावरणात मिसळला जातो. त्यामुळे वातावरणावर ताण निर्माण होतो व निर्वणीकरणामुळे पर्जन्याचा आकृतीबंध व पर्जन्याच्या प्रमाणात बदल होतो.

२) हवामान बदलाची मानवनिर्मित कारणे :

अ) जैविक इंधनाच्या ज्वलनातून मुख्यतः कार्बनडायऑक्साइड उत्सर्जित होणे.

ब) मोठ्या प्रमाणावरील निर्वणीकरणामुळे कार्बनडायऑक्साईडचे प्रमाण वाढते.

3) आदिवासी संस्कृती :

१ ऑगस्ट २०१४ रोजी ठाणे जिल्ह्याचे विभाजन होऊन स्वतंत्र आदिवासी जिल्हा म्हणून पालघरची निर्मिती करण्यात आली. या जिल्ह्यातील कालौघात नामशेष होत चाललेली आदिवासी संस्कृती जपण्यास तसेच आदिवासी संबंधी विविध संशोधन करण्याची कामगिरी अनेक वर्षे पुण्याचे 'आदिवासी संशोधन आणि प्रशिक्षण केंद्र' करत आहे. आपल्या वस्तुसंग्रहालयात जपलेली आदिवासी संस्कृती संवर्धन लोकांपुढे यावी म्हणून संशोधन केंद्राने नव्याने उपक्रम सुरू केले आहेत. प्रादेशिक काळातील आदिमानवाची आदिम संस्कृती म्हणजे आदिवासी संस्कृती होय.

• आदिवासी जीवनधारणा :

प्रागैतिहासिक काळातील आदिमानवाची आदिम संस्कृती म्हणजे आदिवासी संस्कृती होय. आज आदिवासी समूह वेगवेगळ्या पाड्यांवर स्थिर झालेला असला व दळणवळणाच्या वाढत्या सुविधांमुळे आदिवासींचं दर्याखोऱ्यातील वास्तव्य आणि शहरांतील अंतर कमी होत चाललेलं असलं, तरी मात्र त्यांच्यातील संस्कृतीत अजूनही फारसे अंतर वाढलेले आढळत नाही. कारण आदिवासी बांधवांची जीवनशैली आजही वेगळी, म्हणजेच आदिम आहे. त्यांच्या प्रेरणा आणि जीवनधारणा दोन्ही वेगळ्या आहेत.

• निसर्गावर विश्वास :

विज्ञानाचा जरी विकास झाला असेल, शहरं सुधारली असेल आणि त्यांच्या प्रभावातून बदलत चाललेला दिसतो. खेड्यांच्या पार्श्वभूमीवर आदिवासी समुदाय मात्र आजही बहुतांशी सृष्टीच्या निर्माणाच्या काळातील निसर्गघटितांवरच विश्वास ठेवून आहेत.

आदिवासी संस्कृती, त्यांची जीवनशैली आजही पूर्णपणे निसर्गावर अवलंबून आहे. निसर्ग आणि निसर्गातील पृथ्वी, वायू, आप, तेज, आणि आकाश ही पंचमहाभूते आजही त्यांच्या जगण्याच्या मुळाशी आहेत. त्यांचे सण-वार, रीती-उत्सव, कला सारं काही आजही निसर्गाधारित आहे. निसर्ग म्हणजेच प्रकृती हीच आजही त्यांच्या जगण्यामागची प्रेरणा आहे. या अर्थाने आदिवासी जीवनसंस्कृती आणि कलासंस्कृती म्हणजे एकप्रकारे प्रकृती आहे, आदिवासींचं जगणं म्हणजे बहुतांशी आजही त्यांनी साजरा केलेला प्रकृतीचा उत्सव आहे. हा प्रकृतीचा उत्सव प्रत्यक्ष पाहायचा तर आदिवासी जमातींच्या पाड्यांवरच जावे लागेल.

▪ आदिवासी कला :

—) मुखवटे

बदलत्या काळाचा परिणाम निसर्गातील प्रत्येक जीवसृष्टीवर होत असतो. तद्वतच तो आदिवासी जीवनशैलीवरही होत आहे. विविध सण-उत्सवाच्या निमित्ताने केल्या जाणाऱ्या नृत्यात आदिवासी नानाप्रकारचे मुखवटे वापरतात. आदिवासींची शिल्पकला लाकूड व मातीच्या माध्यमातून जपलेली असली, तरी काही भागात धातुची शिल्पंही केली जातात. महाराष्ट्रातील पालघर-ठाणे-नाशिक जिल्ह्यातील आदिवासी शिल्पकाम करताना शिसं-पितळ या धातुचा वापर करताना दिसतात. या त्यांच्या कामाचे अनेक उत्तम नमुने या आदिवासी संग्रहालयात आहेत.

二) चित्रकला परंपरा

भारतातील इतर आदिवासी जमातींप्रमाणेच महाराष्ट्रातील आदिवासींनीही आपली चित्रकलापरंपरा जपलेली आहे. त्यात प्रामुख्याने ठाणे-पालघर जिल्ह्यातील वारली या आदिवासी समाजाने ती अधिक जपलेली आणि जोपासलेली आहे. या वारली चित्रकलेला जागतिक पातळीवर मानाचं स्थान मिळवून देण्यात दिवंगत जीवा सोमा म्हसे यांचा मोठा वाटा आहे. त्यांची काही वारली चित्रं या केंद्रात आहेत. अतिशय सूक्ष्म निरीक्षण शक्ती आणि बारीक काम हे वारली चित्रांचं गमक आहे.

三) चित्र संवर्धन

मात्र परंपरेने चालत आलेली ही वारली चित्रकला खऱ्या अर्थाने जपलीय ती वारली महिलांनी. या समाजात चित्रे काढणार्या महिलांचं प्रमाण, पुरुषांपेक्षा जास्त आढळतं. आदिवासींच्या घराचं सुशोभनाचे मुख्य काम महिला करतात. वारली चित्रपरंपरेबद्दल तर खात्रीने असं म्हणता येतं की, वारली चित्रशैलीची पायाभरणी वारली महिला घराच्या भिंतीवर चितारत असलेल्या भिंतीचित्रांनी केलेली आहे. वारल्यांच्या कुडाच्या भिंती केवळ पानं-फुलं-पशू-पक्ष्यांपुरती मर्यादित नसतात. त्यांचं रोजचं जगणं त्यात अवतरलेलं असतं. उदाहरण देऊनच बोलायचं तर त्यांच्या चित्रांच्या चौकटीत एकाच वेळी तारपा नृत्य करणारा समूह, घरासमोर फिरणार्या कोंबड्या, ताडाच्या झाडावर चढणारा माणूस, किंगरीवादना करणारा समूह असे अनेक विषय सामावलेले असतात.

四) चित्र विषय :

सर्वसामान्यपणे चित्रात एकच वर्णविषय घ्यायची पद्धत असते. परंतु वारली किंवा इतरही आदिवासी चित्रकार एकाचवेळी निसर्गातील विविध विषय चित्रांत हाताळतात. त्यांच्यासाठी ते केवळ चित्र नसतं, त्यांच्यासाठी तो निसर्गाशी साधलेला संवाद असतो. हा संवाद फक्त भौतिक पातळीवरचा नसून किंबहुना बरेचदा तो आधिभौतिक पातळीवरचा असतो. एकप्रकारे ही चित्र म्हणजे सृष्टीतील शुभाशुभाला शांतवण्यासाठी मांडलेली निसर्गाची पूजाच असतो.

五) निसर्ग व अलंकार :

अलंकार कुठल्याही धातुचे असोत, ते महिलांना प्रियच असतात. परंतु आदिवासी स्त्रियांच्या अलंकारांमधील विविधता पाहण्यासारखी असते. दगड, विविध झाडांच्या बिया किंवा विविध रंगांच्या सुकलेल्या गवतापासून आदिवासी महिला स्वतःच आपले अलंकार बनवतात. मात्र त्यांचे वैशिष्ट्यपूर्ण चांदीचे दागिने खास सोनार किंवा ओतार्याकडून घडवले जातात. ते घडवताना निसर्गातील विविध चिन्ह आणि लयबद्धता त्यात असेल, याची काळजी आदिवासी महिलांकडून घेतली जाते.

六) तारपा व वारली नाच :

संगीत हा आदिवासींचा अतिशय जिद्दाब्याचा प्रश्न आहे. विविध सण-उत्सव किंवा श्रमपरिहारार्थ केली जाणारी नृत्यं म्हणजे तर आदिवासींचा प्राणच. या नृत्यांमध्ये तारपा, पावरी, व वारली नाच यास विशेष महत्त्व आहे. विविध तंतुवाद्य, तारपा वापरली जातात. पालघर जिल्ह्यात ठराविक हंगामात अनेक तारपा वादक केवळ स्वतःच्या करमणुकीसाठीही तारपा वाजवितात. या वाद्यांची त्यांना फारच अपूर्वाई असते. वाद्याला ते खूप सजवितात.

७) निसर्गाधारित भांडी :

शहरांच्या संपर्कात आलेल्या आदिवासींच्या घरात आज स्टील-प्लास्टीकची भांडी आली असली, तरी खोल जंगलातील पाड्यांवर राहणाऱ्या आदिवासीसमूह आजही परंपरेने चालत आलेली भांडीच वापरतात. माती, लाकूड, भोपळ्यापासून बनवलेली ही पारंपरिक भांडी पाहून थक्क व्हायला होतं.

■ संस्कृती वारसा समस्या :

—) वातावरण बदलाची समस्या :

आज जागतिक तापमानवाढ, पर्जन्यातील अनियमितता, वाढते प्रदूषण, औद्योगिक क्रांती, विज्ञान - तंत्रज्ञान यामुळे जग अनेक समस्याला सामोरे जात आहे. यातच हवामान बदलाचा परिणाम देखील जागतिक सांस्कृतिक वारसा स्थळांवर होत आहे. त्याचा परिणाम आदिवासी समूह व संस्कृतीवर होताना दिसतो.

२) शासनाची नकारात्मक वननीती :

प्राचीन काळापासून आदिवासींचे निवासस्थान जंगलामध्येच आढळते. ते आपल्या प्राथमिक गरजा पूर्ततेसाठी वनातील उत्पादनासाठी जंगलाचा वापर करतात. परंतु त्यांनी जंगले नष्ट केली नाहीत. त्यातच त्यांच्या संस्कृतीत वृक्षाला फार महत्त्व आहे. आधुनिक काळात फर्निचर, कागद, इंधन, विविध विकास कामाच्या नावाखाली मोठी जंगलतोड होताना दिसते. याचा परिणाम हवामानात बदल होऊन जंगलावरील कुरहाड हीच आदिवासी संस्कृतीवरील समस्या ठरत आहे.

३) आदिवासी विस्थापन व पुनर्वसन समस्या :

धरणे, सिंचन प्रकल्प, विद्युत निर्मिती प्रकल्प, अभयारण्य व व्याघ्र प्रकल्प यासाठी पिढीजात आदिवासींचे विस्थापन होताना दिसते. त्याचबरोबर यातील काही प्रकल्प हवामान व आदिवासी संस्कृती संवर्धनातील समस्या बनत आहेत.

४) आदिवासी बोलीभाषा व संसूचन :

पालघर जिल्ह्यातील आदिवासी समाजाची स्वतःची बोली भाषा आहे. तिची विशिष्ट ठेवण, बोलण्याची पद्धत, लकब, व्याकरण, शब्दसंग्रह आणि त्यांचे स्वतंत्रलोकसाहित्य आहे. मात्र या सर्व बाबी केवळ मौखिक परंपरेनेच होत आल्यामुळे व स्वतंत्र लिपी नसल्यामुळे आदिवासींनी हा जपलेला मौखिक सांस्कृतिक वारसा टिकवणे बदलत्या काळात मोठी समस्या आहे. या बोलीभाषेचे ज्ञान, संस्कृतीची जाण प्रवाहबाह्य लोकांना नसल्याने संस्कृती, वारसा संवर्धनात समस्या निर्माण होत असताना दिसते. याप्रमाणे इतर अनेक समस्या या केवळ हवामान बदलामुळेच नव्हे तर आदिवासी सांस्कृतिक वारशामुळे देखील बनत आहेत.

यावरून हे लक्षात येते की, आदिवासींमध्ये सांस्कृतिक, सामाजिक आणि आर्थिकदृष्ट्या खूप बदल झाले आहेत. विविध सामाजिक, राजकीय आणि धार्मिक शक्तींच्या संपर्कात आल्यामुळे त्यांच्या समाजात अनेक वाईट गोष्टीही आल्या आहेत. अनेक आदिवासींना आपल्या जल, जंगल आणि जमीन या मूलभूत हक्कापासून वंचित राहावे लागत आहे. विविध बाबतीत सावकार, मोठेमोठे जमीनदार, व्यापारी तसेच इतरांकडून त्यांची फसवणूक केली जात आहे.

▪ **सारांश:**

आदिवासी संस्कृतीकडे बघताना आपण एक समृद्ध जीवनशैली पाहत असल्याची जाणीव होते. मानवाच्या मूळ संस्कृतीचा ऐतिहासिक वारसा येथे जपलेला आहे. त्यांच्या विषयीची खरी माहिती जाणून घेण्यासाठी तसेच संस्कृती दर्शनासाठी आदिवासी पाड्यावरच जावे लागते.

परंतु कालौघात लोप पावत असलेल्या आदिवासी संस्कृतीवर संशोधन व्हावं, यासाठी 'आदिवासी संशोधन व प्रशिक्षण केंद्र आणि संग्रहालय' १९६४ साली सुरू करण्यात आले आहे. आज आदिवासी मोठ्या प्रमाणावरील सामाजिक-सांस्कृतिक स्थित्यंतरातून जात आहेत. विज्ञान, तंत्रज्ञान तसेच वाढत्या सोयी सुविधांचा मोठा परिणाम त्यांच्याही आयुष्यावर घडत आहे. त्यातून त्यांची संपन्न जीवनशैली बाधित होण्याची शक्यता अधिक आहे. अशा वेळी 'आदिवासी संशोधन आणि प्रशिक्षण संस्थे'च्या आदिवासी वस्तुसंग्रहालयाचं मोल अधिकच वाढत आहे.

▪ **निष्कर्ष व उपाय :-**

-) हवामान बदलाचा आदिवासी संस्कृतीवर प्रकर्षाने प्रभाव जाणवतो.
-) शासकीय विकास योजना नकळत का होईना आदिवासी संस्कृती संवर्धनास आड येत आहे.
-) नैसर्गिक आपत्ती शिवाय जंगलतोड थांबली तर आदिवासी संस्कृती टिकण्यास मदत होईल.
-) भौतिक विकास होताना आदिवासी संस्कृतीचा विचार व्हावा.

▪ **संदर्भ:-**

-) गारे गोविंद व सोनवणे उत्तमराव, 'आदिवासी कला', गमभन प्रकाशन, पुणे, प्रथम आवृत्ती, १९९३
-) देवगावकर एस. जी. 'आदिवासी विकास प्रशासन', श्री साईनाथ प्रकाशन, नागपूर, प्रथम आवृत्ती, २०२१.
-) साळीवकर संजय, 'भारतीय आदिवासी जीवन आणि संस्कृती', श्री मंगेश प्रकाशन, नागपूर, प्रथम आवृत्ती, २०१४
-) नाडगोंडे गुरुनाथ, 'भारतीय आदिवासी', कॉन्टीनेन्टल प्रकाशन, पुणे, चतुर्थ आवृत्ती, २०१२
-) तुमराम विनायक, 'आदिवासी साहित्य स्वरूप आणि समीक्षा', विजय प्रकाशन, नागपूर, प्रथम आवृत्ती, १९९४

बदलत्या वातावरणाचा पाऊस आणि शेतीवर होणारा परिणाम विशेष : संदर्भ कुणव्याच्या पोरा

नाव: डॉ. बालाजी विठ्ठलराव डिगोळे

मराठी विभाग,
शिवजागृती वरिष्ठ महाविद्यालय, नळेगाव

हवामान बदलामुळे जलवायू परिवर्तन तापमान वाढीचे महाभयानक दुष्परिणाम शेतीवर होत आहेत. तापमानाचा समतोल बिघडत असल्यामुळे पिकावर त्याचा परिणाम होऊन शेतीतील उत्पादन घटत आहे. अवेळी पाऊस, गारपीट, कोरडा दुष्काळ, कारखान्याचे प्रदूषण, जागोजागी उभा केलेले टावर, झाडांची अतोनात कत्तल, नैसर्गिक साधन संपत्तीची चोरी यामुळे निसर्गही माणसाप्रमाणे लहरी होऊन चकल्या मारत आहे. एकविसाव्या शतकातील माणूस यंत्राचा अतिवापर करून खोटाटा बनला आहे. जागतिकीकरणामुळे आणि प्लास्टिक, रसायन यांच्या अतिवापरामुळे पर्यावरण प्रदूषित झाले आहे. आपली भौतिक प्रगती होत आहे; परंतु नैसर्गिक रसातळाकडे वाटचाल होण्यास आपली सुरुवात झाली आहे. निसर्ग कधी कोपेल आणि सर्वच पृथ्वीवरील पालथे करेल. हे कोणीही छातीठोकपणे सांगू शकणार नाही. यामुळे पाऊसही हुलकावण्या देत आहे. हवामान बदलामुळे शेतकऱ्यांच्या शेतातील आज मुगी, लहान कारळ, भादली, वरई, राळे, सावं, उडीद, सूर्यफूल, मल्ली, पिवळी, भेंडी, मऊ हे धान्याचे प्रकार केवळ पाऊस अवेळी पडत असल्यामुळे आणि कधीही आलेला ऋतू, नक्षत्र कोरडाच जात आहे. त्यामुळे हे वरील पीक शेतकऱ्यांचे नष्ट झाले आहेत. आज आपण सर्वजण अन्न खातो का? विष खातो हेच लक्षात येत नाही. याला कारणीभूत हवामानातील बदल आणि मानवाने निसर्गावर केलेली कुरघोडी कारणीभूत आहे. नैसर्गिक आपत्ती आणि साथीच्या रोगांच्या विविध कारणामुळे शेतकरी आणि ग्रामीण भागातील दुर्बल घटकांना सर्वाधिक त्रास होत आहे. अशा परिस्थितीत शेतकऱ्यांची आणि शेतीवर जगणारे जे गरीब मजूर आहेत. त्यांची जगण्याची शक्यता किंवा त्यांचे अस्तित्व टिकण्याची आणि आपत्तीच्या घटनेतून सावरण्याची शक्यता कमी असते. अलीकडे विकास विषयक धोरणांचे विशिष्ट असे परिणाम आपत्ती आणि साथींना प्राप्त झालेले आहे. आपत्ती आणि साथी या नैसर्गिक आहेत. उदाहरणार्थ मुंबईतील २००६ मधील पुराच्यावेळी दक्षिण मुंबई आणि धारावीमध्ये सारखाच पाऊस पडला होता; परंतु दक्षिण मुंबईत पावसाच्या पाण्याचा निचरा झाला आणि धारावी व दाट लोकवस्ती असलेल्या इतर वस्त्यांमधील पाण्याचा निचरा लवकर झाला नाही. (दिलीप चव्हाण, कोरोना आणि स्त्री-पुरुष विषमतेचा प्रश्न, मुक्ता प्रकाशन, प्रथम आवृत्ती, २०२२, पृष्ठ क्रमांक, १) त्याचबरोबर १९९३ मधील लातूर जिल्ह्यातील किल्लारी आणि सभोवतीच्या गावांमध्ये झालेल्या भूकंपामुळे मनुष्यहानी हे भूगर्भातील बदल व हवामान बदलाचेच दुष्परिणाम आहेत. तसेच कोरोना महामारीमुळे आपल्या जीवनाचे सर्वच अंगोपांग हे प्रभावित झालेले आहेत. समाजातील विषमता दारिद्र्य भणंगपणा, क्रौर्य, वंचना इत्यादी नकारात्मक बाजू या काळात आक्राळविक्राळ रूपात पुढे आल्या. त्याचप्रमाणे रासायनिक खते आणि कीटकनाशकांचा अतोनात वापर यामुळे हवामानातील जीवजंतू, पक्षी, प्राणी नष्ट झाले आहेत. हरितगृह वायूंचे उत्सर्जन मर्यादित आपल्याला ठेवता आले नाही. मनुष्य आणि निसर्ग यांच्यातील म्हणजे मनुष्य आणि पर्यावरण यांच्यातील संबंधाच्या साहित्य संहितांमध्ये झालेल्या अभिव्यक्तीचे वर्णन, विश्लेषण हा कवी मारोती कच्छवे यांच्या आस्था विषय आहे. हवामान बदलामुळे पावसाची अगणित रूपं आणि त्याचा शेतीवर होणारा परिणाम कवी मनाने न्याहळाला आहे. कितीही पावसाळे भोगून झाले, तरी प्रत्येक पावसाचा अनुभव पावसाचाइतकाच ताजा, तर कधी उदास, निराश असतो. प्रत्येक कवीमनाला तो पुन्हा- पुन्हा आकर्षित करत राहतो.

कवी मारोती कच्छवे यांच्या निसर्गविषयक आकलनावर पर्यावरणाच्या सांस्कृतिक रचितावर 'कुणब्याच्या पोरा' कवितासंग्रहातील कवितांचा निश्चितच प्रभाव पडलेला आहे. हा पाऊस शेतकऱ्यांसाठी सुंदर चित्रासारखा आनंदी, उदात्त, देखना, तर कधीही वस्त्र वाटतो. शेती, कृषीसंस्कृती आणि भौतिक जग हवामानातील बदल मानवी आणि अमानवी यांच्यातील अंतर्गत संबंध हाच पर्यावरणवादी समीक्षेचा विषय आहे.

भारतीय शेती निसर्गावर, मोसमी पावसावर आधारित आहे आणि हवामान बदलामुळे वेळेवर पाऊस पडत नाही. त्यामुळे शेतकऱ्यांचे शेतातील उत्पादन घटते. देशातील शेती उत्पादनामध्ये कमीअधिक होण्याचे प्रमुख कारण म्हणजे अतिशय कमी किंवा अधिक पाऊस हेच आहे. याशिवाय अतिआर्द्रता, असमान्य तापमान, रोग आणि टोळधाड किडीचा कोप अवकाळी पाऊस, पूर, दुष्काळ, गारपीट ही कारणेही आहेतच. गेल्या काही वर्षांपासून हवामानाचे चक्र सर्वांना चक्राहून सोडण्याइतके दूषित झाले आहे. अतिवृष्टी आणि आवर्षण या दोन्ही गोष्टी शेतीसाठी भस्मासूर ठरले आहेत. त्याचे चित्रण कवी मारोती कच्छवे यांच्या 'कुणब्याच्या पोरा' या कवितासंग्रहातील 'पडपड रे पावसा', 'पाऊस', 'कृत्रिम पाऊस', 'गारपीट', 'निसर्गाचं बदलतंय वारं', 'वाचवा थेंब थेंब पाणी', 'झाड', 'मेघराजा', 'गोदामाय', 'धो धो पाऊस पडला', 'असा कसा हा पाऊस' या कवितांच्या आधारे शेतकरी आयुष्य जगताना त्याच्या जीवनात हा पाऊस किती त-हांनी येतो. याचे वर्णन या शोधनिबंधात करावयाचे आहे.

ग्रामीण माणसांच्या वाट्याला येणारे दारिद्र्य आणि दुःख यांचे एकमेव कारण म्हणजे वारंवार पडणारा दुष्काळ म्हणजे निसर्गाची अवकृपाच होय. मागील काही वर्षांत अल्प पावसामुळे जे दुष्परिणाम शेतीवर झाले. ते कवी मारोती कच्छवे यांच्या कवितेतून अधिक गडद झाले आहेत. जलवायू परिवर्तन आणि तापमान वाढीचा परिणाम म्हणून पूर आणि दुष्काळ वारंवार उद्भवत आहेत. त्यामुळे शेतीचे नुकसान होऊन गावगाड्यातील जीवन उद्ध्वस्त होऊ नये. या चिंतेपोटी 'पडपड रे पावसा' या कवितेतील कुणबी बाप पावसाचे गाणे गातो. "पड पड रे पावसा,पड माझ्या अंगणी गाईन तुला मी, नवी नवी गाणी पड माझ्या रानी माती नाहून धुऊन, पाणी वाहील रानोरानी, हलका नको पड मोठा भरून वाहतील, नदी- नाले, ओढा, शेत माझं बहरून उगवलं, तिथं, मातीतलं सोनं, धरणी कर सगळी वल्ली, सगळीकडे दिसतील हिरव्यागार वेली, हिरवा शिवार सारा, पिका पिकातून, सळसळ करील वारा, कणसा भरतील दाणे, कोकिळा गाते मंजुळ गाणे, चारा होईल जनावराला, दूध दुभते, मिळेल खायला, तलाव भरुनी टाक, नेहमीसाठी पाणी पाणी मिळेल मोबलक." (कुणब्याच्या पोरा, पृष्ठ क्रमांक,६) शेतकऱ्यांच्या सर्वमुखी झालेली ही कविता तिच्यातील व्याकुळतेमुळे शोकगर्भ पाऊस गाणे वाटते, पाऊस नाही पडला की, शेतकऱ्याला वेड लागते. शेतकऱ्याला पावसाचा मोह झाला आहे. ही अस्सल अशी निसर्ग कविता पावसाइतकीच पावसाच्या सृष्टीतील घडामोडी घडणार आहे. शेतकऱ्याला खूप महत्त्वाचे आहे. त्याला पाऊस पडावे म्हणून व्याकुळ करणारी तहान लागते. पाऊस न आल्याने नदी, नाले, अंगण, शेती कोरडे राहते. चातक पक्षाप्रमाणे शेतकरी पावसाला पड पड रे पावसा अशी विनवणी करतो आहे. हा पाऊस सर्वव्यापी असून त्याने शेतकऱ्याचे सर्व भौतिक आणि भावनिक जीवन व्यापले आहे. पाऊस पडला तरच शेती पिकेल, उत्पन्न वाढेल, नदी- नाले भरून वाहतील. काळ्या मातीतून पिकं सोन्याप्रमाणे धान्य देतील. सगळा शिवार हिरवागार होऊन पशुपक्ष्यांना पाणी मिळेल. थोड्याच असलेल्या कणसाला लागलेली दाणे तरारून भरतील. कोकिळा आनंदाने मंजुळ गाणी गातील. दही-दूध लेकराबाळांना खायला भरपूर मिळेल. पिण्याच्या पाण्याचा प्रश्न मिटेल म्हणून पाऊस पडणे शेतकऱ्यासाठी महत्त्वाचे आहे. हा पाऊस पडल्यानंतर शेतकऱ्याचे दुःख, समस्या संपून सुखद जीवन होईल. शेतात काम करणारा शेतकरी लहान पाऊस मागत नाही, तर मोठ्या पावसाचे स्वागत करतो. हा शेतकरी पावसाची हरप्रकारे विनवणी करतो आहे. आर्जव करतो आहे. असा लहान पडू नको. धो धो मोठा पाऊस बरसावा असे म्हणतो. रिमझिम नको आहे. कवीमन दुरून सगळी प्रसन्नता, प्राश्न होऊन मग कवितेत उतरवतात. तर कधी त्याच्याशी एकरूप होतात. त्याची सोबत त्याला आधार देणारी

वाटते. असे शेतकरी पावसाशी संवाद साधतो. कवी मारोती कच्छवे यांच्या कवितेत निनादणारा पाऊस वातावरण निर्मिती करणारा घटक म्हणून येतो. शेतात पाऊस पडून सगळी धरणी वल्ली व्हावी. असे शेतकरी 'पड पड रे पावसा' या कवितेत पावसाची करुणा भागतो. पावसाचे प्रमाण आणि स्वरूपात झालेला बदल हाही पिकावर परिणाम करणारा महत्वाचा घटक आहे. पाऊस कमी पडल्यास जमिनीतील ओलावा नष्ट होत जातो, तर एकाचवेळी अधिक पाऊस पडल्यास मातीची धूप कमी होऊन जमीन नापीक बनू लागते. पावसाचा एकूण शेतावरील खूप मोठा परिणाम होत असतो.

'पाऊस' या कवितेत अनेकदा हा पाऊस प्रतिमेच्या रूपात येतो. जे म्हणायचं ते अधिक गहिरे होते. पावसाच्या प्रतिमाना अनेकांच्या उत्कट भावनेला असा आकार दिला आहे. गाव सामसुम झाला की, पावसाची चिंता करणार्या शेतकर्याची निसर्गाला किंवा आल्याने पाऊस येतो. तेव्हा आकाशात इंद्रधनुष्याची कमान व ढग पाहून शेतकर्यांचे डोळे भरून येतात. तो म्हणतो- "आकाशाला आली इंद्रधनुष्याची कमान, ढग पाहून काळे, आले डोळे भरून, एक-दोन म्हणता, ढग होऊ लागले गोळा, मृदंग वाजवीत, ढग झाले गोळा, दिवसभर करून काम, माणसे येऊ लागली घरा, उन्हाळा संपूनही पावसाळ्यात पडू लागल्या गारा, दिवे लागण झाली, सुरु झाला थंड वारा, मुक्कामाला घेऊन आला सोबत गारा, वीज करते चकाचक, ढग मृदंग वाजवीत, अंधार्या रात्री सुरु झालं, पावसाच्या झडीचं संगीत, नदीनाले घरदार पाणी झालं सगळीकडं, विजांचा कडकडाट रात्रभर झड, गाव होता सामसूम, पडला पाऊस रात्रभर झोडपून काढलं मृदंगाच्या तालावर." (कुणब्याच्या पोरा, पृष्ठ क्रमांक, १०) कवी मारोती कच्छवे या कवितेत अचानक कोसळणार्या पावसाचे आणि त्यांच्या स्वतःच्या मनात येणार्या अनियंत्रित विचारात एकसमानता शोधण्याचा प्रयत्न करतात. आकाशात इंद्रधनुष्याची कमान पाहता आली, सगळे निसर्गाचे चक्र बदलले. एकामागे एक ढग गोळा झाले. दिवसभर शेतीत काम करण्यासाठी गेलेली माणसे झापड पडण्याची वेळी घराच्या ओढीने येत होती. अवकाळी पावसातच गारपीट होते. असे म्हटले जाते; परंतु पर्यावरणात बदल झाल्यामुळे पावसाळ्यातही गारा पडत आहेत. सरासरी तापमानातील वाढ हा पहिला बदल होय. गेल्या काही वर्षांमध्ये तापमान वाढल्याने पाऊस कमी आणि गारा, विजा, ढगांचा कडकडाट वाढला आहे. असा पाऊस शेतकर्यांना परवडत नाही. नुकसानच जास्त या गारपीटीमुळे होते. शेतात अडकलेले माणसं, जनावरं घरी येत असताना ढगांचं पहाड कोसळतात. दिवा लावण्याच्यावेळी थंड वातावरण सगळीकडे होते. संध्याकाळ झाली की, भजनात मृदंग जसा वाजवला जातो. त्याप्रमाणे पावसाच्या सरी कोसळतात. झड लागते, नदीनाले भरून वाहतात. घरादारात पाणी येते. सारा गाव सामसूम झोपला. मृदंगाच्या छावणीतून जसा स्वर निघतो. त्याप्रमाणे रात्रभर पाऊस पडला. कवी म्हणतात, विजांच्या कडकडाटा बरोबर हृदयातही धडधड होऊ लागली यावेळी पडणार्या गारा गावाचा शेती, शिवाराचा नाश करणार्या वाटतात. इथे झिमझिम झड लागल्यामुळे माणसं सामसूम निश्चित पडली होती. असा पाऊस सर्वव्यापी असून त्याने माणसाचे सर्व भौतिक, भावनिक जीवन व्यापले आहे.

शेतकर्याचे, कुणब्याचं जगणं निसर्गावर अवलंबून आहे. तो अनेक नैसर्गिक संकटांना तोंड देतो. त्याच्या शेतीत पिकवलेल्या धान्याला हमीभाव मिळत नाही. तरीही शेतीत रात्रंदिवस कष्ट करून पिकवतो; पण आस्मानी-सुलतानी संकटात त्याचे होत्याचे नव्हते होऊन जाते. अवकाळी पाऊस पडल्यामुळे मोत्यासारखी ज्वारी काळी होते आणि आडवी पडते. शेतकर्याचे सारे कष्ट मातीमोल होतात. तसेच स्वप्न धुळीला मिळते. कणसं गारपीट होऊन काळे पडतात. त्याच्या जीवनात सारा काळा अंधारच येतो. हे कवी मारोती कच्छवे 'गारपीट' या कवितेत शेतकर्याच्या व्यथा व्यक्त करताना म्हणतात, "आकाशी एकाएकी नभ भरून आलं, वार्यासंगती गारपीट झालं, ज्वारी पडली आडवी, सगळीकडं नुकसान झालं, पांढरंसिपट रानोमाळ दिसू लागलं, तोंडाशी आलेलं पिक हातातून गेलं, क्षणातच होत्याचं नव्हतं झालं, बळीराजा हवालदील झाला, उघड्यावर पडला, सरकारच्या मदतीकडे त्याचा डोळा

लागला, तुटपुंजी शासनाची मदत झाली मंजूर, इथून तिथून त्यात अनेक भागीदार, हाती पडली रक्कम, ठाण मांडून सावकार व्याज घेऊन गेला, बळीराजा उघड्यावर..." (कुणब्याच्या पोरा, पृष्ठ क्रमांक, ३४) आजही भारतातील आणि प्रामुख्याने मराठवाड्यातील शेती शंभर टक्के निसर्गावरच अवलंबून आहे. वेळेवर पाऊस पडला नाही, तर हंगाम हातचा निघून जातो. ज्यादा पाऊस आणि अवेळी गारपीट झाली की, पिकांचे अतोनात नुकसान होऊन हातचे पीक नासून, सडून, आडवे पडून, वापून वाया जाते. अवेळी होणारा हवामानातील बदल उभे पीक नष्ट होण्यास कारणीभूत ठरते. शासनाची मदत मंजूर झाली, तरी इथून तिथून मध्येच भागीदार खातात. काहीतरी खटाटोप करून हाती आलेला पैसा ठाण मांडून बसलेला सावकार कर्जाचा फासा आवळतो व्याज घेऊन जातो. शेतकरी मात्र उघड्यावर येतो. त्यामुळे शेतकरी कर्जबाजारी होतो. पाऊस मोठा विचित्र असतो. नको तेव्हा कसलीच खात्री नसताना अवकाळी रूपात मोठा पडून नुकसान करतो.

पाऊस आणि शेती यांचा अनन्य संबंध आहे. कारण शेतकऱ्यांच्या हातात फक्त कष्ट करणे एवढेच असते. त्याच्या कष्टाचे मोल पावसावर अवलंबून आहे. कारण पाऊस जर पडला नाही, तर सर्व पिकं वाळून जातात आणि शेतकरी हतबल होतो. शेतकरी हा जगाचा पोशिंदा आहे. 'असा कसा हा पाऊस' या कवितेतील पाऊस अवेळी येतो. काळ्या आईचे स्वप्न पाऊस असतो. हा पाऊस वाजत गाजत आल्यामुळे शेतकरी आनंदीत होतो. त्या पडणार्या पावसाचे स्वागत करतो. त्याचे स्वप्न साकार होणार आहे. शेतकऱ्यांच्या आशा पल्लवीत होतात. तापलेल्या जमिनीला रिमझिम या पावसाने नाऊ घातले आहे. मातीतून होते. सारी सृष्टी फुलून येते. त्यामुळे शेतीत वल झाल्यामुळे जीवाचं रान करून शेतकरी बियाणं पेरतो. पावसाने सुखाची बरसात केली आहे. पेरणी चांगली झाल्यामुळे पिकं टारारून येतात. कणीस निसवण्यापूर्वीच चिमण्यांनी खोपा झाडाच्या फांदीला बांधला आहे. मोर, लांडोरी रानात नृत्य करतात. वार्याच्या झुळकिनी पीकंही शेतात नाचत आहेत. मातीत पीक बहरून आले. कणसात दाणे भरल्यामुळे पाखरं खातात. अवकाळी पावसाने लवकर पेरल्यामुळे तोंडाला आलेला घास जाईल आणि ज्वारी कणसालाच वापेल ही धास्ती शेतकऱ्याला वाटते. स्वाती नक्षत्रात पाऊस पडल्यामुळे कापसाचे नुकसान झाले. पावसाला जा म्हटल्याने जात नसतो आणि पड म्हटल्याने पडत नसतो. पाऊस शेतकऱ्यांच्या हातात नसतो. पेरणीच्या वेळी शेतकऱ्यांच्या घरात दाणा दुणा काही नसते. आतड्याला पिळ देऊन शेतकरी बाप कवीचा काम करतो. त्याच्या अंगावर ठिघळ लावलेलं धोतर आहे. शेतकऱ्याचा जीव शेतात आलेल्या झाडात अडकला; परंतु कणसांना फुलवरा लागण्या अगोदर सावकाराचा सांगावा येतो. रक्ताचं पाणी करून पीक पिकवलेले असते. हे सावकाराला काहीही देणेघेणे नाही. शेवटी सावकाराच्या कर्जबाजारीपणामुळे शेतकऱ्याचा जीव वेडा पिसा होतो. सालभर शेतात कष्ट करूनही अडदांड सावकार सारं हिंसकावून घेऊन जातो. शेवटी शेतकऱ्याचा खिसा रिकामाच राहतो. ही कविता शेती शिवाराचं, चैतन्याचे पीक पाण्याचं, आबादनाचं वर्णन करणारी आहे. शेवटी सावकाराच्या कर्जामुळे मात्र शेतकऱ्यांच्या नशिबी निराशा येते.

सगळीकडे ढग दाटून येतात. 'धो धो पाऊस पडला' वातावरण सारे बदलून गेले. आभाळातून येणार्या प्रत्येक थेंबाने नदीनाले पाहता पाहता तुडुंब भरले. नद्यांना पूर आला. सगळीकडे पाणीच पाणी झाले. गावात पाणी शिरले. उन्हाळ्याचा दिवस होता. रोहिणी नक्षत्र होते. शेतकऱ्याकडे पेरण्यासाठी बियाणंही नव्हते. शेतकऱ्याचे मन चिंब झाले. एवढेच नव्हे, तर जनावरांना पोटभर हिरवा चारा फुटला. त्यामुळे गाई वासरांना दूध पाजू लागल्या. झाडांच्या पानाफुलात पालवीत आलेल्या हिरवाईची ओल झिरपू लागली. सगळं शिवार हिरवागार झाला. पारवे रानात घुमू लागले. धो धो पाऊस पडल्यामुळे रानं हिरवी झाली. त्याचबरोबर आनंदाने पाखरं गाणी होऊ लागली. या पावसामुळे पीकही उंच आली. त्याचे वर्णन करताना कवी कच्छवे म्हणतात- "धो धो पाऊस पडला, पिकानं नसलं पिवळं पितांबर, हातचं गेलं पिक, कुणबी करू लागला विचार, धो धो पाऊस पडला, जीव ओतून कनिष्ठ राखलं,

अवकाळी पावसाने कणसावर धान वाटलं" (कुणल्याच्या पोरा, पृष्ठ क्रमांक,६८) अवकाळी धो धो पावसामुळे शेतीचे नुकसान झाले. अतिवृष्टी झाल्यामुळे पीक पिवळे पडले. अवकाळी पावसाचा खूप मोठा फटका बसला. शेतकऱ्यांच्या स्वप्नावर पाणी फिरले, तोंडातला घास हिरावून नेला. खरीफ हातचा निघून गेला. कणसालाच ज्वारीला मोड फुटले.

सारांश:-

अशाप्रकारे नैसर्गिक हवेतील जे पदार्थ अथवा घटक मानव, प्राणी, पक्षी, वनस्पती, जंतू, माती यांच्यावर दुष्परिणाम करतात. एकूण सृष्टीच धोक्यात येत असते. तसेच हवामान बदलास कारणीभूत आहे आहेत. त्यांना प्रदूषण घटक म्हणतात. काळोखात असणारे तसेच राकेलमध्ये असणाऱ्या गंधकाचा जेव्हा कोळसा जळतो. तेव्हा सल्फरचेही ऑक्सिडेशन होते व सल्फर डायऑक्साईड तयार होतो सल्फर डायऑक्साईड पाण्यात लवकर विरून जातो. जर हवेत सल्फरडाय-ऑक्साईडचे प्रमाण झाले व त्या काळात पाऊस पडला, तर त्याचे पाण्यामध्ये मिसळून सल्फ्युरिक आम्ल तयार होते व यालाच आम्लधर्मी पाऊस म्हणतात. 'कृत्रिम पाऊस' या कवितेत या पावसाचा पिकावर काय परिणाम होतो हे कवी सांगतात. जमीन आम्लयुक्त होऊन नापीक बनते. मातीतील मात्रा कमी होते. तसेच पाऊस कमी कमी झाल्यामुळे मातीतील आर्द्रता कमी होते जमिनीच्या तापमानात सतत चढउतार होत राहिल्यास अपक्षयाची प्रक्रिया सुरू होते. तापमान वाढीमुळे दुष्काळाची परिस्थिती वारंवार निर्माण होते. या वर्षात काही विभागात पाऊस फार कमी झाला आहे. प्रदूषण वाढल्यामुळे हवामानात बदल झाल्यामुळे हळूहळू वाळवंटाकडे आपली वाटचाल सुरू झाली आहे. पावसाचे कमी- अधिक प्रमाण त्याच्या स्वरूपात झालेला बदल हाही पिकावर परिणाम करणारा आहे. पाऊस कमी झाला, तर जमिनीतील ओलावा नष्ट होऊन बोरला पाणी लागत नाही. शिवाय अतिवृष्टी झाल्यासही जमिनीतील धूप कमी होऊन तिच्या गर्भातील श्वासोस्वास निघून गेल्यानंतर जमीन नापीक होऊन शेतकरी अडचणीत येतो. एकंदरच हवामानाचा पावसावर आणि शेतीवर प्रचंड परिणाम होतो. शेतातील सर्वच पिकांसाठी किंवा पिके जगण्यासाठी आवश्यक तेवढाच पाऊस पडला, तर उत्पादन वाढत असते; पण तो योग्यवेळी त्या त्या नक्षत्रात ऋतूत पडणे आवश्यक आहे. वातावरणातील बदलामुळे शेती तोट्यात येत आहे. वातावरणात कार्बन डायऑक्साईडचे प्रमाण जास्त झाल्यामुळे वनस्पतीवर प्रतिकूल परिणाम होतो. वातावरणातील हा बदल काही प्रदेशात चांगले तर काही ठिकाणी घातक ठरते. हरितगृह वायूंच्या उत्सर्जनामुळे वातावरणातील ओझोनच्या थरावर अत्यंत प्रतिकूल परिणाम होत आहे. या वायूंच्या उत्सर्जनामुळे ओझोनचा थर पातळ होत चालला आहे. त्याचबरोबर मानवी जीवन आणि अन्नधान्याच्या उत्पादनावरही परिणाम होत जातो. तापमानात वाढ आणि जलवायू परिवर्तनाचे दुष्परिणाम टाळण्यासाठी शेतकऱ्यांनी काळजी घेणे आवश्यक आहे. शेतात पाणी आडवा पाणी जिरवा सुविधा निर्माण करावे. जमिनीची धूप कमी होण्याबरोबरच पावसाचे पाणी उपयोगात आणण्यासाठी जलसंवर्धन हा उपाय योग्य ठरतो. त्यामुळे साठलेले पाणी जमिनीत मुरून जमिनीतील पाणीपातळी वाढण्यास मदत होते. त्यासाठी शेतीतील बोरचे पुनर्भरण करणे आवश्यक आहे. संद्रिय आणि नैसर्गिक शेती करणे आता काळाची गरज आहे. रासायनिक खते आणि किटकनाशके जमिनीच्या उत्पादकतेत घट करणारी आहेत. तसेच अन्नामध्ये विषारी घटक मिसळत आहेत. अन्नावाटे पोटात जाऊन नाना प्रकारचे रोग वाढत आहेत. त्याचप्रमाणे रासायनिक शेतीतून हरितगृह वायूंचे उत्सर्जन मोठ्या प्रमाणावर होऊन निसर्गाचे चक्र बिघडून हवामानात बदल होतो. या सर्वांचा परिणाम कवी मारोती कच्छवे यांच्या कवितांवर झाला आहे. बऱ्याच कवितांमध्ये पाऊस आणि निसर्गविषयक कल्पना व्यक्त झालेल्या आहेत. काही कवितांमधून पाऊस हा विषयक सुंदर, विद्रूप प्रत्यय येतो. निसर्ग प्रतिमा, प्रतीकांची योजना त्यांनी केली आहे. शेती आणि पाऊस मानवी जीवन आणि शिवार यांचा जवळचा संबंध आहे. पावसामुळे शेतीत कधी चैतन्य, तर कधी काळोख निर्माण होतो. मनुष्य निसर्गावर कुरघोडी करत असल्यामुळे जग दुःखाने ग्रासले आहे. पृथ्वीची अव्हेलना करून मनुष्य स्वर्ग निर्माण करू इच्छितो आहे. स्वर्ग मिळणे दूरच उलट

मातीतच गडप होत आहे. गावच्या गाव डोंगर कोसळल्यामुळे मातीतच गाडला गेला आहे. निसर्गालाही स्वतःचे अस्तित्व आहे. त्याकडे मानवाने आपल्या नजरेतून पाहिले पाहिजे. 'कुणब्याच्या पोरा' या कवितासंग्रहातील कवितांमध्ये पावसाच्या प्रतिमेनं अनेकांच्या उत्कट भावनेला असा आकार दिला आहे. कवी कच्छवे यांच्या कवितेतील असा कसा पाऊस धो धो पाऊस, कृत्रिम पाऊस, पड रे पड पावसा, वातावरण निर्मिती करणारा घटक म्हणून येतो. त्यामुळे कवितेतील भावाशय गूढ ,तरी ताजा, रसरशीत, कधी काळोख, दुःख, नैराश्य घेऊन अवतरतो. त्यांची कविता आपल्या अंतःकरणात ठसते. अर्थवलय अमूर्त राहतात तरीही काळजाला भिडतात. पावसाच्या अवेळी अवकाळी चुकामुखीचे मिस्किल वर्णन करणारी कवी मारुती कच्छवे यांची कविता आहे. कवी शेतकरी बापाच्या सुखदुःखाला अख्ख आयुष्य देऊन टाकतो. मग त्याचं स्वतःचं जगणं उरतच नाही. तो देशातील सर्व शेतकऱ्यांचा अप्रतिनिधी होतो. तो कविता जगतो आणि भोगतो किंवा भोगण्याचीच कविता करतो. बालकवीतेपासून ते आजच्या असंख्य कवितांना पावसाने आशयामृत पुरवले आहे. असे म्हटले तर योग्य होईल; परंतु ही त्यांची कविता भरल्या शेतशिवाराचं, चैतन्याचं, पीकपाण्याचं बहारदार वर्णन करणारी आहे. शेवटी अवकाळी पावसाने घातलेले थैमान वैताग देणारे आहे. असे हवामान बदलाच्या दुष्परिणामामुळे शेतकऱ्यांच्या जीवनात काळेकुट्ट ढग, वांझ आभाळ येते. त्यांची कविता बदलत्या नैसर्गिक चक्राचे चित्रण करून पर्यावरण संदेश देऊन प्रदूषण वाढणार नाही रोगराई होणार नाही अवेळी पाऊस पडून शेतीचे नुकसान होणार नाही. यासाठी चांगल्या सवयी अंगीकारून आपला शेतकरी सुखी, समाधानी बनवण्यासाठी आशावाद व्यक्त करणारी आहे.

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बदलते वातावरण आणि प्रशासकीय अधिकार्यांची आत्मकथने

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भारताच्या स्वातंत्र्यापूर्वी इ. स. १८५३ च्या चार्टर अॅक्टप्रमाणे ब्रिटिशांनी 'नागरी सेवा' स्पर्धा परीक्षा घेण्यास सुरुवात केली. त्या काळी ही परीक्षा लंडनमध्ये घेतली जात असे त्यामुळे भारतातील या परीक्षांना बसणाऱ्या विद्यार्थ्यांची संख्या कमी होती. इ. स. १८६४ पर्यंत भारतामधून चाळीस विद्यार्थी या परीक्षेला बसले होते. त्यापैकी फक्त दहा विद्यार्थीच या परीक्षेत उत्तीर्ण झाले. या दहा विद्यार्थ्यांत सत्येंद्रनाथ टागोर यांनी ही परीक्षा उत्तीर्ण करण्यात प्रथम यश मिळविले. अनेक स्थित्यंतरानंतर ब्रिटिश सरकारने १ ऑक्टोबर १९२६ साली या परीक्षेचे लोकसेवा आयोगात रूपांतर केले. स्वातंत्र्यानंतर म्हणजे २६ जानेवारी १९५० रोजी भारताची राज्यघटना संमत झाल्यानंतर कलम ३९५ नुसार केंद्रीय लोकसेवा आयोग (यु.पी.एस.सी.) असे संबोधण्यात आले. १ मे १९६० रोजी महाराष्ट्राची स्वतंत्र राज्य म्हणून निर्मिती झाल्यानंतर म्हणजे इ. स. १९९२ साली राज्य लोकसेवा आयोग (एम.पी.एस.सी.) ची निर्मिती झाली. वास्तविक पाहता सुरुवातीच्या कालखंडात शैक्षणिक अभावामुळे या परीक्षांकडे पाहण्याचा लोकांचा फारसा म्हणावा असा दृष्टीकोन नव्हता. अनेक बदलानंतर संपूर्ण भारतात व आपल्या महाराष्ट्र राज्यात या परीक्षेला बसणाऱ्यांची संख्या २००० सालानंतर वाढल्याचे दिसते.

इ. स. २०१० नंतर याचे प्रमाण अधिक वाढले. आज यु.पी.एस.सी. व एम.पी.एस.सी. या दोन्ही परीक्षांना बसणाऱ्या विद्यार्थ्यांची संख्या काही लाखांच्या वर पोहोचलेली आहे. महाराष्ट्राच्या ग्रामीण भागातून बरेच विद्यार्थी या परीक्षांना बसताना दिसतात. अचूक मार्गदर्शन मिळावे म्हणून ग्रामीण भागातून शहरात येणाऱ्या विद्यार्थ्यांचे प्रमाण वाढलेले आहे. यामध्ये आर्थिक स्थिती संपन्न असणारे व नसणारे असे दोन्ही वर्ग पहावयास मिळतात. शहरीकरण, वाढणारी महागाई, शिक्षणाचे बाजारीकरण व बदलणारी सरकारी धोरणे या सारख्या समस्यांना प्रत्येक विद्यार्थ्याला सामोरे जावे लागते. निसर्गाचा एक सर्वसाधारण नियम, ज्याला जन्म आहे त्याला मृत्यू आहे. हे एक त्रिकालबाधित सत्य आहे. तरी प्रत्येकजण मृत्यूला घाबरताना दिसतो. जन्म आणि मृत्यू यांच्या दरम्यानच्या काळाला आपण जीवन असे म्हणतो. किती वर्षे जगलो, यापेक्षा कसे जगलो याला अधिक महत्त्व असते. 'जग सुंदर आहे आणि ते मी अधिक सुंदर करीन' हा सुंदर विचार प्रत्येकाने स्वतःच्या जीवनात उतरविला पाहिजे. जीवनात संकटे येणार त्या प्रत्येक संकटाला धैर्याने तोंड देऊन आपले मार्गक्रमण चालू ठेवले पाहिजे. 'ज्यांच्या जीवनात संकटे नाहीत असा एकही माणूस या पृथ्वीतलावर नाही' हा डॉ. बाबासाहेब आंबेडकरांचा सुविचार प्रत्येकाने लक्षात घेण्यासारखा आहे. मनात असलेले ध्येय साध्य करण्याकरिता गतकाळाचा अनुभव व भविष्याची चाहूल लक्षात घेऊन वर्तमान काळात जगणे महत्त्वाचे आहे. 'चुका करणे' हा मानवाचा स्वभाव धर्म आहे. परंतु झालेल्या चुका दुरुस्त करून नवीन राजमार्गाने जाणे हा गुणधर्म प्रत्येकाने अंगी बाणवला पाहिजे. प्रामाणिकपणा, निष्ठा व संकटांवर मात करणे, हे गुण जर प्रत्येक भारतीय विद्यार्थ्यांने अंगिकारले तर यश, मान-सन्मान नक्कीच मिळणार याबद्दल कोणतीही शंका नाही. वडीलधार्या लोकांचा आदर करणे, गुरु-जनांचा सन्मान करणे, दुर्बलांची सेवा करणे, पदाचा योग्य वापर करणे, देशसेवा निष्ठेने करणे, सर्वांशी प्रेमाने व आपुलकीने वागणे, अभिमानापेक्षा स्वाभिमानाने जगणे या गुणांचा वापर

ज्यांनी केला तेच आज या विश्वामध्ये आदरणीय ठरले आहेत. स्पर्धा परीक्षेच्या माध्यमातून उच्च पदांची सरकारी नोकरी मिळविणे हा जरी जीवनातील अत्युच्च क्षण असला तरी या यशाने हुरळून न जाता आपले पाय जमिनीवर असले पाहिजेत. अशाच खडतर प्रवासातून जिद्दीने अभ्यास करून प्रशासकीय परीक्षा उत्तीर्ण झालेल्या काही व्यक्तींनी आत्मकथने लिहिली आहेत.

आजकालची पुस्तके रडवणारी असतात, हसवणारी असतात, काही विचार करायला लावणारी असतात पण माणसे घडवणारी पुस्तके क्वचितच दिसतात. अशाच माणसे घडवणार्या ज्येष्ठ प्रशासकीय अधिकार्यांनी आत्मकथने लिहिलेली आहेत. एक चिनी म्हण आहे, 'एका वर्षाचे पीक पाहिजे असेल तर गहू किंवा भात पेर, अनेक दशकांसाठी हवे असेल तर माणसं लावा' हे माणसं लावण्याचं काम शाहू, फुले, आंबेडकर, आगरकर, कर्मवीर भारूराव पाटील इत्यादींनी केले. आता पैशाची रोपं लावण्याचे काम सुरु झाल्याने माणसे लावायचे काम मागे पडले आहे. असेच प्रशासकीय अधिकारी ज्ञानेश्वर मुळे, नीला सत्यनारायण, विश्वास नांगरे पाटील यांनी आपल्या प्रशासकीय सेवेतून माणसे जोडली आहेत. 'माती, पंख आणि आकाश' ज्ञानेश्वर मुळे, 'एक पूर्ण-अपूर्ण'- नीला सत्यनारायण, 'मन में है विश्वास'- विश्वास नांगरे पाटील या आत्मकथनांतील प्रत्येक व्यक्तिमत्त्व आपल्याला थक्क करून टाकते. नीला सत्यनारायण ह्या प्रशासकीय सेवेत, ज्ञानेश्वर मुळे विदेश सेवेत तर विश्वास नांगरे पाटील हे पोलीस सेवेत अधिकारपदावर कार्य करणारे आहेत. भारताचे संस्कार घेऊन त्यांनी कार्य केलेले आहे. सामाजिक कार्याचा पिंड त्यांच्या मध्ये आहे. त्यामुळेच तर त्यांची जिथे बदली झाली तिथे त्यांनी सामाजिक कार्याचा वारसा चालविला आहे.

'माती, पंख आणि आकाश' या आत्मकथनातील नायक ज्ञानेश्वर मुळे हे इचलकरंजी जवळच्या लाट या गावचे. त्यांचे वडील वृत्तीने वारकरी होते. घरचा व्यवसाय शेतीचा. या घरण्यात जन्मलेला ज्ञानेश्वर मुळे हा मुलगा जागतिक कीर्तीचा प्रशासकीय अधिकारी होऊन भारतातल्या विदेश विभागात उत्तम काम करून परराष्ट्र खात्यातील महत्वाचे पद जपान, रशिया, मालदीवात भूषवितो. ज्ञानेश्वर मुळे यांनी गगन भरारी मारताना आपली मातीतली मुळे हरवू दिलेली नाहीत. प्रशासकीय सेवेत मोठ-मोठ्या पदावर काम करताना देशोदेशीच्या संस्कृती, समाजात वावरताना, आधुनिक जीवन रीतीशी परिचय आणि परिपाठ आत्मसात झाल्यानंतरही आपला गाव, गावकरी, शाळासोबती, रितीभाती, सगे-सोयरे यांचा अभिमान सच्चेपणाने जागता ठेवला आहे. १९९५ पासून टोकियोत भारतीय विदेश सेवेत असलेला काळ 'माती, पंख आणि आकाश' या आत्मकथनात ग्रंथित केलेला आहे.

नीला सत्यनारायण ही एक महाराष्ट्रीय मध्यमवर्गीय मुलगी भारतीय प्रशासन सेवेत १९७१-७२ मध्ये प्रवेश करते. ही एक अप्रुप घटना होती. कारण त्यावेळी आय.ए.एस. सारख्या परीक्षांमध्ये महाराष्ट्रातील मुले फारसी फिरकत नव्हती. नीला सत्यनारायण यांचा मध्यमवर्गीय कुटूंबात जन्म झाल्यामुळे त्यांचे जीवन आई-वडील, ठराविक नातेवाईक आणि शिक्षकांच्या छत्रछायेत घडले. या कुंपणापलीकडे त्यांचे जग नव्हते, अचानक एका वेगळ्या संस्कृतीत, वेगळ्या भाषेत वाढलेल्या श्री. सत्यनारायण यांच्याशी झालेला विवाह आणि प्रशासनातील नोकरी या जीवनातील दोन्ही नवख्या अनुभवांना त्यांना एकाचवेळी सामोरे जायला लागले. ह्या कुटूंबात एक मतिमंद मुलगा जन्माला आला. मुलगा झाला म्हणून आनंद साजरा करण्यापूर्वीच, तो मुलगा सर्वसामान्य मुलासारखा नाही म्हणजे काय? हे पूर्णपणे न कळल्यामुळे एका आईचा शारीरिक व मानसिक पातळीवरील संघर्ष, तिला पूर्ण सत्य समजल्यानंतर संकटांशी सामना करून शेवटी तिने स्वतःचे 'आईपण' सिध्द केले. एका आय.ए.एस. आईच्या हृदय विदीर्ण करणार्या कहाणीला शब्दात उतरवण्याचा प्रयत्न नीला सत्यनारायण यांनी 'एक पूर्ण-अपूर्ण' या आत्मकथनात केलेला आहे. या आत्मकथनात प्रशासकीय सेवा करताना आपल्या मतिमंद मुलाची आपण कशी सेवा केली याविषयी

माहिती दिलेली आहे. 'एक पूर्ण-अपूर्ण' हे आत्मकथन म्हणजे एका मतिमंद मुलाच्या आईने जगातल्या प्रत्येक आईला सांगितलेली एक कहाणी आहे.

सह्याद्रीच्या कुशीत वारणेच्या मुशीत वसलेले 'कोकरुड' या गावच्या सामान्य शेतकरी कुटुंबात विश्वास नांगरे पाटील यांचा जन्म झाला. कोकरुड ते शिराळा, शिराळ्यातून 'कोल्हापूर' या जिल्ह्याच्या ठिकाणी आणि कोल्हापूरहून 'मुंबई' या देशाच्या आर्थिक राजधानीमध्ये आय. पी. एस. होऊन प्रवास करताना विश्वास नांगरे पाटील यांना अनेक अडचणी आल्या. दक्षिण मुंबईचा डी.सी.पी. म्हणून नियुक्ती झाल्यावर २६/११ च्या रात्री धारिष्ट्याने अतिरेक्यांशी दोन हात केले. त्यामुळे त्यांना 'शौर्यपदक' प्रदान करण्यात आले. १९७३ ते १९९७ या चोवीस वर्षातील त्यांचा जीवनप्रवास 'मन में है विश्वास' या आत्मकथनात आला आहे.

नुकत्याच प्रशासनात दाखल झालेल्या नवागत अधिकार्यांचे 'इथे थांबणे नाही' - रमेश घोलप, 'आजचा दिवस माझा' - विजय कुलांगे, 'गरुडझेप' - भरत आंधळे, 'धडपडणार्या तरुणाईसाठी' - संदीपकुमार साळुंखे, 'ताई मी कलेक्टर व्हयनू' - राजेश पाटील आत्मकथने अभ्यासणे जोगे आहे. या आत्मकथनांचे लेखक यु.पी.एस.सी. ही परीक्षा उत्तीर्ण झालेली आहेत. हे नवागत अधिकारी मुले कोणत्या गावातून आलीत त्यांची नावेही बहुतेक शहरी लोकांनी ऐकली नसणार. बार्शीचा रमेश घोलप (त्यांची आई बांगड्या भरायचे काम करायची), राळेगणचा विजय कुलांगे (वडील टेलरींगचे काम करायचे), ठाणगांवचा भरत आंधळे, मुरुडचा संदीपकुमार साळुंखे, ताडे (एरंडोल) चा राजेश पाटील अशा ग्रामीण पार्श्वभूमी असलेल्या गरीब कुटुंबात या नवागत अधिकार्यांनी जन्म घेतलेला आहे. अत्यंत बिकट परिस्थितीशी झगडून भारतीय प्रशासकीय सेवेसारख्या प्रतिष्ठित नोकरीत पाऊल ठेवले आहे. त्यांच्या प्रवासात त्यांना शारीरिक व मानसिक संघर्षाचा सामना करावा लागणे, प्रचंड परिश्रम आणि दुर्दम्य इच्छाशक्तीच्या जोरावर आय.ए.एस. परीक्षा उत्तीर्ण होणे. ही थक्क करणारी संघर्ष कहाणी शेकडो अभ्यासक मुलांना आत्मशोध घेण्यास प्रवृत्त करणारी आहे. एकूणच नवागत प्रशासकीय अधिकार्यांची आत्मकथने म्हणजे 'शून्यातून विशाल अवकाशाकडे झेपावणारा संघर्षमय प्रवास' आहे.

'माझ्या आयुष्याची पानं' या आत्मकथनाची नायिका मीरां चढढा-बोरवणकर ही भारतीय पोलीस सेवेच्या १९८१ च्या तुकडीची प्रशासकीय अधिकारी आहे. मीरां चढढा-बोरवणकर यांचे शालेय शिक्षण फझिल्कामध्ये झाले आहे. जालंधरच्या डीएव्ही महाविद्यालयामधून त्यांनी इंग्रजी साहित्यात पदव्युत्तर पदवी प्राप्त केली. पुणे विद्यापीठातून कायद्याचे शिक्षण आणि पीएच.डी. पूर्ण केली. नाशिक, कोल्हापूर, मुंबई, औरंगाबाद, पुणे आणि दिल्ली येथे मीरां यांची कारकीर्द घडली. त्या मुंबईच्या गुन्हे शाखेच्या सहआयुक्त, पुण्याच्या पोलीस आयुक्त तसेच महाराष्ट्र तुरुंग विभागाच्या प्रमुख होत्या. राष्ट्रपती पदकांनी त्यांना सन्मानित करण्यात आलेले आहे. त्यांनी 'पोलीस संशोधन आणि विकास विभागाच्या प्रमुख' म्हणून कार्यही केलेले आहे. मीरां चढढा-बोरवणकर यांचे 'माझ्या आयुष्याची पानं' हे आत्मकथन प्रशासकीय सेवेत आपली स्वप्न साकार होताना बघणार्या आणि समृद्ध जीवन व्यतीत करण्याची इच्छा असणार्या प्रत्येक तरुण-तरुणींनी वाचावे असे आहे.

१९५३ च्या बॅचचे आय.पी.एस. अधिकारी जे. एफ. रिबेरो यांचे 'बुलेट फॉर बुलेट' हे आत्मकथन असून त्याचा मराठीमध्ये अनुवाद मंजिरी दामले यांनी केलेला आहे. मुंबईमध्ये खिश्न कुटुंबात जन्मलेल्या रिबेरो या भारतीय पोलीस अधिकार्याने कोल्हापूर, नाशिक, मुंबई अशा अनेक ठिकाणी उत्कृष्ट कामगिरी केली. ते १९८२-१९८६ या कालावधीत 'मुंबई पोलीस आयुक्त' होते. तसेच केंद्रीय राखीव पोलीस दलाचे 'प्रधान संचालक' म्हणून गुजारातमध्येही कार्यरत होते. तसेच पंजाबच्या भीषण दहशतवादाच्या काळात त्यांनी 'पंजाब पोलीस महासंचालक पद' यशस्वीरित्या भूषविलेले आहे. पोलीस खात्यातील त्यांच्या कामगिरीची दखल घेऊन भारत सरकारने त्यांना

'पद्मभूषण' या पुरस्काराने सन्मानित केलेले आहे. या आत्मकथनामध्ये त्यांच्या संघर्षमय जीवनाची धगधगती यशोगाथा आहे.

थोडक्यात असे म्हणता येईल, मराठी साहित्यामधील प्रशासकीय अधिकार्यांच्या आत्मकथनात्मक लेखनातून 'संघर्ष हेच जीवन असते' यांची प्रचिती येते. महाराष्ट्रात सध्याच्या बदलत्या वातावरणाच्या काळात विद्यार्थ्यांना शासकीय नोकरी मिळवणे अवघड झाले आहे. प्रशासकीय अधिकारी हा आपल्यापेक्षा वेगळा माणूस आहे ही त्यांच्या बदलली भीतीची भावना विद्यार्थ्यांमध्ये असते. विद्यार्थ्यांच्या मनातून ही भीतीची भावना या आत्मकथनांमुळे नाहीसी होईल. या वरील प्रशासकीय अधिका-यांच्या आत्मकथनांच्या अभ्यासातून स्पर्धा परीक्षेची तयारी करून प्रशासनात जाण्याची इच्छा असलेल्या नवीन विद्यार्थ्यांना नवचैतन्य, प्रेरणा निश्चितपणे मिळेल. बदलत्या वातावरणात वरील प्रशासकीय अधिका-यांची आत्मकथनांच्या अभ्यासाने विद्यार्थी संकटावर मात करून यशस्वी होतील यात शंका नाही. म्हणून प्रशासकीय अधिका-यांची आत्मकथने बदलते वातावरण व आजचे साहित्य यामध्ये उपयुक्त साहित्य आहे. यात शंका नाही.

सूचीग्रंथ :

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भारतीय स्थलांतरित कामगार

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प्रस्तावना :

कामगार या शब्दाचा अर्थ काय तर कामगार व श्रमशक्ती हा शब्द विशेषतः एका उद्योगासाठी व कंपनीसाठी काम करतात त्यांच्यासाठी वापरला जातो. शहर, गाव, राज्य, देश देखील कामगार शब्द वापरण्यात येतो. भारतात विविध प्रकारचे वर्गीकरण करण्यात आले आहे. 1) व्यवसाय यात मच्छीमार, भूमिहीन शेत मजूर, विडी रोलिंग, विणकर, दगडखाणीतील कामगार, पॅकिंग आणि पशुपालन कामगार, रोजगाराचे स्वरूप, स्थलांतरित कामगार, आकस्मिक मजूर, कंत्राटी कामगार व शेतमजूर, सफाई कामगार, घरगुती कामगार, भाजी विक्रेते, फळ विक्रेते, फुटपाय विक्रेते, वृत्तपत्र विक्रेते, हातगाडी चालक इतर.

कामगार स्थलांतर म्हणजे काय तर "रोजगाराच्या उद्देशाने एका राज्यातून दुसऱ्या राज्यात किंवा त्यांच्या स्वतःच्या राहत्या देशात व्यक्ती जातो. याला स्थलांतर म्हणतात."

स्थलांतर अनेक व्यापक श्रेणीमध्ये मोडते. प्रथम, अंतर्गत आणि आंतरराष्ट्रीय स्थलांतर वेगळे केले जाऊ शकते. कोणत्याही देशात व्यक्ती आणि कुटुंबाच्या एका भागातून दुसऱ्या भागात ग्रामीण भागातून शहरांमध्ये हालचाली असतात हे एका देशातून दुसऱ्या देशात होणाऱ्या हालचालीपेक्षा वेगळे असो. दुसरे स्थलांतर ऐच्छिक व सक्तीचे असू शकते.

स्थलांतर हा लोकसंख्येच्या स्थानिक गतिशीलतेच्या एक प्रकार आहे. ज्यामध्ये एक भौगोलिक एकक आणि कामस्वरूपी निवास बदलाचा समाविष्ट असतो. स्थलांतर हे सांस्कृतिक प्रसार आणि सामाजिक एकीकरणाचे साधन आहे. भारतीय जनगणनेद्वारे जन्मस्थान व निवासस्थानानुसार स्थलांतर निश्चित केले जाते. जनगणनेच्या डेटामध्ये स्लंतराची माहिती देखील असते. पहिल्या भारतीय जनगणनेच्या वेळी स्थलांतर डेटाची नोंद करण्यात आली होती. ती जन्मस्थानावर आधारित होती. स्थलांतराचे आंतरराष्ट्रीय आणि अंतर्गत स्थलांतर या दोन्ही गोष्टींचा अनुभव होय. भारतीय मजुरांचा पहिला गट 1815 मध्ये उसाच्या शेतात काम करण्यासाठी कलकत्ता येथून घेण्यात आला होता. 1947 मध्ये भारतीय उपखंडाच्या विभाजनामुळे मोठ्या प्रमाणावर लोकसंख्येचे भारतातून पाकिस्तान आणि बांगलादेशात स्थलांतर झाले. जगाच्या इतिहासातील मानवाच्या सर्वात मोठ्या हालचाली पैकी एक म्हणून हे स्थलांतर होय.

भारतामधील महाराष्ट्र हे एक औद्योगिकदृष्ट्या प्रगत राज्य आहे. मोठ मोठ्या शहरांत व परिसरात उद्योग व व्यापारात मोठी वाढ झालेली दिसून येते. त्यामुळे महाराष्ट्रात भारतातील इतर सर्वच राज्य आणि केंद्रशासित प्रदेशांमधून स्थलांतरितांचा ओघ वारंवार सुरुच असतो. भारताच्या इतर राज्यांतील नागरी भागातून महाराष्ट्रात स्थलांतरीत झालेल्या पुरुषांची संख्या स्त्रीयांपेक्षा पुरुषाची संख्या जास्त आहे. महाराष्ट्रात सर्वात जास्त लोक स्थलांतरीत उत्तर प्रदेशातील लोक कामगार आहेत. तर गुजरातच्या नागरी भागातून महाराष्ट्रात येणाऱ्या कामगाराची संख्या कमी आहे. तसेच बिहार मधील ग्रामीण भागातील संख्या देखील कमी दिसून येते.

प्रा. हॉल यांच्या मतानुसार संस्कृत व प्रगत लोकच अधिक प्रमाणात स्थलांतर करू शकतात. हे स्थलांतर अल्पकालीन, दीर्घकालीन तात्पुरते व कायमस्वरूपाचे असते.

स्थलांतर प्रक्रियेमध्ये मुख्यत्वे, आपल्या मूळ वास्तव्य ठिकाणापासून अनेक कारणासाठी दुसऱ्या ठिकाणी जावून वास्तव्य करतात. पूर्वी लोक भूक भागवण्यासाठी भटकंती करण्यातून स्थलांतर होत होते. आज शिक्षण आरोग्याच्या सोई, रोजगार नोकरी, व्यवसायाच्या ठिकाणी स्थलांतरीत होतात.

उद्दिष्ट्ये :

- 1) भारतीय कामगार स्थलांतराची संकल्पना काय आहे हे समजून घेणे.
- 2) अंतर्गत व बहिर्गत स्थलांतर म्हाजे काय हे समजून घेणे.
- 3) कामगार स्थलांतराचे विविध प्रवाह समजून घेणे.

भारतीय कामगाराची स्थलांतराची संकल्पनाची प्रक्रिया ही प्राचीन काळापासून चालत आलेली आहे. निसर्गातील अनाकालिन घटना, आकस्मित बदल, भूकंप पाऊस, वादळ, महापूरामुळे आपल्या कुटुंबाचे समायोजन साधून आपली उपजिवीका भागवण्यासाठी काही टोळ्या एका जागेवरून दुसऱ्या जागी जातात.

भारताच्या संदर्भात स्थलांतराची प्रक्रिया ही 19 व्या शतकाच्या पूर्वार्धानंतर मोठ्या प्रमाणात सुरू झाली. औद्योगिक व शहरीकरणाची प्रक्रिया आल्या नंतर ग्रामीण भागाकडून कामगार शहरी भागांकडे मोठ्या प्रमाणात स्थलांतरीत होतात.

भारतीय कामगार स्थलांतराची प्रक्रिया ही वय, लिंग, शिक्षण या प्रमुख गोष्टींवर आधारित असते. डॉ. एस.सी. दुबे म्हणतात भारतीय स्थलांतर ही परिवर्तनाची अशी प्रक्रिया आहे की ज्याद्वारे लोकसंख्येचे अंतर्गत व बहिर्गमन होते.

भारत देशाच्या सिमेअंतर्गत होणाऱ्या स्थलांतरास अंतर्गत व देशांतर्गत स्थलांतर असे म्हणतात. यामध्ये प्रत्येक राज्याच्या अंतर्गत भागात आणि राज्याबाहेर परंतु देशाच्या सिमा अंतर्गत होणाऱ्या कामगार स्थलांतराचा समावेश होतो.

अ) तात्पुरते स्थलांतर हे काही तासांपुरते, एकदिवसापुरते एक महिना, एक वर्ष, त्यापेक्षा जास्त असू शकते.

ब) स्थलांतरामध्ये लोक नोकरी व व्यवसायाच्या निमित्ताने दुसऱ्या ठिकाणी जातात. परंतु ते पुन्हा मूळ गावी वास्तव्यासाठी जातात. दैनिक स्थलांतर म्हणतात.

क) हंगामी होणारे स्थलांतर या प्रकाराच्या स्थलांतरामध्ये कामगार विशिष्ट हंगामात आपले गांव सोडून दुसऱ्या राज्यात कामासाठी जातात. यामध्ये मासेमारी, शिकारी, पशुपालन, कृषिक्षेत्रात काम करणाऱ्या कामगिरीचा समावेश होते.

स्थलांतरीत मजुरांनी संबंधित विविध मुद्दे तयार करून 'नीति' उद्योगाने कामगाराचा सर्वांगीण अभ्यास केला त्याचे मोठ्या प्रमाणावर परिणाम झाला आहे.

सामाजिक, आर्थिक व औद्योगिक संदर्भात वेगवेगळ्या राज्यांतून वेगवेगळ्या महानगरे व औद्योगिक शहरांकडे कामगाराचे स्थलांतर होत असते. ही मंडळी बांधकाम, पायाभूत सुविधा, उत्पादन प्रक्रिया छोटे – मोटे उद्योग, वाहन वाहतूक, प्रकल्प उभारणी, हातमाग व कपडा उद्योग, विविध प्रकारच्या सेवा इ. विविध सरकारी विभागांतर्गत काम करीत असतात. या श्रमिकांचे काम करीत असतात. या श्रमिक कामगाराची फारशी दखल घेतली जात नसे. परंतु आता “नीती” आयोगाच्या अनुशंगाने देशांतर्गत सकल घरेलू उत्पादन म्हणजे जीडीपी दहा टक्के एवढे आर्थिक योगदान स्थलांतरीत मजूरूच व कामगाराचे आहे.

नीति आयोगाने कोरोनामुळे व कोरोना दरम्यानच्या कामगारांना झालेल्या देशच्यापी स्थलांतराला ‘राष्ट्रीय स्तरावरील आर्थिक व मानवीय संकट’ संबोधले गेले.

नीति आयोगाने देशांतर्गत विविध राज्य आणि प्रदेशामधून महानगरे व उद्योग वसाहतीकडे कामगारांचे स्थलांतर ही एक कायमस्वरूपी व अनिवार्य बाब आहे. हे नीती आयोगाने सिद्ध केले आहे.

कल्याणकारी उपाययोजना या कामगारांचे एकूण राहणीमान त्यांच्या आरोग्याची स्थिती त्यांच्या उपजीविकेची स्थिती ह्या बाबत सर्वेक्षण केले तर कामगारांची खरी परिस्थिती समोर येईल. कामगारांना येणार्या अडचणी काय त्यावर उपाय केला पाहिजे. मजुरांच्या मुलांचे शिक्षण बरोबर होत नाही त्यांना मोठ्या प्रमाणात अडचणी निर्माण होतात.

भारतात संघटित व असंघटित असे दोन प्रकारचे कामगार पहायला मिळतात कामगारांची संख्या अगणित आहे. संघटित कामगारांच्या हक्काची व कायदे व कायमस्वरूपी नोकरीची हमी असल्यामुळे असंघटित कामगारांमध्ये स्थैर्य प्राप्त झाले आहे. असंघटित क्षेत्रात काम करणारे कामगार हे अशिक्षित गरीब व निम्न वर्गातील असतात त्यांना कोणत्याही प्रकारचे स्थैर्य नसते. त्यांना आर्थिक स्थैर्य प्राप्त करून देण्यासाठी महत्वाच्या कायद्याची अंमलबजावणी करणे महत्वाचे आहे.

जान ब्रेमन यांनी असंघटित कामगारांच्या संदर्भात विचार मांडले त्यांनी ऊसतौड, हिरे कारागिर, रस्तेबांधणी, इमारत, विटभट्टी शेतमजूर व मीठ कामगारांच्या संदर्भात आपले मत मांडतांना असे दिसून येते की, असंघटित क्षेत्रात काम करणार्या कामगारांना हालाकीचे जीवन जगावे लागत आहे. स्थलांतरीत कामगार हे अनुसूचित जाती व जमातीचे लोक असतात ते गरीब व अशिक्षित असतात. स्थलांतरामुळे त्यांच्या मुलांच्या जीवनावर परिणाम होतो. कामगारांना कायम कामांची व वेतनाची आजिबात हमी नसते. कामगारांना वेठगिरीचे जीवन जगावे लागत असते. त्याचे आर्थिक सोपण मोठ्या प्रमाणात होत असते. असंघटित कामगारांना फार कठिण परिस्थितीला सामोरे जावे लागत आहे. त्यांच्या कायम उपाय करणे गरजेचे आहे.

सारांश :

भारत देशातील 70 % लोकसंख्या ही खेड्यात व ग्रामीण भागात मोडते. ग्रामीण भागातील लोकांचे उत्पन्नाचे स्रोत पूर्ण पणे शेतीवर आधारित आहे. देशाचे राष्ट्रीय उत्पन्न निश्चित करणारा ‘कामगार’ हा एक प्रमुख घटक आहे. दारिद्र्य हे देशाच्या विकासात अडथळा निर्माण करणारे असते. दारिद्र्यामुळे अन्न, वस्त्र, निवारा आणि शिक्षण या मूलभूत गरजा पूर्ण करण्यास ग्रामीण भागातील कामगार वर्ग असमर्थ ठरतो. ग्रामीण भागामध्ये लोकांना रोजगार प्राप्त होत नाही. त्यांचे उदरनिर्वाहाचे मुख्य साधन शेती आहे. परंतु बऱ्याचदा शेती ही हंगामी स्वरूपाची असल्यामुळे कामगारांना बऱ्याच समस्यांचा सामना करावा लागतो. ग्रामीण भागात निर्माण झालेल्या बेकारीने

भयंकर स्थिती निर्माण होते. या आपत्कालीन स्थितीला नेस्तानाबूत करण्यासाठी स्थलांतराच्या प्रक्रियेला मोठ्या प्रमाणात वेग येतो. आपले जीवनमान उंचवण्यासाठी हजारांच्या संख्येने कामगार वर्ग स्थलांतरीन करतात. या स्थलांतरीत कामगारांना कोणत्याही प्रकाराची कामाची हमी नसताना देखील तरी सुद्धा रोजगाराच्या शोधात कामगार वर्ग मोठ्या प्रमाणात स्थलांतर करतात. त्यांना कोणत्याही सोयी – सुविधा नसतांना हे कामगार वर्ग स्थलांतरीत करतात. त्यांना सर्व सोयी उपलब्ध करून देण्याची जीम्मेदारी भारत सरकारने करावी.

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हवामान बदलाची लवचिकता शिक्षणातील नाविन्यपूर्ण बदल आत्मनिर्भर भारताकडे नेत आहेत यासाठी ग्रंथालयाचे योगदान

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²Research Guide, Librarian, Anandrao Dhonde Mahavidyalaya, Kada

सार:

ग्रंथालये माहितीचा प्रसार आणि सामुदायिक सहभागाद्वारे हवामान बदलाच्या लवचिकतेमध्ये योगदान देऊ शकतात, तर शिक्षणातील नाविन्यपूर्ण बदल व्यक्तींना कौशल्य विकास, तंत्रज्ञान एकात्मता, उद्योजकता शिक्षण, शाश्वत शिक्षण आणि सहयोगी शिक्षणाद्वारे स्वावलंबी भारतासाठी योगदान देण्यास सक्षम करू शकतात. हवामान बदलाच्या लवचिकतेसाठी ग्रंथालय कशा पद्धतीने योगदान देऊ शकते तसेच शिक्षणातील नाविन्यपूर्ण बदल हे भारताला आत्मनिर्भर कसे बनवू शकते याबद्दल हि थोडक्यात माहिती दिलेली आहे.

शोधसंज्ञा:

हवामान बदल, शिक्षणातील नाविन्यपूर्ण बदल, आत्मनिर्भर भारत, ग्रंथालय योगदान

प्रास्ताविक:

संयुक्त राष्ट्रे विकास कार्यक्रमांतर्गत २०१९चा मानवी विकास अहवाल प्रसिद्ध झाला आहे. त्यामध्ये हा धोका व्यक्त करण्यात आला आहे. या आधीपर्यंत संपत्ती आणि उत्पन्न यांमुळे अस्थैर्य निर्माण होण्याची भीती व्यक्त करण्यात येत होती. मात्र, आता हवामानातील बदल आणि तंत्रज्ञान हे घटक नव्या पिढीमधील असमानतेचे कारण ठरत आहेत. हवामानातील बदल आणि तंत्रज्ञानामध्ये होणारे आमूलाग्र बैठक या पार्श्वभूमीवर, मानवी विकासातील असमानता नव्या रूपामध्ये समोर येत आहे.

समाजातील गरिबांना हवामानातील बदलांचा सर्वात मोठा फटका बसत आहे. तर, यंत्रणांचे प्रशिक्षण आणि 'आर्टिफिशियल इंटेलिजन्स' यांसारखी तंत्रज्ञानातील बदल यांमुळे एखादा संपूर्ण समाजच, 'अगदी एखादा देशही मागे लागू शकतो,' असे या अहवालात म्हटले आहे. हवामानातील बदल आणि तंत्रज्ञानाचा मोठा परिणाम होत असल्याचे सांगताना, या अहवालात गेल्या काही वर्षांतील बदलांकडे लक्ष वेधण्यात आले आहे. विद्यापीठ स्तरावरील शिक्षण उच्चविकसित देशांमध्ये अविकसित देशांपेक्षा सहापट आहे. हवामानातील बदल आणि तंत्रज्ञान यांमुळे नव्या पिढ्यांमधील असमानता वाढत आहे. त्यावर वेळीच उपाय केले नाहीत, तर त्यातून राजकीय अस्थैर्य आणि हिंसाचाराचा भडका उडू शकतो,' असा इशारा संयुक्त राष्ट्रांनी दिला आहे.

हवामान बदलाच्या लवचिकतेसाठी ग्रंथालयाचे योगदान:

विविध माध्यमांद्वारे हवामान बदलाच्या लवचिकतेमध्ये योगदान देण्यासाठी ग्रंथालये महत्त्वपूर्ण भूमिका बजावू शकतात: माहितीचा प्रसार: वाचनालये हवामान बदल, त्याचे परिणाम आणि लवचिकतेसाठीच्या धोरणांविषयी माहिती प्रसारित करण्यासाठी केंद्र असू शकतात. संबंधित पुस्तके, लेख आणि ऑनलाइन संसाधनांमध्ये प्रवेश प्रदान करणे व्यक्ती आणि समुदायांना माहितीपूर्ण निर्णय घेण्यास सक्षम बनवू शकते.

सामुदायिक सहभाग: वाचनालये हवामान बदल जागरूकता, शाश्वत पद्धती आणि स्थानिक अनुकूलन धोरणांवर कार्यक्रम, कार्यशाळा आणि परिसंवाद आयोजित करू शकतात. हे समुदाय प्रतिबद्धता वाढवते आणि सामूहिक कृतीला प्रोत्साहन देते.

ग्रीन इनिशिएटिव्ह:

ग्रंथालये ऊर्जा-कार्यक्षम तंत्रज्ञानाची अंमलबजावणी करून, कचरा कमी करून आणि टिकाऊ इमारतींच्या डिझाइनला प्रोत्साहन देऊन पर्यावरणपूरक पद्धतींचा अवलंब करू शकतात. हे पर्यावरणास जागरूक वर्तनासाठी एक मॉडेल म्हणून काम करू शकते.

डिजिटल संसाधने:

डिजिटल संसाधने ऑफर केल्याने भौतिक सामग्रीची गरज कमी होते, संवर्धनाच्या प्रयत्नांना हातभार लागतो. शिवाय, ग्रंथालये स्थानिक हवामान-संबंधित दस्तऐवज आणि संसाधने विस्तृत सुलभतेसाठी डिजिटल करू शकतात.

जलसाक्षरतेची गरज :

'अन्न नाही, पाणी नाही' अशी अवस्था येऊ नये म्हणून आतापासूनच जलसंचयन, जलसंधारण कार्याला प्रत्येक वस्तीने, प्रत्येक गावाने सुरवात केली पाहिजे. संकटाची जाणीव आता 'ग्लोबल वार्मिंग' मुळे मिळत आहे. हवामान का बदलले? प्रदूषण का वाढले? याला केवळ मानवच जबाबदार आहे. सर्वासाठी नियोजनात्मक जमीन, हवा, पाण्याचा वापर केला तर सर्वांचेच जगणे सुकर होईल. जलसाक्षरतेबरोबरच जनसंख्या नियंत्रणासाठी जननदरावर नियंत्रण आणणेही भारतासाठी आवश्यक झाले आहे.२

आत्मनिर्भर भारताकडे नेणारे शिक्षणातील नाविन्यपूर्ण बदल:

शिक्षणातील अनेक नाविन्यपूर्ण बदल स्वावलंबी भारत निर्माण करण्यासाठी योगदान देऊ शकतात. कौशल्य विकास: स्थानिक उद्योग आणि गरजांशी संबंधित व्यावहारिक कौशल्यांवर लक्ष केंद्रित केल्याने व्यक्तींना स्वावलंबी होण्यासाठी सक्षम बनवू शकते. यामध्ये व्यावसायिक आणि तांत्रिक शिक्षण महत्त्वपूर्ण भूमिका बजावू शकते.

तंत्रज्ञान एकात्मता: शिक्षणामध्ये तंत्रज्ञानाचा स्वीकार केल्याने शिक्षणाचे परिणाम वाढू शकतात आणि डिजिटल युगासाठी व्यक्ती तयार होऊ शकतात. ऑनलाइन अभ्यासक्रम, ई-लर्निंग प्लॅटफॉर्म आणि डिजिटल संसाधने शिक्षणाचे लोकशाहीकरण करू शकतात आणि दुर्गम भागात पोहोचू शकतात.

उद्योजकता शिक्षण: शिक्षणामध्ये उद्योजकतेला प्रोत्साहन देणे विद्यार्थ्यांना त्यांच्या स्वतःच्या संधी निर्माण करण्यासाठी आवश्यक असलेली मानसिकता आणि कौशल्ये सुसज्ज करते. हे नाविन्य, रोजगार निर्मिती आणि आर्थिक स्वावलंबन वाढवू शकते.

शाश्वतता शिक्षण: शाश्वतता तत्त्वे अभ्यासक्रमात समाकलित केल्याने पर्यावरणाच्या दृष्टीने जागरूक आणि जबाबदार नागरिक तयार होऊ शकतात. हे पर्यावरणीय शाश्वततेचा विचार करणारे स्वावलंबी राष्ट्र निर्माण करण्याच्या ध्येयाशी संरेखित होते.

सहयोगी शिक्षण: सहयोगी आणि प्रकल्प-आधारित शिक्षणाला प्रोत्साहन देणे टीमवर्क, समस्या सोडवणे आणि सर्जनशीलता वाढवते. ही कौशल्ये व्यक्तींना नेटव्हिगेट करण्यासाठी आणि वेगाने बदलणाऱ्या जगामध्ये योगदान देण्यासाठी महत्त्वपूर्ण आहेत.

माहिती तंत्रज्ञानाची पर्यावरण आणि मानवी आरोग्यातील भूमिका

माहिती तंत्रज्ञानाची व्याप्ती प्रचंड आहे. बरेच लोक माहिती तंत्रज्ञानाकडे एक विषय म्हणून पाहतात, मात्र माहिती तंत्रज्ञान हा केवळ एक विषय नसून ते एक प्रभावी साधन आहे. त्याद्वारे ज्या क्षेत्रामध्ये याचा वापर होईल त्या क्षेत्राची कार्यक्षमता वाढण्यास तसेच त्याचा दर्जा सुधारण्यास निश्चित मदत होते, बऱ्याच कंपन्या व संस्थांनी अनेक सॉफ्टवेअर, बिनतारी प्रणाली, विविध प्रोग्रॅम मॉडिल्स विकसित केले असून त्याद्वारे अनेक वैद्यकीय संशोधन संस्था, निवानसंस्था हॉस्पिटल्स इत्यादी मानवी आरोग्याशी संबंधित अशा घटकांना तसेच पर्यावरणाशी संबंधित संस्थांना नवे तंत्रज्ञान उपलब्ध होत आहे.

पर्यावरण व्यवस्थापन आणि मानवी आरोग्य या बाबतीत माहिती तंत्रज्ञान महत्त्वाची भूमिका बजावते, १९ व्या शतकाच्या सुरुवातीला ज्यावेळी अशी सॉफ्टवेअर्स विकसित झालेली नव्हती, त्यावेळी पर्यावरण व मानवी आरोग्याबाबत एखादी विशिष्ट माहिती मिळविणे ही अतिशय वेळखाऊ प्रक्रिया होती, मात्र जसे नवीन सॉफ्टवेअर विकसित केले गेले आणि विविध क्षेत्रात त्याचा मोठ्या प्रमाणावर वापर सुरू झाला. त्या सॉफ्टवेअर प्रणालीचा वापर करून आपण हवी ती माहिती अगदी अल्प वेळात आणि तेही अगदी अल्प श्रमात मिळवू शकतो.

अलीकडील काळात इंटरनेटचा वापर फार वाढला असून इंटरनेटवर अनेक वेबसाईट्स उपलब्ध आहेत. त्या वेबसाईट्सच्या मदतीने आपण पर्यावरण तसेच मानवी आरोग्याबाबतची कोणतीही माहिती मिळवू शकतो, तसेच आपण सांख्यिकी माहिती विविध माहिती स्थळ व्यवस्थापन प्रणाली मार्फत मिळवू शकतो.

माहिती तंत्रज्ञानाची पर्यावरणातील भूमिका:

पर्यावरण व्यवस्थापनात माहिती तंत्रज्ञान महत्त्वाची भूमिका बजावते सुदूर संवेदन (Remote Sensing) भौगोलिक माहिती प्रणालीत (जी.आय.एस) इत्यादी माहिती तंत्रज्ञानातील पद्धती अस्तित्वात आल्या असून अशा पद्धतीमुळे पर्यावरणातील अनेक घटकांसंबंधीची अनेक प्रकारची माहिती मिळण्यास मदत होते.

सुदूर संवेदन (Remote Sensing) :

भूपृष्ठा कुठल्याही प्रकारचा स्पर्श न करता खूप दूर अंतरावरून घेतलेली पृथ्वीची छायाचित्रे तसेच भूपृष्ठावरील एखादी वस्तू वा संपदा यांची सविस्तर माहिती त्यांच्याशी प्रत्यक्ष संपर्क न साधता अप्रत्यक्षरित्या मिळविण्याचे आधुनिक तंत्र म्हणजेच सुदूर संवेदन होय.

हवाई संरक्षण व सुदूर संवेदनात भूपृष्ठाच्या वर अवकाशात उंचावर जाऊन तेथून भूपृष्ठाकडे पाहून त्याचे निरीक्षण करावे लागते. माहिती व छायाचित्रण घ्यावे लागते. अवकाशात भूपृष्ठापासून कमी उंचीकडून जास्त उंचीकडे अशा वेगवेगळ्या उंचीवर वायूचे फुगे, रडार, विमाने, उपग्रह इत्यादी साधनांच्याद्वारे विविध प्रकारचे संवेदक वापरून खालील भूपृष्ठावरील विविध घटकांची माहिती मिळविली जाते.

या तंत्राच्या साहाय्याने आपणास रोजच्यारोज किंवा विशिष्ट कालावधीनंतर हव्या त्या प्रदेशाची/क्षेत्राची तेथे प्रत्यक्ष न जाताही दूरवरून माहिती मिळू शकते. तसेच पर्यावरण दृष्ट्या महत्त्वाची असलेली विविध प्रकारची माहिती

सविस्तरपणे व कायमस्वरूपी तयार करून ठेवणे हा त्याचा प्रमुख उद्देश आहे. सुदूर संवेदन मानवी ज्ञानेंद्रिये व कर्मेन्द्रियांच्या कार्याची व्याप्ती वाढविते. त्यामुळे स्थळ काळ व विद्युत चुंबकीय पट्ट्यांच्या (Electro Magnetic Spectrum) संदर्भात निरीक्षण करून माहिती मिळविण्याच्या मानवी क्षमतेत प्रचंड वाढ होते.

सुदूर संवेदन हे खरी, योग्य व उपयुक्त माहिती मिळविण्याचे उपयुक्त साधन आहे, याचा वापर पर्यावरणाच्या विविध घटकांच्या अभ्यासांत होऊ शकतो. उदा. भू-रचना, नैसर्गिक वनस्पती, प्राणी, जलाशय, परिसंस्था तसेच वसाहती, हवामान इत्यादी.

याच्या बहुशास्त्रीय स्वरूपामुळे अनेकविध संपदा व घटकांचे एकत्रित निरीक्षण करून त्याच्या स्थळ काळानुसारच्या परस्परसंबंधाचे प्रादेशिक पातळीवर विश्लेषण करण्याची प्रचंड क्षमता सुदूर संवेदन प्रदान करते. पर्यावरणाच्या विविध घटकातील नियोजन, व्यवस्थापन, मूल्यमापन, संशोधन देखरेख, नकाशे तयार करणे इत्यादींसाठी सुदूर संवेदन महत्वाचे ठरते.

जी. आय. एस् (GIS) भौगोलिक माहिती प्रणाली:

जी.आय.एस. म्हणजेच भौगोलिक माहिती प्रणाली हे तंत्रज्ञान १९६१ सालापासूनच जगभरात उपयोगात येत आहे. या तंत्राची विलक्षण क्षमता व वाढते उपयोजन यांमुळे त्याची पाळेमुळे आता खूप घट्ट रुजली आहेत आणि या तंत्राला खूप प्रतिष्ठाही प्राप्त झाली आहे. भरपूर मोठ्या प्रमाणावरील सांख्यिकीचे व्यवस्थापन व विश्लेषण करणारे प्रगत शास्त्र म्हणून त्याची वैज्ञानिक जगात गणना होऊ लागली आहे. ही अशी माहिती प्रणाली आहे की जी विविध भौगोलिक स्थळांकडून माहिती मिळविण्याच्या कामासाठी तयार केली आहे. यातून मिळालेल्या माहितीचे विश्लेषण संगणकाच्या साहाय्याने केले जाते.

या माहिती प्रणालीचा वापर अलीकडे वाढला आहे. भौगोलिक माहिती मिळविण्याचे महत्वाचे साधन असलेल्या नकाशावर विविध माहिती दाखविण्याच्या दृष्टीने काही मर्यादा आहेत. त्यामुळे जितकी माहिती जास्त तितका नकाशा समजण्यास गुंतागुंतीचा होतो. परंतु जी. आय. एस्. च्या तंत्रज्ञानाने या पारंपरिक मर्यादा ओलांडणे शक्य झाले आहे. आता नकाशावरील वेगवेगळ्या प्रकारची पर्यावरणीय माहिती वेगवेगळ्या स्तरांवर वेगळी काढून ती एकत्रितपणे अथवा वेगवेगळी पाहता येते. तसेच अशा वेगवेगळ्या व एकत्रित माहितीचे विविध प्रकारच्या गरजांनुसार विश्लेषण करता येते.

या माहिती प्रणालीचा वापर करून पर्यावरणातील खालील घटकांबाबतची विविध प्रकारची माहिती मिळविली जाते. तसेच गरजांनुसार त्या माहितीचे विश्लेषण केल्यामुळे उद्भवलेल्या अनेक समस्यांची जाणीव होऊन समस्या सोडविण्यासाठीची उपाययोजना वेळीच करणे शक्य होते.

(१) नैसर्गिक आपत्तींचा शोध: भूकंप, ज्वालामुखी, वादळे, महापूर, भूमिपात, वणवे इत्यादी नैसर्गिक आपत्तीग्रस्त प्रदेश शोधण्यास व तेथे मदत बचाव आणि पुनर्वसन कार्य करण्यास मदत होते.

(२) वन व प्राणी संपदा: एकूण व विविध वनांखाली कुठे - किती क्षेत्र आहे हे समजण्यास मदत वनसंपदेचा विनाश वाचविण्यासाठी उदा. चोरटी वृक्षतोड, वणवे, वनांवरील किडी-रोग धरणांच्या जलाशयाखाली बुडणारी वनक्षेत्रे याबाबतची माहिती मिळण्यास व त्यानुसार त्यावर प्रतिबंधक उपाययोजना करण्यास मदत होते. विविध वन्य प्राण्यांची निवासस्थाने समजण्यास, त्यांची संख्या, उपलब्ध असलेले खाद्य इ. ची माहिती मिळून चोरट्या शिकारीस प्रतिबंध आणि विनाशाच्या मार्गावर असलेल्या प्राण्यांसाठी अभयारण्ये स्थापता येतात.

(३) **जलसंपदा:** समुद्र, खाड्या, सरोवरे, नद्या धरणांचे जलाशय इ. जलाशयांची स्थिती समजण्यास तसेच त्यातील जलपातळी विविध प्रदूषकांची पातळी समजण्यास मदत होते. त्यावरून योग्य ते नियोजन व उपाययोजना करता येतात.

(४) **वाहतूक दळणवळण व्यवस्था :** विविध वाहतूक दळणवळण साधनांचे वितरण स्थिती-अवस्था अपघात अडचणी समजण्यास मदत होऊन त्यावर उपाययोजना करण्यास मदत होते.

माहिती तंत्रज्ञानाची मानवी आरोग्यामधील भूमिका :

मानवी आरोग्यात माहिती तंत्रज्ञान फार महत्त्वाची भूमिका बजावते. मानवी आरोग्याबाबतची विविध प्रकारची माहिती अनेक संकेत स्थळांवरून (वेबसाईट्स) उपलब्ध होते. माहिती तंत्रज्ञान क्षेत्राच्या विकासामुळे इंटरनेटच्या मदतीने आपण जगातील कोणत्याही तज्ज्ञांकरिता वैद्यकीय सल्ला किमान वेळेत व किमान खर्चात घेऊ शकतो.

सध्या अशी अनेक सॉफ्टवेअर विकसित झालेली असून त्यांच्या मदतीने मानवी आरोग्य चांगले राखता येते. स्मार्ट शर्ट (Smart Shirt) हे अशापैकी एक अलीकडील काळात शोधलेले सॉफ्टवेअर असून त्याच्या वापरामुळे रोग्याला वारंवार डॉक्टरकडे जाण्याची गरज पडत नाही, कारण रोग्याच्या शरीरामध्ये होणारे विशेष बदल या शर्टद्वारा निर्देशित केले जातात.

हॉस्पिटल व्यवस्थापनात अशा अनेक सॉफ्टवेअरचा वापर लहान हॉस्पिटल ते मोठे हॉस्पिटल, क्लिनिक व पॉलिक्लिनिक, परिश्रम प्रयोगशाळा ते निदान केंद्र अशा अनेक पातळ्यांवर केला जातो. हॉस्पिटलमध्ये असलेल्या विविध सुविधांची माहिती ठेवणे व तिचे आदान-प्रदान करणे यासाठी बहुतेक हॉस्पिटलमध्ये काही कर्मचारी नेमलेले असतात. एका विशिष्ट सॉफ्टवेअरच्या माध्यमातून प्रतिमांची माहिती संकेतस्थळांवर दाखविली जाते. त्यामुळे खर्चात बचत होते. वैयक्तिक वैद्यकीय माहिती दूर अंतरावर असलेल्या तज्ज्ञ डॉक्टरांच्या सल्ल्यासाठी पाठविता येते. खास तज्ज्ञ डॉक्टरांनी एका हॉस्पिटलमधून दुसऱ्या हॉस्पिटलमध्ये फिरावे लागते. त्यात वेळ जाऊन निदानाला उशीर होऊ शकतो, यासाठी विकसित केलेल्या खास सॉफ्टवेअरच्या माध्यमाद्वारे तज्ज्ञ डॉक्टरला घरबसल्या एक्स-रे, कॅट स्कॅन, इमेजेस, सीटी (कॉम्प्युटर टोमोग्राफी) स्कॅन आणि एम. आर आय (मॅग्नेटिक रिसोनन्स इमेजेस) इत्यादींचे पुनर्विलोकन करून इतर तज्ज्ञ डॉक्टरांशी सल्लामसलत करू शकतो.

अनेक संकेत स्थळांमुळे रोगी आणि डॉक्टरांसाठी उपलब्ध असलेल्या वैद्यकीय माहितीची सहकारी डॉक्टरांमध्ये देवाण-घेवाण होण्यास मदत होते. याचा अनेक क्षेत्रांसाठी उपयोग होतो. जसे आरोग्य रक्षणासाठीचा खर्च कमी होणे रुग्णाच्या देखभालीत सुधारणा होणे इ. अलीकडील काळात एक्स रे, सी.टी. स्कॅन, एम्. आर. आय, इत्यादी प्रतिमा तंत्रांचा वापर आरोग्य रक्षणांमध्ये वाढत आहे. वैद्यकीय स्वरूपाची माहिती गोळा करणे, ती व्यवस्थित ठेवणे, तिच्यावर प्रक्रिया करणे आणि तिचे वितरण करणे. यामध्ये संगणकाच्या विविध प्रणालींच्या वापरामुळे लक्षणीय सुधारणा झालेली आहे. माहितीच्या जलद स्थानांतरासाठी दळणवळण जाळ्यांचा फार उपयोग होतो. अशा तंत्रज्ञानामुळे रुग्णांबाबतच्या माहितीची जवळच्या तसेच दुर्गम भागातील तज्ज्ञ डॉक्टरांना सहजपणे देवाण-घेवाण करता येते आणि आरोग्य रक्षणाबाबतचा खर्च कमी होऊन आरोग्यात सुधारणा होण्यास मदत होत

समारोप:

शेवटी, हवामान बदलातील लवचिकता शिक्षणामध्ये ग्रंथालयांची भूमिका एक परिवर्तनकारी शक्ती म्हणून उदयास आली आहे, जे नाविन्यपूर्ण बदलांचा परिचय करून देते जे आत्मनिर्भर भारताच्या दृष्टीकोनात योगदान देतात.

माहितीच्या प्रसारासाठी केंद्र म्हणून काम करून, सामुदायिक सहभाग वाढवून आणि शाश्वत पद्धतीचा अवलंब करून, वाचनालये व्यक्ती आणि समुदायांना हवामान बदलामुळे निर्माण झालेल्या आव्हानांना नेटिव्हिगेट करण्यासाठी आणि त्यांना तोंड देण्यासाठी आवश्यक ज्ञान आणि कौशल्ये सुसज्ज करण्यात महत्वपूर्ण भूमिका बजावतात. ग्रंथालय आणि हवामान लवचिकता शिक्षण यांच्यातील हा समन्वय भारतासाठी अधिक शाश्वत आणि स्वयंपूर्ण भविष्य घडवण्याच्या दिशेने एक महत्वपूर्ण पाऊल आहे.

संदर्भ :

-) किर्दात एस.बी.पर्यावरण जाणीव-जागृती ऑक्टो.२००४ प्रथम आ.निराली प्रकाशन पुणे.
-) चौधरी ए.पी.हवामानशास्त्र आणि सागरविज्ञान नोव्हेंबर २०१८ प्रशांत प्रकाशन जळगाव.
-) कार्लेकर श्रीकांत,जी आय एस भौगोलिक माहिती प्रणाली २०११ डायमंड प्रकाशन पुणे.
-) सावंत प्रकाश पर्यावरण जागृती ऑक्टो.२०११ नरेंद्र प्रकाशन पुणे.
-) महाराष्ट्र टाइम्स शुक्रवार, १३ डिसेंबर २०१९ अहमदनगर.

पर्यावरणाच्या समस्या

प्रा. डॉ. रामकृष्ण गहिनीनाथ बोडखे

इतिहास विभाग प्रमुख
आनंदराव धोंडे ऊर्फ बाबाजी महाविद्यालय, कडा
ता. आष्टी जि. बीड

प्रस्तावना :

मराठी शब्दांमधील पर्यावरण या शब्दाच्या व्याख्यानुसार सजीवाच्या नैसर्गिक परिसरात पर्यावरण असे म्हणतात. वैज्ञानिक परिभाषिक कोषानुसार पर्यावरण या संज्ञेत वनस्पती अथवा प्राणी ज्या नैसर्गिक परिसरात जगतात, वाढतात तेथील हवा, जमीन, पाणी इतर सजीव पर्जन्यमान, उंची, तापमान, इत्यादी सर्वांचा समावेश पर्यावरणात होतो.

थोडक्यात पर्यावरण म्हणजे काय प्रकार? पृथ्वीवरील अथवा पृथ्वीच्या कोणत्याही प्रदेशातील मानव तसेच इतर सजीव ज्या परिसरात राहतात, त्या परिसरातील सर्व घटक समूह मिळून तयार झालेली परिस्थिती म्हणजे पर्यावरण होय. पर्यावरणात तापमान, सूर्यप्रकाश, जल, वातावरण इत्यादी अजैविक घटकांबरोबरच वनस्पती, प्राणी, सूक्ष्मजीव इत्यादी जैविक घटक देखील असतात.

पर्यावरण हे सर्व सजीव आणि निर्जीव घटक आणि त्यांचे मानवी जीवनावर प्रभाव टाकणारे परिणाम याची बेरीज म्हणून परिभाषित केले जाऊ शकते. सर्व सजीव किंवा जैविक घटक प्राणी, वनस्पती, जंगले, मत्स्यपालन आणि पक्षी असले तरी, निर्जीव किंवा अजैविक घटकांमध्ये पाणी, जमीन, सूर्यप्रकाश, खडक आणि हवा यांचा समावेश पर्यावरणात होतो.

पर्यावरणीय समस्या म्हणजे इकोसिस्टीमच्या नेहमीच्या कार्यात व्यत्यय आहे. पुढे या समस्या मानवामुळे होऊ शकतात किंवा त्या नैसर्गिक असू शकतात. सध्याच्या परिस्थितीत जेव्हा इकोसिस्टीम पूर्ववत होऊ शकत नाही, तेव्हा या समस्या गंभीर मानल्या जातात आणि जर इकोसिस्टीम नक्कीच कोलमड्याचा अंदाज वर्तवला जात असेल तर ते आपत्ती जनक मानले जातात.

हवामान बदल आणि वायु प्रदूषण :

पृथ्वीला हवामान बदलाचा सामना करावा लागत आहे, कारण तापमान वाढत आहे. आणि हे मानवी क्रिया कलपा मुळे गतिमान झाले आहे म्हणजेच आपण मानवांना चालविलेले आहे. हरितगृह वायू उत्सर्जन वाढले आहे. त्याचा सामना करण्यासाठी जागतिक बांधिलकीची आवश्यकता आहे, ज्यामध्ये सर्व देशांनी वातावरणातील हरितगृह वायूचे उत्सर्जन कमी केले पाहिजे. यासाठी नवी करणीय ऊर्जा, सार्वजनिक वाहतूक आणि स्वच्छ ऊर्जा वापरणाऱ्या गाड्यांवर पैज लावणे आणि उद्योगातून होणाऱ्या उत्सर्जनाचे नियम करणारे कायदे करणे आवश्यक आहे. वायु प्रदूषण, म्हणजेच हवेतील प्रदूषकाची उपस्थिती, नैसर्गिक आणि मानवनिर्मित अशी दोन्ही कारणे आहेत. वायु प्रदूषणास कारणीभूत असलेले सर्वात मोठे घटक हे आहेत. रासायनिक उत्पादनाच्या वापरासाठी खाणकाम आणि त्याच्या विकासासाठी आवश्यक जड यंत्रसामुग्री, जंगल तोड, जीवाश्म इंधन, आग आणि शेतीमध्ये कीटकनाशकाच्या वापराशी संबंधित वाढीव वाहतूक ते कमी करण्यासाठी, सार्वजनिक वाहतुकीला चालना देणे,

जीवाश्म इंधनाच्या जबाबदारीने वापर करणे, अधिक हिरवे क्षेत्र तयार करणे किंवा कचरा निर्मिती कमी करण्यासाठी वापर कमी करणे यासारखे उपाय केले जाऊ शकतात.

आम्ल पाऊस आणि जंगलतोड :

ऍसिड पाऊस हा पाणी आणि विषारी कचरा विशेषता वाहने, उद्योग किंवा इतर प्रकारच्या यंत्रसामग्री पासून बनवलेला एक वर्षाव आहे. हे होण्यापासून रोखण्यासाठी, प्रदूषण उत्सर्जनावर नियंत्रण ठेवणे, आलो पालन न करणारे उद्योगधंदे बंद करणे आणि इंधनातील सल्फरचे प्रमाण कमी करणे किंवा नवी करणे ऊर्जेला प्रोत्साहन देणे आणि गुंतवणूक करणे आवश्यक आहे.

एफ.ए.ओ. (संयुक्त राष्ट्रांची अन्न आणि कृषी संघटना) दक्षिण अमेरिका आणि आफ्रिकेतील कोणतेही देश ठरवते. अनिश्चित शेती आणि लाकडाच्या अति शोषणामुळे जंगलतोडीचा त्यांना सर्वाधिक फटका बसतो. जंगलात लागणार्या आगीचे प्रमाण तुलनेने कमी असले तरी, दरवर्षी जगाच्या विविध भागात हजारो झाडे नष्ट होण्याचे ही ते कारण आहे.

मातीची झीज आणि दूषितता :

जेव्हा माती खराब होते, तेव्हा ती तिचे भौतिक आणि रासायनिक गुणधर्म गमावते, त्यामुळे ती यापुढे शेती किंवा परिसंस्था सेवा यासारख्या सेवा देऊ शकत नाही. मातीची झीज होण्याची कारणे विविध कारणामुळे होतात. सगळी वृक्षतोड, विस्तृत शेती, आती चर, जंगलातील आगी, जलस्रोताचे बांधकाम किंवा अति शोषण. ही समस्या टाळण्याचा किंवा कमी करण्याचा उपाय म्हणजे जमीन वापराचे नियम करणारी पर्यावरणीय धोरणे लागू करणे. हानीकारक कृषी तंत्रज्ञानाचा वापर (कीटकनाशके, कीटकनाशके आणि खते किंवा सांडपाणी किंवा नद्या प्रदूषित करणे), शहरी कचऱ्याची अयोग्य विल्हेवाट, पायाभूत सुविधांचे बांधकाम, खान काम, उद्योग, पशुधन आणि सांडपाणी ही सर्वात सामान्य कारणे आहेत.

सामान्य माती दूषित होण्यासाठी हानीकारक कृषी तंत्रज्ञानाचा वापर यामध्ये कीटकनाशके, खते, सांडपाणी किंवा प्रदूषित नद्यांचा वापर. शहरी कचऱ्याचे अयोग्य विल्हेवाट, पायाभूत सुविधांचे बांधकाम, खान काम, उद्योग धंदे, पशुधन आणि सांडपाणी ही माती दूषित होण्याचे सर्वात सामान्य प्रकार आहेत.

चांगली शहरी नियोजन, पुनर्वापर आणि कचरा पर्यावरणात टाकून देणे, बेकायदेशीर सॅनिटरी फिल्म प्रतिबंधित करणे आणि खान आणि औद्योगिक कचरा व्यवस्थापनाचे माननीयिकीकरण करून घेणे.

शहरी वातावरणात पर्यावरणीय समस्या :

कचरा व्यवस्थापन आणि पुनर्वापराचा अभाव

जास्त गर्दी आणि प्रत्यारोपित ग्रहकांच्या जीवनशैलीमुळे कचऱ्याच्या उत्पादनात वाढ होत आहे आणि त्यामुळे नैसर्गिक संसाधनांच्या शोषणात वाढ होत आहे. ज्यामुळे कमी होण्याचा धोका आहे. हे रोखण्यासाठी शिक्षित करणे आवश्यक आहे आणि घट पुनर्वापर किंवा पुनर्वापर यासारख्या क्रिया कालापद्धारे वर्तुळाकार अर्थव्यवस्थेवर जोर द्या जरी बऱ्याच देशांमध्ये, विशेषता विकसित देशांमध्ये, जर कचरा व्यवस्थापन केले जात असेल आणि त्याच्या निर्मूलनासाठी संस्था आहेत. असेही अनेक देश आहेत जे रिसायकल करत नाहीत. नवीन नैसर्गिक संसाधनांच्या वाढीव उत्खनना व्यतिरिक्त, पुनर्वापराच्या अभावामुळे लँडफिल्स मध्ये मोठ्या प्रमाणात कचरा जमा होतो.

पुनर्वापराच्या अभावाबाबत, जनजागृती करणे आणि लोकांना सुशिक्षित करणे महत्त्वाचे आहे. परंतु सरकारने देखील स्वतःला वचनबद्ध केले पाहिजे जेणेकरून चांगले कचरा व्यवस्थापन साध्य होईल.

प्लास्टिक आणि पर्यावरणीय पाऊल खुणा वापरणे

ज्यांनी आमच्यासाठी एक डिस्पोजेबल संस्कृती स्थापित केली आहे आणि आम्हाला अधिक आरामदायक जीवनशैलीत प्रदान केले आहे, जी विशेषता प्लास्टिक उत्पादनामध्ये प्रमुख आहे. प्लास्टिकच्या उत्पादनाचा सर्वात जास्त परिणाम समुद्रावर होतो, कारण हा कचरा कालांतराने महासागरात पोहोचेल, ज्यामुळे सागरी प्रजातीच्या आरोग्यावर आणि नंतर आपल्यासह स्तलीय प्रजातीच्या आरोग्यावर परिणाम होईल. प्लास्टिकचा वापर कमी करणे आणि पर्यावरणास अनुकूल अशा इतर प्रकारची पॅकेजिंग शोधणे हा उपाय असावा.

एका लॉजिकल फूड प्रिंट हा एक पर्यावरणीय सूचक आहे. जो एखाद्या व्यक्तीच्या पर्यावरणावरील प्रभावाचा संदर्भ देतो वापरलेल्या संसाधनाचे उत्पादन करण्यासाठी आणि तयार केलेला कचरा मिळवण्यासाठी किती उत्पादन क्षेत्र आवश्यक आहे हे दर्शवितो. बेजबाबदार उपभोग आणि जागतिकीकरणाचा अर्थ असा आहे की जागतिक आणि वैयक्तिक पर्यावरणीय पदचिन्ह वाढत आहे.

जैविक स्तरावर पर्यावरणीय समस्या :

कृषी, पशुधन, शहरी केंद्राचा विस्तार, औद्योगिक रोपण, नैसर्गिक वातावरणाचे आतीशोषण किंवा गैरनेटीव प्रजातीचा परिचय, कार बेकायदेशीर यासारख्या कृतीमुळे, त्यात होत असलेल्या परिवर्तनामुळे इकोसिस्टीम बिघडली आहे. प्रदूषण आणि इतर मानवीय क्रिया कलाप ही मुख्य पर्यावरणीय समस्या आहेत. जैवविविधतेचे नुकसान यावर तोडगा काढण्यासाठी लोकांना नैसर्गिक पर्यावरणाचा आदर करण्यास सुशिक्षित करण्यासोबतच, नैसर्गिक जागा कायद्याद्वारे संरक्षित करणे देखील आवश्यक आहे. बेकायदेशीरपणे व्यापार केलेल्या प्रजातीसाठी बाजार आहेत जे त्यांच्या मातृभूमीतून जीव पकडतात आणि त्याचा व्यापार करतात, अखेरीस प्रजाती आक्रमक मानल्या जाणाऱ्या इतर भागात पोहोचतात. प्रदेश आणि अन्न यांच्या स्पर्धेमुळे आणि परिसरात नवीन रोगाचा प्रसार झाल्यामुळे, आक्रमक प्रजाती अखेरीस मूळ प्रजातीची जागा घेऊ शकतात.

वायु प्रदूषण :

बऱ्याच देशाला वायू प्रदूषणाची समस्या भेडसावत आहे. उच्च पातळीच्या वायू प्रदूषणाचा सामना करावा लागतो, विशेषतः शहरी भागात, यासारख्या कारणामुळे औद्योगिक क्रिया कला, वाहतू आणि ऊर्जा उत्पादन. प्रदूषणामुळे मानव आणि वन्यजीव दोघांच्याही आरोग्यावर गंभीर परिणाम होऊ शकतात. या समस्यांचा सामना करण्यासाठी सार्वजनिक वाहतुकीच्या वापरास प्रोत्साहन देणे आणि पर्यायी ऊर्जा स्रोताच्या वापरास प्रोत्साहन देणे यास अनेक उपाय लागू केले आहेत. या प्रयत्नानंतरही वायू चिंतेचा विषय बनला आहे.

औष्णिक ऊर्जा निर्माण करणाऱ्या कारखान्याचे सर्वात सामान्य उदाहरण म्हणजे पावर प्लांट. दुर्दैवाने हे पावर प्लांट नायट्रोजन ऑक्साईड, सल्फर ऑक्साईड आणि सीओ२ सारख्या मोठ्या प्रमाणात हानिकारक वायू सोडतात. 16 ते 1960 या 2006 वर्षांच्या कालावधीत CO₂ उत्सर्जन 50 टक्क्याने वाढले. केवळ एक या वर्षात एकूण 433 दशलक्ष टनापर्यंत पोहोचले, जे प्रती रूहवासी प्रतिवर्षी अंदाजे दहा टन सरासरी प्रतिनिधित्व करते. हे हरितगृह वायू ग्लोबल वार्मिंग आणि हरितगृह परिणामाच्या घटनेत महत्त्वपूर्ण योगदान देतात.

जगामध्ये पर्यावरणाच्या अभ्यासाला फारच महत्त्व प्राप्त झाले आहे. पर्यावरण हा शब्द अलीकडे सर्वांच्या जिव्हाळ्याचा शब्द झाला आहे. सध्या आर्थिक पर्यावरण सामाजिक पर्यावरण या संज्ञा प्रचलित होत आहेत. प्रगतीसाठी व उच्च राहणीमानासाठी स्पर्धा चालू असताना स्पर्धेतून जगाचे व भावी काळाचेही पर्यावरण धोक्यात आले आहे. पर्यावरणाचा नाश आणि प्रदूषण यामुळे मानव जात स्वतःचा नाश ओढून घेईल अशी भीती निर्माण झालेली आहे. साधन संपदेचा प्रचंड वेगाने होणारा रास, लोकसंख्या विस्फोट, आम्ल पर्जन्य, हवामानातील बदल, जंगल आणि प्राणी यांचा सहार, प्रदूषण, औद्योगीकरण, ओझोन स्तर विथ हाऊस या समस्या निर्माण झाल्या आहेत.

संदर्भ ग्रंथ :

- 1) आरोग्यदायी पर्यावरण----लेखक भूषण पटवर्धन.
- 2) जीवनशैली पर्यावरण प्रदूषण आणि आयुर्वेद... लेखक प्रभाकर पवार.
- 3) डायमंड क्लीझ सिरीज : पर्यावरण.... लेखक जॉन्सन बोर्जेस.
- 4) एन्व्हायरमेंट आवरणेस मराठी.... लेखक अरुण राजाराम कुंभारे.
- 5) पर्यावरण अभ्यास लेखक... डॉ. एस. व्ही. ढमढेरे.

डिजिटल ग्रंथालय : आजची गरज उद्याची सोय.

निलेश कुंडलिक वाखारे

(संशोधक विद्यार्थी)

डॉ. शाम तुकाराम सांगळे

(संशोधक मार्गदर्शक)

सध्याचे युग हे माहिती तंत्रज्ञानाचे युग म्हणून ओळखले जाते सध्याच्या आधुनिक युगामध्ये माहिती तंत्रज्ञानाच्या क्षेत्रात मोठ्या प्रमाणात संशोधन झाल्यामुळे नवनवीन तंत्रज्ञान उदयास आले आहे. या नवीन तंत्रज्ञानाचा वापर करून ग्रंथालय आणि माहितीशास्त्रात आमुलाग्र बदल झालेला दिसतो. सदर लेखामध्ये डिजिटल ग्रंथालय म्हणजे काय? डिजिटल ग्रंथालयाची व्याख्या, उद्दिष्टे, गरज, डिजिटल ग्रंथालयाद्वारे दिल्या जाणाऱ्या सेवा, डिजिटल ग्रंथालयाचे फायदे आणि तोटे यांचा मागोवा घेण्यात आला आहे.

संज्ञा - Digital Library, E-Library, Virtual Library, Library without Boundaries, Services

प्रास्ताविक

संगणकाच्या वापराने तसेच इलेक्ट्रॉनिक माध्यमाचा प्रभाव यामुळे अलीकडील ग्रंथालयाच्या विकासावर त्याचा परिणाम झालेला दिसतो. याचा परिणाम म्हणून इलेक्ट्रॉनिक ग्रंथालये (E-Library), क्षितीजाविना ग्रंथालये (Libraries without Boundaries), आभासी ग्रंथालये (Virtual Library) अशा नवनवीन तांत्रिक संकल्पना उदयास आल्या आणि त्यानंतर डिजिटल ग्रंथालय या नवीन संकल्पनेचा उदय झाला. माहिती ही मोठ्या प्रमाणामध्ये ज्याप्रमाणे वाढत चालली आहे, त्याच प्रमाणे त्या माहितीला मागणी ही तेवढ्याच प्रमाणात वाढत आहे. संशोधन करणाऱ्या व्यक्तीची संख्या वाढत आहे. ग्रंथालयात ऐतिहासिक दृष्टीने महत्त्वपूर्ण तसेच दुर्मिळ स्वरूपाची माहिती असते. माहितीचा उपयोग हा संशोधक संशोधनासाठी करू शकतो. परंतु अशा प्रकारचे वाचनसाहित्य अत्यल्प व दुर्मिळ असल्या कारणाने ते संशोधकाला दिले जात नाही. त्यासाठी त्या साधनाचे डिजिटायझेशन करणे गरजेचे असते. वाचकाला माहितीची आवश्यकता ही कोणत्याही वेळी असू शकते त्यासाठी डिजिटल ग्रंथालयाद्वारे आपण वाचकापर्यंत माहिती ही विविध माध्यमाद्वारे कोणत्याही वेळी व कमी कालावधीमध्ये वाचकापर्यंत पोहचवू शकतो. डिजिटल लायब्ररी, ई-लायब्ररी आणि आभासी ग्रंथालय या तीनही संकल्पनेमध्ये फारसा फरक आढळत नाही. यामधील साम्य म्हणजे वाचन साहित्य हे इलेक्ट्रॉनिक स्वरूपात साठवून ठेवले जाते.

डिजिटल ग्रंथालय म्हणजे काय ?

आर्मस्च्या , "डिजिटल ग्रंथालयाच्या ठिकाणी साहित्य संग्रह हा डिजिटल स्वरूपात साठविलेला असतो व नेटवर्कच्या माध्यमातून तो वापरता येतो. असे ग्रंथालय वापरण्यासाठी संग्रह व माहितीसेवांचे व्यवस्थापन केलेले असते."

उद्दिष्टे :

१. डिजिटल ग्रंथालयाची गरज जाणून घेणे.
२. डिजिटल ग्रंथालयाच्या सेवांचा अभ्यास करणे.

३. डिजिटल ग्रंथालयाचे फायदे आणि तोटे अभ्यासणे

४. नविन सेवा सुरु करणे आणि त्या वाचकांना पुरविणे

१. डिजिटल ग्रंथालयाची गरज :

भविष्यकाळात ग्रंथालयांना व पर्यायाने ग्रंथांना डिजिटल स्वरूपात माहिती निर्मिती तसेच ग्रंथालयाकडे असलेल्या विविध छापील साहित्याचे डिजिटल स्वरूपात परिवर्तन व डिजिटल स्वरूपातल्या माहितीस्रोतांचे जतन व संरक्षण या बाबींकडे विशेष लक्ष देणे आवश्यक आहे. डिजिटल ग्रंथालयाची निर्मिती ही भविष्याकाळाची गरज आहे. डिजिटलग्रंथालयाच्या निर्मितीची कारणे व डिजिटल ग्रंथालयाची गरज पुढील मुद्द्यांवरून स्पष्ट होईल.

१. छापील माध्यमाची मर्यादा -

ग्रंथालय साहित्य संग्रहामध्ये छापील स्वरूपातील साहित्याचा भरणा आजही आपल्याला आढळतो. ग्रंथालये करते.

४. जागतिक व्यापक जाळे (World Wide Web) -

या सेवेचा उपयोग सर्व्हिस प्रोव्हायडरमार्फत प्रत्येक महाजाळ्याशी जोडणी करण्यासाठी होतो. ही सेवा खुप लोकप्रिय आहे.

५. शोध इंजिन (Search Engines) -

अनेक संकेतस्थळापासून आपणास आवश्यक असणारी माहिती शोधून इंटरनेटद्वारे मिळविण्याकरीता ह्या त्या संकेतस्थळावर पत्याशिवाय पोहोचणे शक्यच नसते. हा पत्ता मिळवून देण्याचे कार्य सर्च इंजिन करते.

फायदे:

१. डिजिटल ग्रंथालयामुळे वाचनसाहित्य संग्रहाचा एकाचवेळी विविध मार्गांनी वापर शक्य होतो.

२. डिजिटल ग्रंथालयामुळे वेळ, श्रम, पैसा या स्वरूपातील अडथळे दूर होतात.

३. डिजिटल ग्रंथालयामुळे कमी जागेमध्ये मोठ्या प्रमाणात वाचन साहित्य संग्रह करता येतो.

तोटे :

१. डिजिटल ग्रंथालयामुळे कॉपीराईट कायद्याचे उल्लंघन होत आहे.

२. डिजिटल ग्रंथालयासाठी वापरल्या जाणाऱ्या हार्डवेअर, सॉफ्टवेअर यांच्या किमती जास्त आहे.

३. वाचकाना अमुद्रित साहित्य हाताळायला अवघड जाते.

२. वेगवेगळ्या स्वरूपातील साहित्य जतन -

ग्रंथालय संग्रहात ग्रंथ, नियतकालिके, संदर्भग्रंथ, छापील ग्रंथेतर साहित्य या व्यतिरिक्त अनेक साहित्यप्रकार वस्तू संग्रहित असतात. ज्यामध्ये अमुद्रित ग्रंथेतर साहित्यप्रकार, पेटिंग्ज, वस्तुसंग्रहातील वस्तू, दसरखान्यातील दस्तावेज,

खेळणी, प्रतिकृती, छायाचित्रे इ. गोष्टी समाविष्ट असतात. अशा सर्व वस्तूंबद्दलची माहिती विशिष्ट माध्यमात परावर्तित करून कायम स्वरूपी टिकविणे आणि संशोधकास सुलभापणे उपलब्ध करून देणे हे ग्रंथालयाचे कर्तव्य आहे. डिजिटल ग्रंथालय निर्मितीच्या प्रक्रियेत अशी माहिती साठविणे शक्य आहे.

३. विविध भाषेतील माहिती वापरण्याची एकत्र सोय -

भारतासारख्या विविध भाषिक संघराज्यात विविध भाषांमध्ये साहित्यनिर्मिती होत असते. एका ग्रंथालयातही विविध भाषेतील साहित्य उपलब्ध असू शकते. अशा विविध भाषांतील उपलब्ध साहित्याचे जतन करताना डिजिटायझेशनसारखे तंत्रज्ञान वापरता येते. असे परावर्तित साहित्य वाचकांना वापरण्याची एकत्रित सोय डिजिटल ग्रंथालयाच्या माध्यमाने होऊ शकते.

४. ग्रंथालयतालिकेची व्याप्ती वाढविणे -

ग्रंथालय तालिकेचा उपयोग नेमके स्थान शोधण्यासाठी केला जातो. तालिकेमध्ये सुचिबद्ध माहितीचे वर्णन असते परंतू या व्यतिरिक्त ग्रंथाबद्दल कोणतीही अतिरिक्त माहिती तालिकेमध्ये नसते. उदा. ग्रंथाचे प्रत्येक चित्र, अनुक्रमनिका, प्रस्तावना, विषयसूची इ. माहिती तालिकेत समाविष्ट केली तर त्याची व्याप्ती वाढेल. अशा माहिती उपयोग वाचक ग्रंथ निवडीसाठी किंवा ग्रंथाची उपलब्धता नसतानाही आत्मसात करू शकतील.

५. इंटरनेट माध्यमातील प्रसारित माहिती वापरण्यातील तांत्रिक अडचणी -

इंटरनेटच्या माध्यमातून विविध प्रकारची डिजिटल स्वरूपाची माहिती उपलब्ध होत असते. उदा. ई-जर्नल्स, ई-डेटाबेसेस, ई-बुक्स इ. वरील सर्व प्रकार मुख्यत्वेकरून व्यापारी तत्वावर उपलब्ध होत असतात. नेटवर्किंग सारख्या तंत्रज्ञानातील छोटयाशा बिघाडाने अशा माहितीचे प्रसारण कधीही बंद होऊ शकते. ही अडचण लक्षात घेता डिजिटल माध्यमातून उपलब्ध होणाऱ्या माहितीचे स्थानिक पातळीवर जतन करण्याची, संरक्षण, प्रसारण उपलब्धतेची सोय या सर्व बाबी डिजिटल ग्रंथालय निर्मिती अंतर्गत येतात.

डिजिटल ग्रंथालयाची सेवा :

पारंपारिक ग्रंथालयामध्ये प्रामुख्याने संदर्भ सेवा, तालिकीकरण, वर्गीकरण, संघतालिका, आंतर ग्रंथालयीन सेवा, रेफरल सेवा, प्रचलित जागरूकता सेवा, माहितीचे निवडक प्रसारण सेवा, ग्रंथसूची सेवा अशा विविध प्रकारच्या सेवा देण्यात येत होत्या. दिवसेंदिवस पारंपारिक ग्रंथालयाची डिजिटल स्वरूप धारण करण्यास सुरुवात केली आहे. त्यामुळे त्याच्या सेवामध्येही बदल होताना दिसत आहे. डिजिटल ग्रंथालयामध्ये मुख्यत्वे करून पुढील सेवा देण्यात येतात.

१. इलेक्ट्रॉनिक मेल (E-Mail) -

ई-मेल ही एक महत्त्वाची सेवा आहे. त्यामुळे जाळ्यातील (नेटवर्क्स) भागीदाराना ते सदस्य असणाऱ्या डेटा नेटवर्कचा वापर करून जगातील कोणत्याही भागामध्ये संदेशाची देवाण घेवाण करणे शक्य होते.

२. वेब-ओपॅक (Web-online Public Access Catalogue)-

या सेवेचा उपयोग करून विविध ग्रंथालये आणि माहिती केंद्राची यंत्ररूप तासिका इंटरनेट वेबच्या माध्यमातून उपलब्ध केली जाऊ शकते.

३. फाईल ट्रान्सफर प्रोटोकॉल (File Transfer Protocol) -

फाईल एका ठिकाणाहून दुसऱ्या ठिकाणी पाठविणे हे इंटरनेटची प्राथमिक सेवा आहे. दोन संगणकामध्ये अशा फाईल्सच्या प्रती एकमेकांकडे पाठविण्याकरीता इंटरनेट फाईल्स ट्रान्सफर प्रोटोकॉल या प्रमाणित साधनाचा वापर

निष्कर्ष

२१व्या शतकामध्ये पारंपारिक ग्रंथालयाचे डिजिटल ग्रंथालयात रूपांतर करण्याची प्रक्रिया सुरु झाली असून ग्रंथालयातील ग्रंथ दुर्मिळ वाचनसाहित्याचे तसेच इतर छापील साहित्याचे डिजिटल स्वरूपात परिवर्तन करून त्याचे जतन व संरक्षण करणे गरजेचे आहे. डिजिटल ग्रंथालये ही ई-मेल, बुलेटिन बोर्ड सर्व्हिस, फाईल ट्रान्सफर, प्रोटोकॉल, वेब ओपॅक, माहितीचे निवडक प्रसारण सेवा अशा विविध सेवा या कमी वेळेमध्ये डिजिटल ग्रंथालयाद्वारे वाचकांपर्यंत पोहोचवण्याचे काम केले जाते. डिजिटल ग्रंथालय माहिती तंत्रज्ञान जगात एका प्रकारे क्रांती झाली आहे. आजची ग्रंथालये ही ग्लोबल नॉलेज रिसॉस सेंटर होत आहे.

छापील स्वरूपातील साहित्य टिकविण्याचा प्रयत्न करतात. परंतु असे साहित्य टिकविण्यात कागदाच्या मर्यादित आयुष्यामुळे अडचणी येतात. कालांतराने हे साहित्य नष्ट होण्याची भीती असते. अशा संग्रहामध्ये अमूल्य स्वरूपाचे तसेच प्रकाशकाकडून किंवा इतर कोणत्या मार्गाने उपलब्ध न शकणारे दुर्मिळ ग्रंथ असू शकतात. असे छापील साहित्य नष्ट होण्यापूर्वीच योग्य त्या माध्यमात परावर्तित करणे आवश्यक आहे.

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ओपन सोर्स सॉफ्टवेअर्स आणि ग्रंथालये

राम गंगाधर वाजिरे

(संशोधक विद्यार्थी)

डॉ. शाम तुकाराम सांगळे

(संशोधक मार्गदर्शक)

ग्रंथालयामध्ये येणाऱ्या सर्व वाचकांना सहजपणे माहिती उपलब्ध होण्यासाठी माहिती तंत्रज्ञानाचा प्रभावी वापर करणे आवश्यक आहे. यासाठी माहिती तंत्रज्ञान सहजपणे उपलब्ध झाले पाहिजे. ओपन सोर्स सॉफ्टवेअर हा माहिती तंत्रज्ञानाचा एक महत्त्वाचा घटक आहे. वाचकांना / वापरकर्त्यांना हवी ती माहिती सहजपणे उपलब्ध करून देण्यासाठी सॉफ्टवेअर विनामूल्य पुरावित असा व्यापक विचार तज्ञांनी केला आणि त्यातूनच ओपनसोर्स सॉफ्टवेअरचा उगम झाला. सदर लेखामध्ये ओपनसोर्स सॉफ्टवेअर म्हणजे काय? आणि ग्रंथालयाशी संबंधित असणारी ओपनसोर्स सॉफ्टवेअरचा परिचय देण्यात आला आहे.

संज्ञा-Open Source Software, Koha, New Gen Lib, Digital Library, Library Automation

१) प्रास्ताविक:

ओपनसोर्स सॉफ्टवेअर ही कमी खर्चिक आणि आपल्या दैनंदिन कामांच्या प्राधान्य क्रमानुसार उपलब्ध होऊ शकणारी आज्ञावली म्हणून ओळखली जाते. ओपनसोर्स सॉफ्टवेअरच्या वापरामुळे ग्रंथालयामधील सेवांमध्ये सुधारणा झाल्याचे पहावयास मिळते. ओपनसोर्स सॉफ्टवेअरच्या माध्यमातून ग्रंथालयाचे संगणकीकरण करून वेळेची व श्रमाची बचत, कामकाजात शिस्त, अचूकता व वेग इत्यादी गोष्टी या साध्य होण्यासारख्या आहेत. आपल्या आवश्यक गरजेनुसार या सॉफ्टवेअरमध्ये बदलही करता येत असल्याने ती अधिकच उपयुक्त ठरतात. खाजगी सॉफ्टवेअरचे निर्माते त्यांच्या सॉफ्टवेअरचा सोर्सकोड कोणालाही सांगत नाहीत. परंतु व्यापक समाजहिताचा विचार करणारे सॉफ्टवेअर तज्ञ त्यांच्या सॉफ्टवेअरचा सोर्सकोड सर्वांनाच उपलब्ध करतात. म्हणून सोर्सकोडसह मोफत उपलब्ध असणाऱ्या सॉफ्टवेअरसोबत ओपनसोर्स सॉफ्टवेअर म्हणतात. थोडक्यात, ओपनसोर्स सॉफ्टवेअर म्हणजे-

अ) मोफत / विनामूल्य सॉफ्टवेअर

ब) सॉफ्टवेअर बरोबरच सोर्सकोडही उपलब्ध

क) असे सॉफ्टवेअर वापरण्यासाठी काही अटीचे पालन करावे लागते. त्याला General Purpose License म्हणतात.

२) व्याख्या :

www.opensource.org नुसार "सोर्सकोड मधील नवनवीन बदल, भर व त्यातील दर्जात्मक सुधारणेद्वारे ओपन सोर्स हे त्या आज्ञावलीची गुणवत्ता व विश्वासार्हता वाढविण्यास मदत करते. ओपनसोर्स म्हणून घेण्यासाठी लायसन्सच्या पाठबळाद्वारे आज्ञावली वाचवण्याचा, पुनर्वितरणाच्या, सुधारणेच्या व मोफत वापरण्याच्या हक्कांची हमी द्यावी लागते."

३) ओपनसोर्स सॉफ्टवेअरचे फायदे :

३.१ विनामूल्य :-

ओपनसोर्स सॉफ्टवेअर हे सर्वांना विनामूल्य उपलब्ध असतात. त्यामुळे ज्या ग्रंथालयांना सॉफ्टवेअरसाठी निधीची अडचण भासते त्यांना ही सॉफ्टवेअर विनामूल्य उपलब्ध होतात.

३.२ सहज प्रसार :-

ओपनसोर्स सॉफ्टवेअर मोफत उपलब्ध असल्यामुळे त्याचा प्रसार मोठ्या प्रमाणावर होतो.

३.३ आवश्यक ते बदल करणे शक्य:-

ओपनसोर्स सॉफ्टवेअरचा उपभोक्तात्याला हवा तसा बदल करू शकतो. त्याला महत्वाचा असा वाटणारा बदल तो केव्हाही करू शकतो.

४) ग्रंथालयाशी संबंधित ओपनसोर्स सॉफ्टवेअर

४.१ Library Automation

४.१.१ कोहा (Koha)

ग्रंथालयाकरिता निर्माण झालेल्या ओपनसोर्स सॉफ्टवेअरपैकी 'कोहा' हे पहिले इंटीग्रेटेड सॉफ्टवेअर आहे. न्यूझीलंडमधील 'Library Trust' करिता 'Katipo Communication' ने १९९९ मध्ये कोहाची निर्मिती केली. जानेवारी २००० मध्ये तो सर्वप्रथम कार्यरत झाले. २००५ मध्ये कोहाकरिता 'LibLime' या वेगळ्या कंपनीची ओहियो येथे स्थापना करण्यात आली. पुढे जाऊन 'Zebra' या इंटीग्रेटेड सपोर्टची कोहाला जोड देण्यात आली. सध्या सहा मॉड्यूलस मध्ये उपलब्ध असणारी ३.०.३ ही कोहाची नवी आवृत्ती २००९ मध्ये प्रसिध्द झाली आहे. मोफत उपलब्धतेकरिता 'कोहा' GNU लायसन्सद्वारा प्रसारित केलेले आहे.

४.१.२ Php My Bibli (PMB)

My Bible (PMB) ही Linux वा Windows ऑपरेटिंग सिस्टीमवर कार्यरत होणारी, PHP प्रोग्रामिंग भाषेत तयार केलेली इंटीग्रेटेड ओपनसोर्स ग्रंथालय आज्ञावली आहे. 'अॅनोऑक्स' या सार्वजनिक ग्रंथालयाचे 'अॅनोऑक्स' या सार्वजनिक ग्रंथालयाचे प्रमुख फ्रन्काइजलंमाचेड (Francois Lemarchand) यांनी ऑक्टोबर २००२ मध्ये या सॉफ्टवेअरच्या प्रकल्पाची सुरवात केली. ऑक्टोबर २००८ मध्ये PMB ची नवीन आवृत्ती ३.२.० उपलब्ध झाली असून त्यात आणखी नवनवीन वैशिष्ट्यांची भर घालण्याचे काम सुरुच आहे.

४.१.३ New Gen Lib (New Generation Library)

Verus Solutions Pvt. Ltd. आणि Kesavan Institute of Information & Knowledge Management या हैद्राबाद मधील कंपनीने विकसित केलेले 'New GenLib' हे ओपनसोर्स इंटीग्रेटेड लायब्ररी मॅनेजमेंट सॉफ्टवेअर आहे. सन २००५ मध्ये या सॉफ्टवेअरची १.० ही पहिली आवृत्ती प्रसिध्द झाली. ही पहिली आवृत्ती ओपनसोर्स म्हणून मोफत उपलब्ध नव्हती, पुढे ९ जानेवारी २००८ ला 'Uerus Solution' या कंपनीने General Public License (GNU) च्या अन्वये या आज्ञावलीला ओपनसोर्स म्हणून घोषित केले.

४.१.४ Evergreen

Evergreen ची पहिली आवृत्ती १.० सप्टेंबर २००६ मध्ये जॉर्जियाच्या राज्य सार्वजनिक ग्रंथालयाने विकसित केली. सन २००७ मध्ये Evergreen Development Team ने या आज्ञावलीचा विकास, प्रशिक्षण व सेवा याकरीता 'एक्झिक्युटिव्ह सॉफ्टवेअर या व्यावसायिक कंपनीची स्थापना केली. Linux सर्वर आणि Postgre SQL. या बॅकएंड टेडाबेसवर चालणारी 'Evergreen' ही आज्ञावली General Public License (GNU) द्वारे मोफत उपलब्ध आहे. १.४.०.६ ही 'Evergreen' ची नवी आवृत्ती नुकतीच सप्टेंबर २००९ मध्ये उपलब्ध झाली आहे.

४.१.५ E-Granthalaya:-

ई-ग्रंथालय आज्ञावली ही राष्ट्रीय माहिती विज्ञान केंद्र (National Information Centre) आणि भारत सरकारचे इलेक्ट्रॉनिक्स आणि माहिती तंत्रज्ञान ग्रंथालय यांनी सन २००३ मध्ये प्रसिध्द केले आहे. सदर आज्ञावलीच्या चार मुख्य आवृत्त्या प्रसिध्द झाल्या आहेत. यामध्ये e-G 1.0, e-G 2.0, e-G3, e-G 4.0 या मुख्य तसेच त्याच्या वेळोवेळी सुधारीत आवृत्त्या प्रसिध्द झाल्या आहेत.

४.२ डिजिटल ग्रंथालय सॉफ्टवेअर

४.२.१ ग्रीनस्टोनडिजिटललायब्ररी

General Public License (GNU) च्या अटी अंतर्गत ग्रीनस्टोन डिजिटल लायब्ररी हे ओपनसोर्स सॉफ्टवेअर सर्वाकरीता उपलब्ध केले जात आहे. हे सॉफ्टवेअर न्यूझीलंड येथील वायर्केटो विद्यापीठाने सन १९९७ मध्ये विकसित केले आहे. या सॉफ्टवेअर मध्ये डब्लिनकोर (Dublin Core) या मेटा डेटा प्रमाणकाचा वापर केला आहे. माहिती संकलन आणि सादरीकरणासाठी ग्रीनस्टोन डिजिटल लायब्ररी सॉफ्टवेअरही एक ओपनसोर्स प्रणाल

४.२.२ डिस्पेस (Space)

डिस्पेस सॉफ्टवेअर ह्यूलेटपॅकर्ड (Hewlett Packard) आणि मॅसॅच्युसेट्स इन्स्टिट्यूट ऑफ टेक्नॉलॉजी (Massachusetts Institute of Technology) या संशोधन संस्थांच्या सहकार्यातून सन २००२ मध्ये प्रथम विकसित करण्यात आले आहे. हे सॉफ्टवेअर जावा (Java) या प्रोग्रॅमिंग लॅंग्वेजवर आधारीत आहे.

४.२.३ ई-प्रिंट (E-Print)

E-Print ही आज्ञावली University of Southampton School of Electronic and Computer Science ने सन २००२ मध्ये विकसित केली आहे. ई-प्रिंट ही आज्ञावली Institutional Repository म्हणून ओळखली जाते.

निष्कर्ष:

ग्रंथालय संगणकीकरण ही खर्चिक बाब असली तरी त्याचे फायदे लक्षात घेता. सर्वच ग्रंथालयांमध्ये संगणकीकरणाच्या कामाला चालना मिळाली आहे. वेळ व श्रमाची बचत, कामकाजात शिस्त, अचूकता व वेग, परंपारिक व दैनंदिन सेवामध्ये लक्षणीय बदल इत्यादी फायदयामुळे सर्वच ग्रंथालये बाजारात उपलब्ध इंटिग्रेटेड आज्ञावलींचा अवलंब करताना दिसतात. परंतु आजमितीस बाजारात उपलब्ध असणाऱ्या आज्ञावलींच्या किमती या फार मोठ्या आहेत. त्या सर्वच ग्रंथालयांना घेणे शक्य होत नाही. त्यामुळे ओपनसोर्स सॉफ्टवेअरचा उपयोग करणे

फायद्याचे ठरत आहे. त्यासाठी निशुल्क अशा विविध आज्ञावली या आज उपलब्ध आहेत. त्यांचा वापर ही मोठ्या प्रमाणांमध्ये ग्रंथालयामध्ये होताना दिसून येत आहे.

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वातावरणातील बदल आणि डिजिटल ग्रंथालयाकडे वाटचाल

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संशोधक विद्यार्थी

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सार:

1990 च्या दशकात डिजिटल लायब्ररीमध्ये विद्वान आणि व्यावसायिक स्वारस्य वेगाने वाढले आहे.ग्रंथालयाच्या विकासावर वातावरणाचा परिणाम यामध्ये आपण प्रामुख्याने डिजिटल ग्रंथालयाचा अभ्यास करणार आहोत. त्याचप्रमाणे या बदलत्या वातावरणामुळे कशाप्रकारे ग्रंथालयावर याचा परिणाम झाला आहे. सदर शोधनिबंधामध्ये याचा शोध घेणार आहोत.तसेच डिजिटल ग्रंथालयाकडे वाटचाल कशाप्रकारे चालू झाली. ग्रंथ जतन व संवर्धन करून ठेवण्यासाठी काय उपाययोजना करता येतील ते सदर शोधनिबंधा मध्ये दिले आहे. त्याचप्रमाणे वेगवेगळे इ-स्रोत यामधून डिजिटल ग्रंथालय पेपरलेस कार्य याचा कशाप्रकारे वापर करता येणार आहे व वातावरणात झालेला परिणाम आपल्याला पाहायचा आहे. यामुळे तंत्रज्ञान उद्योजकता विकास या डिजिटल युगामुळे कधीही आणि कुठेही आपण पुस्तके, साप्ताहिके,मासिके,वृत्तपत्रे कोणत्याही ठिकाणी आणि आपण एका क्लिकवर वाचू शकतो.

शोधसंज्ञा:

वातावरणातील बदल, डिजिटल ग्रंथालय, डिजिटल ग्रंथालय वाटचाल,आभासी ग्रंथालय.

उद्दिष्टे:

1. आभासी ग्रंथालयाचा इतिहास आणि वाढीचा अभ्यास करणे.
2. आभासी ग्रंथालय संकल्पनेच्या विकासाचा अभ्यास करणे.
3. जागतिक स्तरावर आभासी ग्रंथालय विकासाचा अभ्यास करणे.
4. बदलत्या वातावरणामध्ये मध्ये आभासी ग्रंथालय विकासाचा अभ्यास करणे.
5. आभासी ग्रंथालय वाढीचा आणि प्रभावाचा अभ्यास करणे.

प्रास्ताविक:

ह्या विश्वात ज्ञात असलेल्या प्राणिमात्रांमध्ये मनुष्य हा अधिक ज्ञानी असल्यामुळे त्याची ज्ञानप्राप्तीची संवेदनादेखील अधिक तीव्र आहे. ज्ञानाच्या विश्वात अनेक विषय आहेत. त्या त्या विषयांचा विकास कमीअधिक प्रमाणात झालेला आढळतो. ग्रंथालयशास्त्र आणि माहितीशास्त्र हा विषय विज्ञानाच्या नव तंत्रज्ञानाला अधिक जवळचा वादू लागला आहे. विज्ञान आणि तंत्रज्ञानाच्या माध्यमातून ज्ञानविकास झपाट्याने होत आहे. विद्वानांपर्यंत, अभ्यासकांपर्यंत सर्वसामान्यांपर्यंत हे ज्ञान पोचविण्याचे काम ग्रंथालय आणि माहितीशास्त्र परिणाम कारकरित्या करू शकले.मानवी संशोधन हे सर्वव्यापी आहे. गेली काही शतके आणि भविष्यातील पुढील सर्व शतकेच विविध

संशोधनाची आहेत. ग्रंथालय आणि माहितीशास्त्रातील संशोधनास गेल्या शतकाच्या म्हणजेच विसाव्या शतकाच्या तिसऱ्या दशकात शिकागो विद्यापीठात सुरुवात झाली. सन १९२६ मध्ये पीएच.डी. स्तरावरील अभ्यासक्रमास त्या विद्यापीठाच्या स्कूल ऑफ लायब्ररी स्टडीजने सुरुवात केली. विद्यापीठ स्तरावर ग्रंथालयशास्त्र हा अभ्यास आणि संशोधनाचा विषय ठरण्याचे कारण म्हणजे कार्नेजी प्रतिष्ठानाने नेमलेल्या विल्यमसन समितीच्या सन १९२३च्या अहवालातील शिफारशी होय. ग्रंथालय आणि माहितीशास्त्र हा सामाजिकशास्त्राचा एक भाग आहे असे म्हटले तर वावगे ठरणार नाही. त्यामुळेच समाजशास्त्रीय संशोधनाची वैशिष्ट्ये या शास्त्राची वैशिष्ट्ये ठरू शकतात.

हवामान बदलाचा पृथ्वीवर प्रभाव पडत असल्याने, शैक्षणिक आणि सांस्कृतिक क्षेत्रे त्याच्या प्रभावापासून मुक्त नाहीत. हे संशोधन वातावरणातील बदल आणि डिजिटल लायब्ररी चळवळीच्या छेदनबिंदूचे अन्वेषण करते, विकसित होत असलेल्या पर्यावरणीय लँडस्केपमुळे पारंपारिक ग्रंथालय पद्धतीचे पुनर्मूल्यांकन कसे आवश्यक आहे याचे परीक्षण करते. हवामान बदलाच्या संदर्भात पर्यावरणीय स्थिरता आणि लवचिकतेमध्ये योगदान देण्यासाठी डिजिटल लायब्ररीच्या संभाव्यतेचा अभ्यास हा अभ्यास करतो.

पूर्व संशोधन साहित्याचा आढावा:

माहितीमध्ये डिजिटल लायब्ररीचा इतिहास तंत्रज्ञान युग आणि भविष्यातील विकास डिजिटल लायब्ररी मध्ये एन. किरण सुहास यांनी त्यांच्या शोधनिबंधामध्ये म्हटले आहे कि, डिजिटल लायब्ररीचे भविष्यातील विकासाचे स्वरूप आताच्या तुलनेत खूप वेगळे असेल. स्पष्टपणे, कॉन्सोर्टिया इलेक्ट्रॉनिक माहितीच्या जगात आणखी महत्त्वपूर्ण शक्ती बनतील. जोपर्यंत ते हे सिद्ध करू शकतात की ते वापरल्या जाणाऱ्या किफायतशीर उत्पादन देत आहेत, ते पुढे चालू ठेवतील निधी एजन्सींचे समर्थन प्राप्त करत राहतील.

डिजिटल लायब्ररी: व्याख्या, समस्या आणि आव्हाने गॅरी क्लीव्हलँड यांच्या शोधनिबंधा मध्ये त्यांनी असे म्हटले आहे कि, जगभरातील ग्रंथालये अनेक वर्षांपासून आव्हानांचा सामना करून काम करत आहेत. त्यांनी अनेक डिजिटल लायब्ररी उपक्रम तयार केले आहेत. मुख्य मुद्द्यांचा संयुक्तपणे शोध घेण्यासाठी योजनासह अनेक वर्षांचा संचित अनुभव, प्रारंभिक विकासाभोवती उत्साह, डिजिटल लायब्ररीची जागा सोबर सेकंडने घेतली आहे. हे विचार ग्रंथपालांनी शोधून काढले आहे. अपवाद, डिजिटायझेशनसाठी व्यावसायिक केस बनवणे. डिजिटल तंत्रज्ञानातील गुंतवणूक अधिक आहे. पहिल्या कल्पनेपेक्षा कठीण, विशेषतः दिलेले तांत्रिक आणि कायदेशीर मर्यादा ज्या प्रथम असणे आवश्यक आहे. मात्र इतर तांत्रिक अडचणी प्रमाणे लायब्ररीमध्ये गेल्या काही वर्षांत घडामोडी घडतील, आटोपशीरपणे पुढे जावे लागेल, उत्क्रांती पावेल, वेगाने जाण्या ऐवजी क्रांतिकारी पद्धतीने जावे लागेल.

ई-लायब्ररीची उत्क्रांती आणि विकास - एक ऐतिहासिक अभ्यास कु.अस्मिता गायकवाड यांनी त्यांच्या शोधनिबंधामध्ये अशी चर्चा केली आहे, डिजिटल लायब्ररी ही सतत वाढणारी आणि नाविन्यपूर्ण माहिती प्रणाली आहे; म्हणून, ते योग्य असल्याची खात्री करण्यासाठी मूल्यमापन महत्त्वपूर्ण आहे. ई-लायब्ररीची उत्क्रांती आणि विकास या अभ्यासात ई-लायब्ररीच्या वाढीवर भर देण्यात आला आहे. जागतिक स्तरावर त्याचा ऐतिहासिक भाग समाविष्ट करून एक "डिजिटल लायब्ररी" ई-कलेक्शन, सेवा आणि आजीवन समर्थन करण्यासाठी पायाभूत सुविधांचा समावेश आहे. शिक्षण, संशोधन, विद्वत्तापूर्ण संवाद तसेच जतन आणि आमच्या रेकॉर्ड केलेल्या ज्ञानाचे संवर्धन हे प्रदान करते. ग्रंथालय व्यवसायांसाठी ई-संसाधनांसह अंतिम वापरकर्त्यांसाठी प्लॅटफॉर्म मोठा प्रभाव निर्माण करतात. या प्रभावामुळे वाचनालय पारंपारिक ते डिजिटल हे त्याच्या वापरकर्त्यांना मूल्यवर्धित सेवा प्रदान करते.

डिजिटल लायब्ररीची व्याख्या:

"डिजिटल लायब्ररी" च्या जवळजवळ तितक्याच व्याख्या आहेत जितक्या टर्म वापरणारे प्रकल्प आहेत, परंतु असोसिएशन ऑफ रिसर्च लायब्ररी (एआरएल), त्याच्या "डिजिटलच्या व्याख्या आणि उद्देश" मध्ये लायब्ररी," ने डिजिटल लायब्ररीची व्याख्या खालील गुणांसह केली आहे.

- डिजिटल लायब्ररी ही एकच संस्था नाही.
- डिजिटल लायब्ररीला अनेकांच्या संसाधनांना जोडण्यासाठी तंत्रज्ञानाची आवश्यकता असते;
- अनेक डिजिटल लायब्ररी आणि माहिती सेवा यांच्यातील संबंध पारदर्शक आहेत अंतिम वापरकर्त्यासाठी.
- डिजिटल लायब्ररी आणि माहिती सेवांमध्ये सार्वत्रिक प्रवेश हे एक ध्येय आहे.
- डिजिटल लायब्ररी संग्रह दस्तऐवज सारोगेट्सपुरते मर्यादित नाही: ते डिजिटल पर्यंत विस्तारित आहेत.मुद्रित स्वरूपात प्रस्तुत किंवा वितरित केल्या जाऊ शकत नाहीत अशा कलाकृती.

डिजिटल ग्रंथालयाची पार्श्वभूमी:

1939 मध्ये, पहिली डिजिटल संगणक प्रणाली तयार होण्यापूर्वी, वान्नेवर-बुश, एक प्राध्यापक.MIT मधील विद्युत अभियांत्रिकीने एक प्रणाली प्रस्तावित केली जी अनेक प्रकारे आधुनिक डिजिटल पूर्वचित्रित करते. लायब्ररी [बुश 1939, 1945] (बुश वैज्ञानिक संशोधन कार्यालयाचे प्रमुख बनतील आणि महायुद्ध 2 दरम्यान विकास आणि नंतर राष्ट्रीय निर्मितीसाठी प्रमुख वकिलांपैकी एक सायन्स फाऊंडेशन.) ही प्रणाली, "Memex", पुस्तकांच्या संपूर्ण लायब्ररीचे मायक्रोफिल्म करण्यासाठी तयार करण्यात आली होती आणि जर्नल्स, हे व्यक्तींच्या खाजगी नोंदी आणि अनुक्रमणिकांसह एकत्र करून त्यांना उपलब्ध करून दिले जाई. बुश यांनी कल्पना केली की मेमेक्स वापरकर्ते आणि माहिती व्यावसायिकांना सक्षम करेल, म्हणून 'सहकारी मार्ग', विविध भागांमधील दुव्यांद्वारे ज्ञानाच्या नवीन संघटना तयार करा. कागदपत्रे ही प्रणाली कधीच बांधली गेली नसली तरी बुशच्या कल्पनांनी भविष्यातील पिढ्यांना प्रेरणा दिली. जे.सी.आर.सह संगणक शास्त्रज्ञ Licklider, ज्यांनी मूलभूत योगदान दिले. वैयक्तिक संगणक इंटरफेस, कृत्रिम बुद्धिमत्ता, इंटरनेट आणि डिजिटल ग्रंथालयांचा विकास Licklider ने आधुनिक डिजिटल लायब्ररींच्या डिझाइनची कल्पना केली आहे, ज्यामध्ये एकीकरणाचा समावेश आहे. अनुक्रमणिका, शोध, पुनर्प्राप्ती आणि संचयन सेवा.

डिजिटल लायब्ररीचा इतिहास 20 व्या शतकाच्या मध्यापर्यंतचा आहे. आणि तांत्रिक प्रगती आणि माहिती व्यवस्थापनाच्या बदलत्या प्रतिसादात विकास झाला आहे. डिजिटल लायब्ररीच्या इतिहासातील प्रमुख टप्पे आपण पाहूया. डिजिटल लायब्ररीचा इतिहास तांत्रिक नवकल्पना, बदलत्या वापरकर्त्यांच्या अपेक्षा आणि डिजिटल माहितीचा प्रवेश आणि संरक्षण सुधारण्यासाठी सतत प्रयत्न करत असलेली गतिमान उत्क्रांती प्रतिबिंबित करतो.

1950-1960: सुरुवातीची सुरुवात:

डिजिटल लायब्ररीचा संकल्पनात्मक पाया 1950 आणि 1960 च्या दशकात शोधला. जेव्हा संशोधक आणि संगणक शास्त्रज्ञ इलेक्ट्रॉनिक पद्धतीने माहिती संग्रहित आणि पुनर्प्राप्त करण्याचे मार्ग शोधू लागले. सुरुवातीच्या संगणक प्रणालीचा विकास आणि इंटरनेटच्या उदयाने माहितीच्या डिजिटायझेशनसाठी पाया घातला.

1970-1980: पायनियरिंग प्रयत्न:

1970 आणि 1980 च्या दशकात लायब्ररी संग्रहांचे डिजिटायझेशन करण्याचे पहिले महत्त्वपूर्ण प्रयत्न झाले. 1979 मध्ये मायकेल एस. हार्ट यांनी सुरु केलेल्या प्रोजेक्ट गुटेनबर्गसारख्या प्रकल्पांचा उद्देश साहित्यकृतींच्या इलेक्ट्रॉनिक आवृत्त्या तयार करणे आणि त्यांना मुक्तपणे उपलब्ध करून देणे हे होते. संदर्भग्रंथीय डेटाबेसची स्थापना आणि शैक्षणिक जर्नल्सचे डिजिटायझेशन चळवळीला हातभार लावला.

वर्ल्ड वाइड वेबचा उदय 1990:

1990 च्या दशकाच्या सुरुवातीस वर्ल्ड वाइड वेबच्या आगमनाने डिजिटल लायब्ररींसाठी एक परिवर्तनाचा काळ म्हणून चिन्हांकित केले. ऑनलाइन कॅटलॉग, डेटाबेस आणि डिजिटल संकलनासाठी लायब्ररींनी इंटरनेटचा फायदा घेण्यास सुरुवात केली. अलेक्झांड्रिया डिजिटल लायब्ररी प्रकल्प, कॅलिफोर्निया विद्यापीठ, सांता बार्बारा येथे 1994 मध्ये सुरु करण्यात आला, ज्याने भौगोलिक डेटावर लक्ष केंद्रित केले आणि विशेष सामग्रीसह डिजिटल लायब्ररींसाठी पाया घातला.

1990-2000 च्या दशकाच्या उत्तरार्धात: संस्थात्मक भांडार आणि मुक्त प्रवेश:

1990 च्या दशकाच्या उत्तरार्धात आणि 2000 च्या दशकाच्या सुरुवातीस संस्थात्मक भांडारांचा विकास झाला, शैक्षणिक संस्थांनी त्यांचे बौद्धिक उत्पादन संचयित करण्यासाठी आणि प्रवेश प्रदान करण्यासाठी डिजिटल रिपॉझिटरीजची देखरेख केली. विद्वान साहित्याच्या विनामूल्य आणि अनिर्बंध प्रवेशासाठी समर्थन देत मुक्त प्रवेश चळवळीला गती मिळाली. बुडापेस्ट ओपन ऍक्सेस इनिशिएटिव्ह (2002) सारख्या उपक्रमांनी या चळवळीला हातभार लावला.

2000-वर्तमान: विस्तारित व्याप्ती आणि तंत्रज्ञान:

डिजिटल लायब्ररींनी मजकूर-आधारित सामग्रीच्या पलीकडे मल्टीमीडिया, संग्रहित साहित्य आणि डेटासेट समाविष्ट करण्यासाठी त्यांची व्याप्ती वाढवली. डिजिटल सामग्रीची दीर्घकालीन सुलभता सुनिश्चित करण्यासाठी डिजिटल संरक्षण मानके आणि पद्धतींचा विकास महत्त्वपूर्ण ठरला. डिजिटल पब्लिक लायब्ररी ऑफ अमेरिका (DPLA) सारख्या सहयोगी प्रयत्नांचा उद्देश विविध संस्थांकडून डिजिटल संग्रह एकत्रित करणे आणि उपलब्ध करून देणे.

वर्तमान ट्रेंड: एआय, बिग डेटा आणि इंटरएक्टिव्हिटी:

समकालीन डिजिटल लायब्ररी माहिती पुनर्प्राप्ती आणि वापरकर्ता अनुभव वर्धित करण्यासाठी कृत्रिम बुद्धिमत्ता आणि मोठ्या डेटा विश्लेषणासारख्या तंत्रज्ञानाचा अधिकाधिक फायदा घेतात. डिजिटल लायब्ररी डिझाइनमध्ये आभासी प्रदर्शन, परस्पर संवाद आणि मल्टीमीडिया सामग्री यासारख्या वैशिष्ट्यांसह परस्पर क्रियाशीलता आणि वापरकर्ता प्रतिबद्धता यावर जोर दिला जातो.

जतन:

दुसरा महत्वाचा मुद्दा म्हणजे जतन करणे डिजिटल माहिती शाश्वत उपलब्ध आहे. मध्ये डिजिटल साहित्याचे जतन हा खरा मुद्दा आहे तांत्रिक अप्रचलितता. मध्ये तांत्रिक अप्रचलितता डिजिटल युग हे कागदाच्या खराब होण्यासारखे आहे कागदाचे वय प्री-डिजिटल युगातील ग्रंथालये होती हवामान नियंत्रण आणि डी-एँसिडिफिकेशनबद्दल चिंता करा

पुस्तके, परंतु डिजिटल माहितीचे जतन याचा अर्थ सतत नवनवीन तंत्रज्ञान येत असेल उपाय. डिजिटल सामग्रीचा विचार करताना, तीन आहेत "संरक्षण" च्या प्रकारांचा संदर्भ आपण घेऊ शकतो. साठवण माध्यमाचे संरक्षण टेप्स, हार्ड ड्राइव्हस् आणि फ्लॉपी डिस्कसमध्ये क्षमता खूप आहे. लहान आयुष्य कालावधी अप्रचलितपणा त्यांच्यावरील डेटा असू शकतो, रीफ्रेश केलेले, बिट वैध ठेवून वर्तमान प्रसारमाध्यमे डिजिटल साधने साठवून ठेवले जात होते.

सामग्रीमध्ये प्रवेशाचे संरक्षण, या संरक्षणाच्या स्वरूपामध्ये प्रवेश संरक्षित करणे समाविष्ट आहे. दस्तऐवजांच्या सामग्रीकडे, त्यांची पर्वा न करता स्वरूप फायली एकातून हलवल्या जाऊ शकतात.

यापेक्षा ही कदाचित मोठी समस्या आहे. अप्रचलित स्टोरेज तंत्रज्ञानाचा एक उपाय म्हणजे डेटा माइग्रेशन ¼ म्हणजे, डेटा एका फॉर्मॅटमधून दुसऱ्या फॉर्मॅटमध्ये ट्रान्सलेट करणे. वापरकर्त्याची पुनर्प्राप्ती करण्याची क्षमता जतन करणे, माहिती सामग्री प्रदर्शित करणे, तसेच डेटा स्थलांतर करणे महाग आहे. डेटासाठी अद्याप कोणतेही मानक नाहीत. स्थलांतर आणि विकृती किंवा माहितीचे नुकसान होऊ शकते. प्रत्येक वेळी डेटा काही कारणास्तव सादर केला जातो.

समारोप:

हे संशोधन हवामान बदलामुळे निर्माण झालेल्या आव्हानांना प्रतिसाद देण्यासाठी डिजिटल ग्रंथालयांची महत्त्वपूर्ण भूमिका अधोरेखित करते. निष्कर्ष शाश्वत माहिती व्यवस्थापनावर चालू असलेल्या प्रवचनात योगदान देतात. आणि डिजिटल लायब्ररी चळवळीच्या विकसित होत असलेल्या भूप्रदेश पर्यावरणीय विचारांच्या एकत्रीकरणासाठी समर्थन करतात. संस्था त्यांचे कार्बन फूटप्रिंट कमी करण्याच्या अत्यावश्यकतेशी झुंज देत असताना, अभ्यासात अंतर्दृष्टी प्रदान करते जे धोरणात्मक निर्णय घेण्यास सूचित करू शकतात. आभासी ग्रंथालयांसाठी भविष्याच्या शोधात नवकल्पनांना प्रेरित करू शकतात.

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साहित्य आणि पर्यावरण

डॉ. विठ्ठल शंकर केदारी

सहयोगी प्राध्यापक व प्रमुख मराठी विभाग
पदवी, पदच्युतर व संशोधन केंद्र,
कला, वाणिज्य व विज्ञान महाविद्यालय, किल्लेधारूर.

साहित्यातून पर्यावरणाचे चित्रण येणे अपरिहार्य असते. लेखक ज्या समूहात राहतो त्या समूहाच्या अवतीभवतीचा परिसर त्याच्या लेखनातून येतो. सुरुवातीच्या कालखंडातील साहित्य लेखनातून पर्यावरणीय दृष्टिकोनातून महत्त्व विशद झाले आहे. निसर्ग आणि मानव यांचे अतूट नाते असते. एकमेकांवर यांचे पारस्परिक अवलंबित्व असल्याने निसर्ग वगळून मानवी जीवनाला पूर्णत्व प्राप्त होत नाही. मानवाच्या प्रमुख गरजा या निसर्गावरच अवलंबून आहेत. निसर्गतः उपलब्ध साधनसंपदेवर भौतिक जीवनातील बाबींची पूर्तता होते. जगण्यासाठी आवश्यक हवा, अन्नधान्य, पाणी व ऋतुमान परतवे घडणारे नैसर्गिक बदल ह्या सर्व गोष्टींच्या मुळाशी निसर्ग आहे. पर्यावरणाचे मानवी जीवनातील महत्त्व याच कारणाने वैशिष्ट्यपूर्ण ठरते. निसर्गाने माणसाला विविध गोष्टींचे ज्ञान दिले. निसर्गातील होणार्या विविध बदलांच्या विषयी मनामध्ये कुतूहल निर्माण झाले. हे कुतूहल जाणून घेण्याचा प्रयत्न मानवाने नेहमीच केला. आपल्या मनातील कुतूहलाचे समाधान झाल्याशिवाय मानव स्वस्त बसला नाही. साहित्यिक यातून माणसाचे नैसर्गिक दृष्टिकोनातील अभ्यास वृत्ती दिवसेंदिवस वृद्धिंगत होत गेली. यामुळे तिचा विकास झाला.

मध्ययुगीन मराठी वाङ्मयामध्ये संतांच्या अभंगातून पर्यावरणाचे महत्त्व प्रतीत होताना दिसते. संत तुकाराम अगदी सहजपणे आपल्या अभंगातून म्हणतात, "वृक्षवल्ली आम्हा सोयरे वनचरे | पक्षीही सुस्वरे आळवीती ||" या पद्धतीने अगदी स्वाभाविकरीत्या झाडांचे महत्त्व सांगतात. जानवर अवलंबून असलेले पक्षी यांचे जीवन आणि शिवाय अपुरे असते. निसर्ग शिवाय जगू शकत नाहीत. भूतलावरील प्रत्येक जीवाला जगण्यासाठी पर्यावरणाचा आधार घ्यावा लागतो. किंबहुना निसर्ग शिवाय कोणत्याही जीवाचा जीवन प्रवास पूर्णत्वास जात नाही. लेखक म्हणून लेखनातून विचार व्यक्त करत असताना सभोवतालच्या परिस्थितीनुसार आलेल्या अनुभवांचे सादरीकरण करतो. लेखकाच्या अनुभवविश्वाला समृद्ध करण्यामध्ये निसर्ग हा घटकही महत्त्वाचा ठरतो. आधुनिक मराठी कवितेचा प्रवास हा एका शतकाहून अधिक झालेला आहे. या कवितेच्या प्रवासात अध्यात्म धार्मिकता भक्ती या संबंधीचे वर्णन पहावयास मिळते. ब्रिटिश राजवटीच्या काळात झालेल्या स्थित्यंतराची चाहूल लागली. संत, पंडिती व शाहिरी काव्यप्रकारांतून पारलौकिकाचा ध्यास व्यक्त झाला. त्यामुळे लोक मनोरंजनाची भूमिका मागे पडली. आणि लौकिक, सामाजिक, वैयक्तिक विषयांना काव्यात स्थान प्राप्त झाले. दीर्घकाव्य, प्रधान कवितेची जागा, स्फूर्त कवितेने घेतली. केशवसुतांच्या कवितेने हे स्थित्यंतर स्पष्टपणे दाखवून दिले. निसर्गासंबंधीची कविता प्रथमतः केशवसुतांनी लिहिली. 1945 च्या दरम्यान मर्ढेकरांच्या कवितेने साहित्याला नवे वळण प्राप्त करून दिले. आपल्या आजूबाजूच्या परिसरात महायुद्धोत्तर परिस्थितीने निर्माण झालेल्या प्रसंगांचे चित्र कवितेतून आले. मरढेकरांची कविता मानवी अस्तित्व, असंबंधता, निरर्थकता, एकाकीपण, व्यक्तिव्यलोक, अमानवीकरण, परात्मभाव, अस्तित्वाची विघटितता, संवाद शून्यता या मानवाच्या पर्यावरणीय दृष्टीने महत्त्वाच्या ठरणार्या घटकांना व्यक्त करते. व्यक्तीच्या अंतर्मनाचा वेध घेण्याचा प्रयत्न या कवितेतून होतो. नारायण सुर्वे, अमर शेख यांची विद्रोही कविता सामाजिक बांधिलकी सांगते. नामदेव ढसाळ, दया पवार, यशवंत मनोहर, वामन निंबाळकर यांच्या कविता समूहलक्षी विचार मांडतात. ना. धो.

महानोर, आरती प्रभू, सुरेश भट, कवी ग्रेस या 1960 नंतरच्या कवींच्या कवितेतून प्रणय भाव व निसर्ग संवेदन रोमाँटिक पद्धतीने व्यक्त होते. पर्यावरणीय दृष्टिकोनातून या कविता महत्वाच्या ठरतात. "बदलत्या कृषी जीवनाशी संबंध जीवन जाणिवाना अविष्कार करणारी कविता हा समकालीन महानगरेतर जीवनजाणिवेचा एक महत्वाचा भाग आहे. या जाणिवेची कविता लिहिणाऱ्या कवींची समकालातील संख्या बरीच मोठी आहे. परंतु कृषी जीवनाची रम्यता, विलोभनीयता, त्यांचे उदात्तीकरण, वेगळेपण यांचे आकर्षण यामधून अद्यापही मराठी कवितेची सुटका झालेली नाही. ही बाब लक्षात येते. या धारेतील बरीचशी कविता ही शेती, शेतकरी, रान, पीक, खेड्यातील आईबाप यांच्या विषयीच्या व्याकूळ स्मरण रंजनात रमलेली आहे. अशा कवितांचा अपवाद वगळता गावामध्ये आर्थिक व सांस्कृतिक दृष्ट्या होत असलेले बदल, गाव व शहर यांत होणारी गावापासून तुटलेल्या सुशिक्षित मनांची कुतरओढ त्यातून वाट्यास आलेले दुभंगलेपण गाव व शहर यांच्यातील सर्व प्रकारचे अंतर कमी होत चालल्याने उभी ठाकलेली नवनवीन आव्हाने, लोकजीवनात रुजलेल्या मुळांची, त्यातून प्राप्त होणाऱ्या जीवन रसाची लागलेली आस, कृषी जीवनाच्या गाभ्याशी असलेल्या सनातन मूल्यांचा वर्तमानाच्या रेट्यातून निर्माण झालेल्या नव्या मूल्य व्यवस्थित सुरु असलेला झगडा या आशय सूत्रांचा प्रत्यय देणारी ही कविता लक्षणे स्वरूपाची आहे."¹ या पद्धतीने मराठी कविता वागण्यामध्ये निसर्ग हा शेतीशी संबंधित विविध प्रकारच्या संदर्भाने येतो. शेतकरी शेतीमध्ये कष्ट करतो, पीक पिकवितो त्यांचे चित्र ना. धो. महानोर आपल्या कवितेतून यथार्थपणे मांडतात. कृषी दिन संस्कृतीची जाणीव महानोर यांच्या कवितेतून प्रतीत होते. या कालखंडामध्ये शेतीशी संबंधित कवितेतून चित्रण करणारे अनेक कवी दृष्टीस पडतात. बहुतेक लेखक शेतकरी कुटुंबातून आलेले असल्याने शेतीशी त्यांचा निकटचा संबंध आहे. त्यामुळे जगलेल्या अनुभवांना शब्दरूपाने कवितेतून मांडून आपले अनुभव शब्दांकित करतात. ना. धो. महानोर, अनुराधा पाटील, श्रीकांत देशमुख आणि कल्पना दुधाळ यांच्या जीवन जाणिवेचे केंद्र कृषीजनसंस्कृतीचे आहे. त्यांच्या कवितेतून सहजपणे खुब्या मोडव्या खेड्याचे, डोळे गळू आले आता, रुखे मुकेपण, कारुण्याचा भोगवटा, ओला स्वर, रस्ते दूरचे उदास, हिरवं जाळून आभाळ, भादव्याचं उदेपण, तव्यावर जळे पाणी, वेडा घेतो गळफास अशा शब्दांतून ना. धो. महानोर खेळण्याची विपणनावस्था अचूकपणे टिकतात. तर कुणव्यासोबतच गुरं ढोरं, शेतातली पिक असे ओसाडपणाचे वर्णन करण्यासाठी योजतात. ना धो महानोर कुणव्याच्या शेतावर तुझी चंद्रभागा धाड कवितेतून याचना करतात. खेडोपाडी मोडलेल्या कुणव्यांना गर्भवास अशी शब्द योजना सहजपणे करताना दिसतात. खेडेगावाला पंढरी समजून गावपण वैभव मानणारे ना. धो. महानोर गावाचे गावपण हरवल्यामुळे 'सुना सोन्याचा पिंपळ' असा भावपूर्ण उद्गार कवितेतून काढतात. महानोर यांच्या कवितेतून कृषी आणि पर्यावरणीय चित्रण अगदी स्वाभाविकपणे घडते. या वर्णनातून प्रतीत झालेले शब्द ग्रामीण जीवनाची पार्श्वभूमी सांगण्यासाठी अपरिहार्य ठरतात. निसर्गापासून तुटणे म्हणजे आपल्या अस्तित्वापासूनच ढळण्यासारखे आहे. आधुनिकीकरणातून येणाऱ्या नागरिकीकरणात आणि जागतिकीकरणाच्या झंजावातात आपली पाळीमुळे कशी टिकवून ठेवायची, आपल्या अस्तित्वाचे विघटन कसे थांबवायचे हा तिच्यासमोरचा तापदायक पेच आहे."² अशा पद्धतीने आधुनिकीकरणाच्या परिस्थितीत पर्यावरणावर झालेल्या परिणामामुळे उद्भवणाऱ्या समस्यांचे चित्रण येते. मराठीतील ग्रामीण कविता लेखनातून पर्यावरणीय चित्र करताना भोवतालाला विषय केले आहे. कवी इंद्रजीत भालेराव यांनी पीक पाणी या आपल्या कवितासंग्रहातून ग्रामीण जीवन, कृषी संस्कृती उभी केली. ग्रामीण जीवनात शेतकर्याला सहन कराव्या लागणाऱ्या यातना कवितेतून व्यक्त करतात,

"माझं ओलांडून प्रेत | आधी रुजविल शेत

मग आला स्मशानात | काळ्यांईचं गाणं जात" या ओळींतून कवी इंद्रजीत भालेराव शेतातील वास्तव परिस्थिती उभी करतात. समाजात स्वार्थ भोकाळला कुटुंबाची एकात्मता भावली या संबंधी कवी इंद्रजीत भालेराव लिहितात,

'माझं तुटलं माहेर | सख्खे भाऊ पक्के वैरी

थाटल्यात आमराया | माझी नाही एक कैरी' निसर्गावर मानवी भावनांचे आरोपण करण्याची कवी वृत्ती नाधोंच्या रानातल्या कवितेपासून कवितेमध्ये रुजली. रानातल्या पिकात कवीला महिलांच्या विषयक प्रतिमा जाणवल्या. या पद्धतीने पर्यावरणीय विषयाला अनुसरून कवी इंद्रजीत भालेराव व कवी ना. धों. महानोर कविता लेखन करतात. प्रेम विषयक कवितेतून प्रेयसीला जेव्हा रानातील शृंगार सुचक घटना समजत नाही त्यावेळेस कवी म्हणतो,

' उत्तम केळीच्या बागेतून उसासे तिला कसे

ऐकू येत नाहीत पाटातून वाहणार्या

पाण्याची चाल खरंच का तिला नसेल कळत ?' या पद्धतीने वर्णन येते. या वर्णनाला मध्ये कवीने पर्यावरणीय चित्रनातून संदर्भ दिले आहेत. प्रेयसीची भावावस्था व्यक्त करताना योजलेली रूपकात्मकता वैशिष्ट्यपूर्ण ठरते. केवळ प्रेम विषयक दृष्टिकोनातूनच कवितेतील चित्रणे येतात असे नाही. तर शेती दुष्काळजन्य परिस्थितीमध्ये दैन्यवस्थेकडे जाते. या प्रसंगी होणार्या जंगल झडीची संवेदना कवी कोळगावकर पुढीलप्रमाणे शब्दांकित करतात,

'ढासळलेल्या विहिरीत शेवाळलेले कुजलेले पाणी

मोठेची धाव उध्वस्त दिनवाणी म्हातार्याचं काळीज

पाण्याबाहेर काढलेल्या माशासारखं तापलेल्या ढेकळांमध्ये

तडफडत उडत राहतं'

अशा वर्णनातून शेती न पिकल्यामुळे उध्वस्त उध्वस्त झालेल्या शेतकऱ्याचे वर्णन अधोरेखित होते. शेतकऱ्यावर ओढवले संकट पर्यावरणीय असंतोलामुळे निर्माण झालेले आहे. नैसर्गिक पर्यावरण आणि सामाजिक पर्यावरण या दोन्ही प्रकारातून कवी लेखन करतात. हरवलेल्या गावात अनावृत पत्र या कवितेतून सामाजिक पर्यावरण निदर्शनास येते.

'गावसंस्कृतीच्या बखरी झाल्या इतिहास जमा

वासुदेवाच दान पावलं, टाळांचा नाद झाला लुस

रायंदर, पांगोळ, दरवेशी, डोंबारी, भविष्यवाले

भाकरी तुकड्याच्या विवंचनेत आतड्याचा पीळ काढत बसले

झुंजरुख जात्याच्या घरघरीवर उमटणारी ओवीची लय

घुसमटत राहिली वेदनेच्या आतील व्रनाला कुरवाळीत'

या प्रकारे सामाजिक जीवनातील पर्यावरणीय घटकांचे अस्तित्व संपलेले लक्षात येते. या सर्वांच्या अस्तित्वामुळे समाजाला गुण अवगुणांची जाणीव करून देण्याचे कार्य होत होते. यामुळे सामाजिक पर्यावरणाचे रक्षण होत होते. या घटकांवर जागतिकीकरणामुळे उपासमारीची वेळ आल्याने परंपरागत जगणे सोडून त्यांना रोजगाराच्या शोधार्थ पोटाची भूक भागवण्यासाठी शहराकडे अथवा मोलमजुरीकडे वाटचाल करावी लागते.

संत ज्ञानेश्वरांनी मूर्तीपूजा, तीर्थयात्रा इत्यादी कर्मकांडांना विरोधच केला. "तीर्थांचे माहेर असलेल्या परमेश्वराला न ओळखता दगडाच्या देवाची पूजा करणे आणि तीर्थयात्रा करित राहणे हे किती वेळेपणाचे आहे. परंतु कधी कधी अशी भूल पडते भ्रमाच्या गुहेत आत्मा भटकत राहतो आणि आपल्यात हृदय भवनात असलेल्या 'आत्मारामा'चा विसर पडतो. देव जवळ असताना उगीच तीर्थांठण करणे हा मोठा भ्रमच आहे."³ संत ज्ञानेश्वर देवाचे उपासना व परमार्थ यासंबंधी लोकांना वास्तव सांगतात. देवाची पूजा केल्याने देव मिळणार नाही. मात्र लोकांच्या मनात असलेली देवासंबंधीची भावना स्वांत सुखाय स्वतःच्या भ्रमात ठेवणारी आहे. 'निर्जीव दगडाची काय करीशी सेवा | तो तुज निवैदा देईल काय ||

कवने गुन्हे भुली पडला गव्हारा | तीर्थांच्या माहेरा नोळखेशी ||' या पद्धतीने संत ज्ञानेश्वर लोकांना उपदेश करतात. दगडाची पूजा करणे तीर्थयात्रा करणे हे वेडेपणाचे असून माणुस केवळ भ्रमात राहतो त्याला स्वतःच्या अस्मितेचा विसर पडतो. कर्मकांड करण्यापेक्षा आत्मतत्त्व जागृत ठेवणे महत्त्वाचे आहे. या प्रकारे संत ज्ञानेश्वर सामाजिक पर्यावरण समाजात निर्माण होण्यासाठी प्रयत्न करताना दिसतात. सासुरवाशीणीला माहेराची ओढ अतोनात असते. या संबंधी संत ज्ञानेश्वर पुढील रचनांतून सांगतात,

'पैल तो ग काऊ कोकताहे | शकुन गे माये सांगता हे

उडरे उडरे काऊ | तुझे सोन्याने मढवीन पाऊ'.....

'घनु वाजे घुण घुणा | वारा वाहे रुण झुणा

भवतारकू हा कान्हा | वेंगी भेटवा का'

पंढरीच्या विठ्ठलाची भेट घेण्यासाठी भक्ताच्या मनात निर्माण झालेली ओढ संत ज्ञानेश्वरांनी या शब्दांतून योजली आहे. विठ्ठल भेटीचा भक्ताच्या मनातील विरह नैसर्गिक प्रतिमांतून संत ज्ञानेश्वर साकार करतात. संत ज्ञानेश्वरांनी भक्त आणि देव यांच्यातील विरहाच्या परिस्थितीचे वर्णन करण्यासाठी नैसर्गिक प्रतिमा योजली. कर्मकांडापेक्षा आत्मतत्त्व जागवले पाहिजे हेच येथे संत ज्ञानेश्वरांनी स्पष्ट केले आहे. भक्तीचा मळा फुलविणारे संत सावता माळी अभंग लिहिताना निसर्गातील प्रतिमांचा वापर योग्य प्रकारे करतात. शेती करणे हा पारंपारिक व्यवसाय असल्याने व्यवसायाशी संबंधित कामांचे स्वरूप अभंगातून लिहितात.

'आमुची माळीयाची जात | शेत लावू बागाईत

आम्हा हाती मोटनाडा | पाणी जाते फुलझाडा ||

शांती-शेवंती फुलली | प्रेम जाई जुई व्यापली ||

सावताने केला मळा | विठ्ठल देखीयला डोळा ||'

या अभंगारचनेतून संत सावता माळी कृषी कर्म करताना आलेल्या अनुभवांना अभंगातून व्यक्त करतात. हे कार्य करत असताना दैनंदिन जीवनातील गोष्टींना अभंगाचा विषय बनवून समाजाचे उद्धोधन घडवितात.

'कांदा, मुळा, भाजी अवघी विठाबाई माझी | लसूण, मिरची, कोथिंबीरी ||

अवघा झाला माझा हरी | मोट, नाडा, विहीर, दोरी अवघ व्यापीली पंढरी |

सावता म्हणे केला मळा विठ्ठलापाई गोविला गळा ||'

अशा रीतीने संत सावता माळी दैनंदिन जीवनातील गोष्टींना अभंगाच्या केंद्रस्थानी ठेवतात. शेतात कृषी कर्म करत असताना श्रमांची जाणीव होऊ नये. या उद्देशाने अभंगांच्या रचना संत सावता माळी करताना दिसतात.

"आदिवासी समाज हा प्रामुख्याने डोंगरदर्यात राहणारा असल्यामुळे जंगलात हिंडणे, शिकार करणे, फळे-कंदमुळे, मध गोळा करणे, औषधी गोळा करणे हीच त्यांची कामे दिसून येतात. महाराष्ट्राच्या अतिपूर्वेकडील भामरागड अरण्यात माडिया गोंड या आदिवासी जमातीमध्ये स्त्रिया अंगभर कपडे न घालण्याचा दंडक आहे. माडिया गोंडांमध्ये रेलों रेलों नृत्यात हवा तो मुलगा-मुलगी पकडून रानात जाऊन संग करून आई-वडिलांच्या मान्यतेने विवाह करतात. मावची जमातीत घरजावई होण्याची परंपरा आहे. वर पक्षाकडून पायलीभर खावटी दारू, भात, कुळीद, दारू पिऊन शिक्कामोर्तब होतो. वरपक्षाकडून वधू वरहाडी मंडळींचा स्वागत करण्यासाठी पाण्याच मंडक उभली रितची दारू बायकांना नाच असतो. रीतची दारू बायकांचा नाच असतो दारू मिळते वरहाड बसत नाही. उभी राहतात त्याला उभली रीतची दारू म्हणतात."⁴ या रचनेतून कोरकू आदिवासी जमातीच्या लोकगीतांची अभिव्यक्ती दिसते. सुख, दुःख, आनंद, राग, लोभ, प्रेम, वात्सल्य, विरह, भावना या गोष्टींची अभिव्यक्ती त्यांच्या गीतातून कशी होते याचे स्वरूप स्पष्टपणे लक्षात येते. तसेच वेगवेगळ्या सण, विधी, जन्म-मृत्यू प्रसंगामध्ये कोणकोणती गीते गायली जातात हे दिसते. तर पुढील रचनेतून "प्यारे जंगला मे बेरली रे लवारी रे पर्वत बोले दो मोर" या गीतरचनेतून श्रृंगारिक भावनेचे प्रकटीकरण होते. विरहिणीच्या विरहाची मनोवेदना कवी टिपतो. प्रियकर प्रेयसी विवाह व्यथा चंद्र, चांदणे इत्यादी प्रतीकांतून ध्वनीत करतो.

बाबुराव बागुल यांच्या कथेतही निसर्ग अवतरतो. हिरवा साप, सापाचे वेटोळे, काळा जुनाट साप यांची वर्णाने अकारण गुंतागुंतीने येतात. मुलांचे ह्या सापाशी निर्भयपणे खेळणे आणि साप चावून आई मेल्यापासून भीती धरलेली भागू कोळील असे अंतर विरोधी चित्रे आलेली आहेत. जुन्या स्फूट कथेत ज्याप्रमाणे अंतर्गत संघर्ष दिसतो तसे भावविश्व बाबुराव बागुल कथेत निर्माण करतात. तो काळा साप भावाला चावला की काय? याची उत्कंठा सतत ताणली जाते. संध्याकाळच्या अंधारात जाळ्यात नेमके काय अडकले आहे याविषयीचे धूसर आकलन, घरातल्या अंधारामुळे जाळ्यातल्या माशाचे नेमके दर्शन न घडणे, धुरामुळे ते अधिकच संदिग्ध राहणं आणि भिकाच्या स्वप्नाप्रमाणे तो साप तर जाळ्यात अडकून आला नाही. याविषयी वाचकाच्या मनात शंका राहणे, भागू कोळीणीचा मृत्यू सापाची भाजी खाऊन तर झाला नाही ना असे प्रथमदर्शनी वाटावे इतके ते रहस्य वाटते. अशा रीतीने मराठी साहित्यामध्ये पर्यावरणीय चित्र येताना दिसते. पर्यावरणाचे साहित्यात चित्रण होणे अपरिहार्य असले तरी ती मानवी जीवनाच्या परिपूर्णतेला सहाय्यभूत असलेली मुख्य परिसंस्था आहे. पर्यावरणाशिवाय मानवी जीवनाला पूर्णत्व येत नाही. व्यक्तीच्या सार्वत्रिक गरजा पूर्ण करण्यासाठी निसर्ग महत्त्वाची भूमिका बजावतो. मानवी जीवनाला बहुतांश समृद्ध बनवण्याचे कार्य निसर्गाकडूनच घडते. त्यामुळे साहित्यातून पर्यावरणीय चित्रण अवतरणे अपरिहार्य आहे.

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पिंपळखोपा या कवितेतील वातावरणाचा झालेला परिणाम

प्रा. सुनीता दत्तात्रय बोंबे

मराठी विभाग, गांधी महाविद्यालय कडा
तालुका आष्टी जिल्हा बीड

कोणत्याही भाषेच्या साहित्यात पर्यावरणास महत्त्वपूर्ण स्थान दिलेले आहे. बाराव्या शतकात लिहिला गेलेला 'लीळा चरित्र' या ग्रंथात झाडे, पशु, पक्षी यांचे वर्णन दिसून येते. त्यांचे जतन संवर्धन कसे केले गेले पाहिजे याचाही उल्लेख दिसून येतो.

मराठीमध्ये काही लेखकांनी सुद्धा पर्यावरणाशी साहित्याचे नाते कसे आहे हे सांगितले आहे. निशिकांत आलटे हे प्राचार्य असून त्यांनी फुले - शाहू आंबेडकर विचारांचे चिंतन, संशोधन, लेखन, भाष्यकार म्हणून त्यांचा परिचय सांगता येईल. त्यांच्या काही कवितांमधून नैतिक, मानवीय मूल्यांचे दालन, काव्यात्मक पद्धतीने मांडलेले आहे त्यांनी पर्यावरणाशी नाते असलेली 'पिंपळखोपा' ही कविता माणसाची स्वार्थी विघातक वृत्ती पशु पक्षांना किती घातक आहे याचे चित्र सांगणारी आहे.

तिचा हट्ट

पाळणा बांधण्यासाठी

पावसाळ्यापूर्वी

राती फाटकी झोपडी मोडून

सिमेंट मजबूत घर बांधण्याचा

या वरील ओळीत कवीने चिमणीच्या माध्यमातून आपण आपल्या सभोवतीच्या निसर्गाचा कशा पद्धतीने विनाशाला कारणीभूत आहोत ते शब्दातून मांडले आहे. निसर्गाचा विचार केला तर बऱ्याच दिवसापासून अनेक पशु- पक्षांची संख्या ही दिवसेंदिवस कमी कमी होत चाललेली सांगता येईल.

संपूर्ण जगातील लोककथा आणि चिऊताई चिऊताई दार उघड सारख्या बडबडगीतांमध्ये सगळीकडे जाणवणारी चिव चिव चिमण्या कुठे गेली असा प्रश्न जगातल्या मध्ये सर्वत्र पर्यावरण प्रेमींना पडलेला आहे. सर्वत्र आढळणारी कारखानदारीमुळे धूर बाहेर पडण्यात येणाऱ्या चिमण्या आणि ग्रामीण भागात झाडझुडपांवर दिसणाऱ्या चिमण्या यांचा जो नाश झाला त्याचे कारण म्हणजे वातावरणातील वाढणारे कार्बनचे प्रमाण हे निसर्गातील स्वच्छंदीपणे विहार करणाऱ्या सर्व पशु पक्षांना मृत्यूला कारणीभूत सांगता येईल. जसा मानवाच्या शरीरावर कार्बनच्या त्रासामध्ये थसनाचे विकार होत आहेत यामुळे कवीला काही कालांतराने पुढच्या पिढीला चिमणी फक्त चित्रांमध्ये दिसणार की काय अशी शंका वाटते.

ग दि माडगूळकरांचे या चिमण्यांनो परत फिरा रे, घराकडे आपुल्या हे गाणे पूर्णपणे बदलत्या वातावरणाशी मिळते- जुळते आहे. आजही आई किंवा आजी लहान मुलांना घास भरवताना चिऊ काऊ चा उल्लेख करते पण काही दिवसांनी चित्रातील चिऊ काऊ दाखवावे लागेल म्हणजेच काय तर प्रत्येकाच्या जीवनाशी चिऊ काऊ बरोबर नाते

जोडलेले आहे. सध्याच्या वातावरणाचा विचार केला तर चिमण्यांचा चिवचिवाट कानी पडतो दुर्मिळ झाले आहे. शिवाय अंगणात धान्य निवडणारी महिला दिसत नाही. अंगणात उड्या मारत धान्य टिपणारी बागडणारी चिमणी कुठे बरे दिसणार हे सर्व चित्र वातावरणात बदलामुळे सांगता येईल. तर पुढे कवी म्हणतात

“तिचा हट्ट पाळणा बांधण्यासाठी पावसाळ्यापूर्वी

राहती फाटकी झोपडी मोडून सिमेंट मजबूत घर बांधण्याचा”

माणसाने स्वतःच्या निवार्यासाठी किंवा इतर विकासाच्या कामासाठी प्रचंड प्रमाणात वृक्षतोड केली, अजूनही चालू आहे यामुळे माणसासाठी घरासाठी मोकळी जागा झाली पण जी वृक्षतोड झाली त्यावर बसणाऱ्या पशु पक्षांची घरटी नाहीशी झाली.

वाढत्या औद्योगीकरण त्यामुळे पाण्याची कमतरता यामुळे चिमण्यांचे प्रमाणही कमी होत चालले आहे. पर्यावरणात राहण्यास मोलाचे कार्य करणाऱ्या चिमणीला विद्युत चुंबकीय उत्सर्जना बरोबर हवामान बदल आणि प्रदूषणाचा धोकाही वाढत चालला आहे.

पुढे कवी म्हणतात

“आता तिनेही मजबूत सिमेंट घर होताच

खोप्याच्या आकाराची झुंबर विकत घेऊन टांगलेल्या बैठकीत

तरी का कोण जाणे कोणत्याही चिमणीने आणखीन शिवले नाही त्याला.”

निसर्गाच्या कुशीत कोणत्याही झाडावर, अंगणात पहाटे वेगवेगळ्या पक्षांचा किलबिलाट ऐकायला येत असे. पण काही वर्षांपासून हे प्रमाण कमी कमी होत चाललेली दिसते यामुळे आजही आकाश वेगवेगळ्या पक्षांच्या रंगीबेरंगी पणामुळे सुनेसुने वाटते.

हे चित्रण साहित्यातही पहावयास मिळते. पर्यावरणातील सातत्याने होणारे बदल, नैसर्गिक बदल कोणत्याही पशु पक्षांच्या अस्तित्वाला धोका निर्माण करणारी सांगता येईल. निसर्गात शेतीच्या उत्पन्नात घट, उष्णतेचा होणारा परिणाम यामुळे अनेक अडीअडचणी वाढत गेल्या यामुळे पक्षांच्या संख्येत अधिक प्रमाणात घट होत चालली आहे. वाढते शहरीकरण कारखाने दुसऱ्या बाजूला वृक्षतोड, पर्यावरणाचा र्हास यामध्ये पशु पक्षांच्या घरट्यांवर सुद्धा परिणाम झालेला सांगता येईल. या सर्व गोष्टीचे कवीने पिंपळखोपा या कवितेत अचूकपणे मांडल्या आहेत.

संदर्भग्रंथ

- 1) पारचार्य निशिकांत आलटे (पिंपळखोपा - कविता)
- 2) पाऊस काळ - महेश मोरे
- 3) काळ्या मातीत - विठ्ठल वाघ

जागतिक हवामान बदल नियंत्रणाबाबत भारताची भूमिका

प्रा.डॉ.रणजीत कवरसिंह पवार

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प्रस्तावना

आज जागतिक हवामान बदलाचे मोठे आव्हान मानवी जीवनासमोर उभे आहे. जागतिक हवामान बदल ही सर्व मानवांसाठी एक गंभीर समस्या बनले आहे. अनेक शास्त्रज्ञ, शिक्षणतज्ज्ञ, राजकारणी, एनजीओ, भूगोलशास्त्रज्ञ, पर्यावरण शास्त्रज्ञ जागतिक हवामान बदलाच्या नियंत्रणाबाबत च्या अभ्यासात गंभीरपणे गुंतलेले आहेत. त्याची कारणे, परिणाम आणि उपाय यावर चर्चा करणे, विश्लेषण करणे आणि त्यांचे स्पष्टीकरण करणे अत्यंत आवश्यक आहे. गेल्या एक ते दोन शतकांमध्ये पृथ्वीच्या पृष्ठभागाजवळ हवेचे सरासरी तापमान वाढण्याची ही भयानक घटना आहे. 20 व्या शतकाच्या मध्यापासून हवामान शास्त्रज्ञांनी हवामानातील विविध घटनांचे जसे की तापमान, पर्जन्य आणि वादळे आणि हवामानावरील संबंधित प्रभावांचे तपशीलवार निरीक्षण गोळा केली आहेत. ही निरीक्षणे सूचित करतात की भूगर्भीय काळाच्या सुरुवातीपासून पृथ्वीचे हवामान जवळजवळ प्रत्येक कल्पनीय कालखंडात बदलले आहे आणि किमान औद्योगिक क्रांतीच्या सुरुवातीपासून मानवी क्रियाकलापांचा प्रभाव हवामान बदलाच्या अगदी फॅब्रिकमध्ये खोलवर विणलेला आहे. ज्यातून मानवाचे अस्तित्व पणाला लागले असल्याचे दिसून येते. ही समस्या मानवी जीवनाचा नाश करणारी समस्या असल्याने आपल्याला याकडे लक्ष देणे गरजेचे आहे. मागील काही वर्षात पर्यावरण विषयक जागृती मोठ्या प्रमाणात निर्माण झाली आहे. देशात सर्व पातळीवर पर्यावरण पूरक कार्यक्रम हाती घेतले जात आहेत ही जरी समाधानाची बाब असली तरी हे प्रयत्न अत्यल्प असल्याची जाणीव सगळ्यांना होणे गरजेचे आहे. या दृष्टीकोनातून जागृतीच्या उद्देशाने हा शोधनिबंध प्रस्तुत करण्यात आला आहे.

शोध निबंधाचे उद्देश

1. जागतिक हवामान बदलाची कारणे समजून घेणे.
2. जागतिक तापमान वाढीचे परिणामाचा परामर्श घेणे.
3. जागतिक हवामान बदल नियंत्रणाबाबत भारताची भूमिका व योगदानाचा आढावा घेणे.

सध्यस्थितीत जागतिक तापमान वाढीचे मोठे आव्हान मानवी जीवनासमोर उभे आहे. कारण मागील काळात यापूर्वी कधीही झालेली नाही एवढ्या झपाट्याने तापमानवाढ होत आहे. विषुववृत्तीय भागातील जी थोडी पर्वत शिखरे हिमाच्छादित आहेत, त्यातील किलिमांजारो हे पर्वत शिखर प्रसिद्ध आहे. या पर्वत शिखरावरील हिमाच्छादन इ.स. 1906 च्या तुलनेत 25 टक्केच उरले आहे. आल्प्स आणि हिमालयातील हिमनद्या मागे हटत चालल्या आहेत. इ.स. 1970 च्या दशका पासून नेपाळमधील सरासरी तापमान 10 अंशाने वाढले, तर सैबेरियातील कायमस्वरूपी हिमाच्छादित प्रदेशात मागील 30 वर्षात 10 अंशाने तापमानवाढ नोंदवण्यात आली आहे. अशी जागतिक तापमानवाढीची अनेक उदाहरणे आहेत. या तापमान वाढीमुळे पुढील काळात मोठे संकट उद्भवू शकते. मानवाच्या सुरक्षेच्या संदर्भात विचार केला असता हे एक मोठे आव्हान आहे. त्याचा आढावा पुढील प्रमाणे घेण्यात आलेला आहे.

जागतिक हवामान बदलाची कारणे

मानवाने आधुनिकरण साधत असताना निसर्गाच्या ऋतूचक्राकडे पूर्णतः दुर्लक्ष केले आहे. ऋतूचक्र बिघडण्यास कारणीभूत असणारे मोठ्या प्रमाणातील प्रदूषण ज्यामध्ये प्रामुख्याने रासायनिक कारखाने व वाढत जाणारी वाहनांची संख्या, शहरीकरण, जंगलांचा हीस अशा एक ना अनेक कारणांचा समावेश आहे. आज वातावरणात कार्ब वायूचे प्रमाण इतक्या मोठ्या प्रमाणात वाढत आहे, त्यामुळे जागतिक तापमानात मागील काही वर्षांत चिंताजनक वाढ होत आहे. याबरोबरच वाढत्या जगाच्या लोकसंख्येमुळे कार्बन-डाय-ऑक्साईडचे उत्सर्जनाचे प्रमाण वाढत आहे. कार्बन-डाय-सूर्यकिरणांची दाहकता वाढल्यास जागतिक तापमान वाढ होण्याची शक्यता असते. औद्योगिक क्रांती नंतर जंगलांचा मानवाने इंधन म्हणून मोठ्या प्रमाणावर वापर सुरू केला. कुठलाही कार्बनी पदार्थ जाळला की त्यातून कार्बनडाय ऑक्साईडची निमिर्ती होते. त्याप्रमाणे लाकूड आणि दगडी कोळसा जाळल्यानंतर वातावरणात कार्बन डायऑक्साईडचे प्रमाण वाढू लागले. यामुळे वातावरणात घातक बदल होत आहेत.

क्योटो करार

जागतिक हवामान बदलाचा विषय आज मोठ्या प्रमाणात चर्चिला जात आहे. १९९७ साली संयुक्त राष्ट्र संघटनेच्या सभासद देशांनी क्योटो प्रोटोकॉल हा करार केला. या प्रोटोकॉलमध्ये त्यावेळी औद्योगिकदृष्ट्या विकसित देशांनी मान्य केले की ते इ.स. २००५ ते २०१२ पर्यंत आपापल्या देशातील हरितगृह वायूंचे उत्सर्जन इ.स. १९९० सालच्या पातळीपेक्षा पाच टक्के कमी आणतील. या कराराप्रमाणे अनेक देशांनी प्रयत्न केले, पण कोणताच देश हे उद्दिष्ट गाठू शकला नाही. तापमान वाढीच्या मुद्द्यावर १९२ देशांनी मिळून क्योटो करार केलेला आहे. क्योटो, जपान येथे झालेल्या करारानुसार प्रगत राष्ट्रांनी मोठ्या प्रमाणात या वायूंच्या उत्सर्जनावर निर्बंध आणणे तसेच प्रगतशील व इतर राष्ट्रांनी आधुनिकरण साधताना कार्ब वायूचे प्रमाण नियंत्रणात आणणे आवश्यक असल्याचे ठरवण्यात आले.

भारतावरील परिणाम

मागील पन्नास वर्षांच्या तुलनेत २००६ साली ०.६३ सेल्सिअस इतके तापमान वाढ नोंदवली गेली व पुढील दहा वर्षांत त्याच्यामध्ये वाढ होऊन तापमान ०.८७ नोंदवले गेले. जागतिक तापमान वाढीच्या संदर्भात जगातील पहिल्या दहा शहरांमध्ये भारतातील चार शहर येतात. मागील काळात भर उन्हाळ्यात ओरिसा आणि पश्चिम बंगालमध्ये आलेल वादळ. तसेच काही दिवसापूर्वी मुंबई-गुजरात किनारपट्टीवर थैमान घातलेल्या वादळाचा अनुभव आपण सगळ्यांनी घेतला आहे. तापमान वाढ आणि ऋतूचक्राचा समतोल बिघडत चाललेले अनेक संकेत आपल्याला मिळत आहेत. हवामानातील बदल हा जागतिक तापवाढीमुळे होणारा सर्वात चिंताजनक परिणाम आहे. जागतिक तापमानवाढीमुळे समुद्राच्या पाण्याचेही सरासरी तापमान वाढले आहे. पाण्याचे तापमान वाढल्याने बाष्पीभवनाचे प्रमाण वाढते, यामुळे पावसाचे प्रमाण, चक्रि वादळांची संख्या व त्यांची तीव्रता वाढलेली आहे. २००५ मध्ये अमेरिकेत आलेल्या कतरिना या चक्रिवादळाने हाहाकार माजवला. याच वर्षी जुलै २६ रोजी मुंबईत व महाराष्ट्रात नः भूतो अश्या प्रकारचा पाउस पडला होता. दुसरीकडे उष्णतेच्या लाटेचाही धोका आहे. 2015 साली उन्हाच्या झळांनी भारत आणि पाकिस्तानात अनेक लोकांचा बळी गेला होता. ही नित्याचीच बाब होऊ शकते. भारताच्या पूर्वकडचं कोलकाता आणि दक्षिण पाकिस्तानातील कराची या दोन शहरांना याची सर्वात जास्त झळ बसण्याची शक्यता आहे.

जागतिक हवामान बदल: नियंत्रणाबाबत भारताची भूमिका

जागतिक हवामान बदलाचे परिणाम तसेच जागतिक तापमानवाढ रोखायची तर वातावरणातील कार्बन डायऑक्साईड वायू कमी करण्यासाठी उपाय करावे लागतील. यातला एक उपाय म्हणजे झाडं वाढवणे.या दृष्टीने भारतात प्रयत्न चालू आहेत. सध्याचे कार्बन डायऑक्साईडचे वातावरणातील प्रमाण थोपवायचे तर त्याची निर्मिती कमी करणे आवश्यक आहे. जंगलांखालची भूमी सध्याच्या तीन ते पाच पट वाढवायला हवी. सध्याच्या युगात कोणताही देश उर्जेचा वापर कमी करून आपली प्रगती खोळंबून घेणार नाही. अभ्यासातील पहाणीनुसार विकसित देशांचा ऊर्जेचा वापर हा विकसनशील देशांपेक्षा कितीतरी पटीने जास्त आहे.परंतु या वापराचे प्रमाण भारतात स्थिरावले आहे. भारताकडून अशा उपाय योजना करण्यात येत आहेत,मार्ग शोधण्यात येत आहेत ज्यामुळे वातावरणात कार्बन डायऑक्साईड सोडला जाणार नाही व उर्जेचे उत्पादन खोळंबणार नाही. त्यासाठी मध्यम स्वरूपातील उपायांमध्ये भारतात वाहनांसाठी व वीजनिर्मिती प्रकल्पांसाठी नवीन प्रकारचे इंधन शोधून काढणे हे पर्याय शोधण्यात येत आहेत. कायमस्वरूपी उपायांमध्ये तंत्रज्ञे विकसित करणे जेणेकरून मानवाचे खनिज व निसर्गातील अमूल्य ठेव्यावर अवलंबून रहाणे कमी होईल असे पर्याय शोधण्यात येत आहेत.

अमिन च्या विविध द्रव्यामध्ये कार्बनडायऑक्साईड विरघळते. ज्वलनानंतर धूराला अमिनच्या द्रव्यामध्ये धुतल्यास त्यातील कार्बन डायऑक्साईड वेगळा होता नंतर अमिनला गरम करून कार्बन डायऑक्साईड वेगळे करणे सोपे जाते. या प्रक्रियेला अमिन स्कबिंग (Amine scrubbing)असे म्हणतात.वरील प्रक्रिया आज भारतात औद्योगिक स्तरावर प्रचलित होत आहे. परंतु आर्थिक दृष्ट्या सोयीस्कर नाहीत. त्यामुळे अजून स्वस्त प्रक्रियांचा शोध लावणे चालू आहे.हायड्रोजन हे एक प्रभावी इंधन आहे. हायड्रोजनच्या ज्वलनाने फक्त पाण्याची निर्मिती होते. पाण्याच्या विघटनातून, पेट्रोलियम पदार्थातून तसेच जैविक पदार्थांमधून हायड्रोजनची निर्मिती करता येते. सध्या हायड्रोजनचे नियोजन कसे करायचे याचे उत्तर शास्त्रज्ञ शोधत आहेत. हायड्रोजन हा हलका वायु असल्याने त्याला केवळ दाबाखाली साठवता येते. अतिशय ज्वालाग्राही असल्याने याचे इंधन म्हणून वापरण्यावर बंधने आहेत.

सध्या अपारंपारिक उर्जास्रोताच्या निर्मितीवर बहुतांशी देशांचा भर आहे. अपारंपारिक स्रोत म्हणजे ज्यात खनिज संपत्तीचा वापर केला जात नाही असे स्रोत. जलविद्युत, पवनचक्क्या, सौरउर्जेचा विविध प्रकारे वापर, बायोगॅस निर्मिती, शेतीमालाचे वायूकरण (Gasification), भरती ओहोटीपासून जलविद्युत, हे काही अपारंपरिक उर्जास्रोत आहेत. अणूउर्जा अणुशक्तीपासून मिळवलेली उर्जा म्हणजे अणूउर्जा. अणूउर्जेत हरितवायूचे उत्सर्जन होत नाही. परंतु किरणोत्सर्गाचा त्रास, अणुभट्ट्यांची सुरक्षितता तसेच अणूउर्जेच्या नावाखाली अण्वस्त्रांचा होणारा विकास अणूउर्जेसाठी लागणारे इंधन व हे इंधन बनवताना होणारे हरितवायूचे उत्सर्जन यामुळे हा विषय नेहेमीच वादात रहातो व सध्या अणूउर्जा हा जागतिक तापमानवाढीवर पर्याय नकोच असा सुर आहे.

समारोप

जागतिक हवामान बदलाचे परिणाम मानवी आरोग्यासाठी अत्यंत घातक आहेत. हे भौतिक वातावरण तसेच नैसर्गिक आणि मानवी दोन्ही प्रणालींच्या सर्व पैलूंवर परिणाम करते. हे मानवाच्या सामाजिक आणि आर्थिक परिस्थिती आणि आरोग्य प्रणालींवरही परिणामकारक ठरत आहे. त्यामुळे हे धोक्याचे गुणक आहे. ही जागतिक तापमान वाढ मानवी आरोग्याच्या प्रगतीचे दशक कमी करणारे आणि संभाव्यपणे उलट करणारे आहे. हवामानाची परिस्थिती बदलत असताना, वादळ, अति उष्णता, पूर, दुष्काळ आणि वणत्यांसह अधिक वारंवार आणि तीव्र होणारे हवामान आणि हवामानाच्या घटना पाहिल्या जातात. या हवामान आणि हवामानाच्या धोक्यांचा आरोग्यावर प्रत्यक्ष

आणि अप्रत्यक्षपणे परिणाम होतो, ज्यामुळे मृत्यूचा धोका, असंसर्गजन्य रोग, संसर्गजन्य रोगांचा उदय आणि प्रसार आणि आरोग्य आपत्कालीन परिस्थिती वाढते. त्यामुळे पर्यावरण संवर्धनाचा विषय गंभीरतेने घेणे आवश्यक आहे यातच राष्ट्रचं, जगाचे आणि संपूर्ण मनुष्यजातीच भविष्य आधारित आहे. भारताची लोकसंख्या मोठी आहे. शिवाय इथे गरिबी आणि विषमताही मोठ्या प्रमाणावर आहे. त्यामुळे जागतिक तापमानवाढीचे मोठे परिणाम भारताला भोगावे लागतील. या हेतूने भारताने कठोर पावुले उचलण्यास सुरुवात करणे गरजेचे आहे.

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उच्च शिक्षणात योगा व खेळाचे महत्व

डॉ. शेटीबा भीमा चौगुले

सहा. प्राध्यापक

शारीरिक शिक्षण विभाग

नवगण शिक्षण संस्था राजुरी संचलित

शारीरिक शिक्षण महाविद्यालय, बीड

प्रस्तावना :

मुलामुलींच्या शारीरिक, बौद्धिक, भावनिक व सामाजिक विकासासाठी आनंददायी, गतिमान व क्षमतावर्धक अशा शारीरिक हालचालींद्वारे नियोजनपूर्वक दिले जाणारे शिक्षण. हालचाल हा शारीरिक शिक्षणाचा पाया असून शरीर हे शारीरिक शिक्षण प्राप्त करण्याचे प्रमुख माध्यम आहे. असे असले, तरी शारीरिक शिक्षणाचे उद्दिष्ट केवळ शरीरापुरतेच मर्यादित नाही; तर शरीराबरेबरच मन, भावना, विचार इत्यादींवर होणारे संस्कारसुद्धा त्यात अंतर्भूत आहेत.

विविध शारीरिक हालचालींद्वारे व्यक्तीला मिळणाऱ्या अनुभवाचे संघटित ज्ञान म्हणजे शारीरिक शिक्षण, अशी व्याख्या डी. ओबट्युफर यांनी केली आहे. शारीरिक शिक्षण हा एका मोठ्या समग्र अशा विषयाचा एक भाग असून त्याचा संबंध महत्वाच्या स्नायूंच्या हालचालींशी आणि त्यांच्याशी संबंधित असणाऱ्या क्रियांशी आहे. अशी व्याख्या डॉ. जे. बी. नॅश यांनी केली आहे. 'महत्वाच्या स्नायु-हालचालींमधून मिळणाऱ्या परिपूर्ण अनुभवाद्वारे बालकाची सर्वाधिक अंतिम टप्प्यापर्यंतची वाढ व विकास साधणाऱ्या प्रक्रिया -समुच्चयास शारीरिक शिक्षण असे म्हणतात', अशी कल्पना ब्राउनेल यांनी मांडलेली आहे. 'शारीरिक हालचालींद्वारे शरीर, मन व आत्मा यांचा परिपूर्ण व योग्य विकास साधून बालकाच्या व्यक्तिमत्त्वाचा सर्वांगीण विकास साधणे, म्हणजे शारीरिक शिक्षण होय', अशी व्याख्या भारताच्या केंद्रीय शारीरिक शिक्षण व मनोरंजन सल्लागार मंडळाने केलेली आहे.

उद्दिष्ट्ये :

- शरीर व मन यांना एकत्र जोडणे.
- योगचित्तवृत्ती निरोधभाव चित्तवृत्तीचा निरोध.
- शारीरिक, मानसिक, बौद्धिक व आध्यात्मिक उन्नती करणे.
- शरीर व मनाचे व्यापार नियंत्रित करणे.
- सुख-दुःख, लाभ-नुकसान या द्वंदांतून मुक्त होवून समत्व भावनेचा विकास करणे.
- योगिक प्रक्रियेद्वारे आहार, विहार, विचार व व्यवहार संतुलित करून सुस्वास्थ्य, संपूर्ण सुखाची प्राप्ती करणे इत्यादी.

स्वरूप व व्याप्ती :

योगशास्त्र हे अतिशय व्यापक शास्त्र आहे. मुलभूत विज्ञान, मानव्यविद्या यांतील विद्याशाखांमध्ये मानवी जीवनाच्या कोणत्याही एका अंगाचा अभ्यास करून अनेक अभ्यासशाखा व विषय निर्माण झाले. योगविज्ञानात मानवी

जीवनाच्या सर्व अंगाचा विचार करून व्यक्तिमत्त्वाचा परमोच्च विकास करणे, हे या शास्त्राचे उद्दिष्ट आहे. योगशास्त्र हे अतिप्राचीन असल्यामुळे निरनिराळ्या कालखंडात वेगवेगळ्या योगिक क्रियांचा अभ्यास केला गेला. योगशास्त्रात अनेक तंत्र, मंत्र वापरले जाऊन असंख्य प्रवाह उदयास आले. त्यांचा सूत्रबद्ध अभ्यास न झाल्याने योगाचे ज्ञान विस्कळीत होते. त्यात एकसूत्रीपणा आणण्याचे कार्य महामुनी पतंजली यांनी आपल्या १९६ योगसूत्रांद्वारे केले. योग शिक्षणाचा खरा प्रारंभ पातंजल योगातूनच झाला. बाराव्या शतकाच्या आरंभास हठप्रदिपिका, घेरण्डसंहिता, सत्कर्मसंग्रह, शिवसंहिता, योगतारावली, योगशास्त्र, भक्तियोग, राजयोग, कर्मयोग, ज्ञानयोग, ध्यानयोग इत्यादी योगप्रवाह उदयास आले.

कालानुरूप योगातील संकल्पना बदलत गेल्या. एका योगग्रंथातील प्रक्रिया दुसऱ्या योगग्रंथात वेगळ्या रूपात मांडण्यात आल्यात. उदा., स्वात्मरामांनी योगाची ४ अंगे सांगितली; घेरण्डसंहितेमध्ये ७ अंगाचा उल्लेख आहे; तर हठयोगात शुद्धीक्रिया आसने, बंध, प्राणायाम, ध्यान, कुंडलीनी जागृती, मुद्रा यांचे वर्णन आहे. हठयोगात पतंजलीचा उल्लेख नाही, तर पातंजल योगात हठयोगातील मुद्रा, बंध, कुंडलीनी जागृती यांचा उल्लेख आहे. स्वामी विवेकानंदांनी राजयोगाचा प्रसार केला. यामध्ये कर्मयोग, भक्तियोग, प्रेमयोग यांचा समावेश आहे. संत तुकाराम, संत ज्ञानेश्वर, संत एकनाथ आदींनी भक्तियोगाचा पाया घातला. हठयोगामध्ये आसने, प्राणायाम, मंत्रजप, ध्यान यांद्वारे तंत्रयोग पुढे आला. गीता उपविषयामधून ज्ञानयोग, कर्मयोग यांचा पुरस्कार केला गेला. एकुणच योग हे परिसीमारहित अतिव्यापक दर्शन आहे. दर्शन म्हणजे तत्त्वज्ञान योगामध्ये तत्त्वज्ञान व शास्त्र दोहोंतील गुण समाविष्ट आहेत.

जगात योगाचा प्रसार सर्वदूर करण्याचे कार्य महर्षी पतंजलीच्या अष्टांगयोगाने केले व पतंजली योगाला जगमान्यता मिळाली. आधुनिक काळात योग घराघरांत पोहोचला आहे. रामदेव बाबा, श्री श्री रविशंकर, ऋषी प्रभाकर, विश्वास मंडलीक, प्रजपिता ब्रम्हाकुमारीज, स्वामी कुवलयानंद, मोरारजीभाई देसाई योग संस्थान, दिल्ली अशा हजारो संस्था व तज्ज्ञ योगाचा प्रचार व प्रसार करीत आहेत. त्यामुळे योगाला सामान्य माणसाच्या हृदयात मानाचे स्थान प्राप्त झाले आहे.

शारीरिक शिक्षणाच्या परंपरेची रूपरेखा

राष्ट्रीय स्तरावरील शारीरिक शिक्षणाचा विचार करता त्याचे वैदिक काल व पौराणिक कालखंड (इ.स. पू. २००० ते ६००), मध्युगीन व ऐतिहासिक कालखंड (इ.स.पू. ६०० ते इ.स.१७५०), ब्रिटिश कंपनी सरकार व अटवल इंग्रजी कालखंड (१७५० ते १९४७) व स्वातंत्र्योत्तर कालखंड (१९४७ नंतर) असे भाग पडतील. वैदिक कालामध्ये स्वसंरक्षण व स्वजातिसंरक्षण यांकरिता सामर्थ्य वाढवण्यासाठी शारीरिक शिक्षणामध्ये युद्धोपयोगी शिक्षण व हालचाली उदा., धनुर्विद्या, घोडदौड, रथ चालवणे इ. गोष्टींचा समावेश असे. त्याचबरोबर सूर्यनमस्कार, योगविद्या, प्राणायाम यांचाही मानसिक तयारी करण्यासाठी समावेश होतो. मध्युगीन काळात लढाऊवृत्ती टिकवण्यासाठी कुस्ती, मुष्टियुद्ध, अश्वारोहण, भालाफेक, तिरंदाजी इ. बाबींचा समावेश शारीरिक शिक्षणात होता. तसेच शरीरस्वास्थ्य टिकवून ठेवण्यासाठी प्राणायाम, सूर्यनमस्कार, वनविहार इ. व्यायामप्रकार केले जात. विद्यार्थ्यांच्या शारीरिक सुदृढतेसाठी शारीरिक व्यायाम हा एक अविभाज्य घटक होता. घोडदौड, नेमबाजी, धनुर्विद्या, कुस्ती, शिकार यांबरोबरच संगीत व नृत्य या कलांचा विकासदेखील ह्या काळात झालेला दिसून येतो. इ.स. १२०० नंतर मुस्लिम राजवटीत सैनिकांना युद्धसज्ज ठेवण्यासाठी घोडदौड, नेमबाजी, तलवारबाजी, कुस्ती, पोहणे, शिकार यांबरोबरच बैल, रेडा, हत्ती यांसारख्या प्राण्यांशी सामना करण्याचे शिक्षण दिले जाई. छत्रपती शिवाजी महाराजांनी मराठी युवकांना युद्धाचे, बलसंवर्धनाचे शिक्षण देण्याची व्यवस्था केलेली आढळते. समर्थ रामदासांनी गावोगावी हनुमान मंदिरे स्थापन केली. त्यांचेच

रूपांतर पुढे आखाड्यांत झाले, तिथे दंड, बैठका, सूर्यनमस्कार, वजन उचलणे, कुस्ती, लाठी, दांडपट्टा तसेच ढालतलवारीने, जांबियाने, भाल्याने युद्ध करणे, अशा अनेक युद्धोपयोगी क्रीडाप्रकारांचे प्रशिक्षण दिले जाई. पेशवे काळातही ही आखाडा-व्यायामपद्धत जपण्यात आली. त्या काळात मल्लविद्या व मल्लखांबाद्वारे शरीर कसदार व घाटदार बनविणार्या व्यायामप्रकारांवर भर दिला जाई.

महाविद्यालयीन पातळीवर विभागीय, आंतरविभागीय स्पर्धा घेऊन त्यातून आंतरविद्यापीठ स्पर्धेकरता संघ निवडला जातो. तो प्रथम विभागवार स्पर्धेत सहभाग घेतो आणि नंतर अखिल भारतीय विद्यापीठ स्पर्धेत सहभागी होतो. शारीरिक शिक्षण संचालक म्हणून नियुक्त केलेल्या व्यक्ती महाविद्यालयामध्ये शारीरिक शिक्षणातील पदव्युत्तर कोर्स (एम.पी.एड. किंवा एम.पी.ई) पूर्ण केलेल्या असतात. काही महाविद्यालयांमध्ये शारीरिक शिक्षण हा ऐच्छिक विषय म्हणून तीनही वर्षांसाठी निवडता येतो. तिथे वरील अर्हताप्राप्त व्यक्तींची शारीरिक शिक्षण अधिव्याख्याता म्हणून नेमणूक केलेली असते.

माध्यमिक शाळेतील विद्यार्थ्यांची संख्या लक्षात घेता २५० ते ४०० विद्यार्थिसंख्येसाठी शैक्षणिक अर्हताप्राप्त एका क्रीडाशिक्षकाची नेमणूक करावी, असा आदेश महाराष्ट्र सरकारने काढला आहे. शिवाजी विद्यापीठामध्ये प्रथमवर्ष पदवी परीक्षेकरिता १० गुणांची शारीरिक शिक्षण परीक्षा अनिवार्य केलेली आहे. असे काही अपवाद वगळता शैक्षणिक पातळीवर हा विषय दुर्लक्षितच आहे.

शारीरिक शिक्षणाच्या विकासासाठी भारत सरकारने ग्वाल्हेर (मध्य प्रदेश) येथे राणी लक्ष्मीबाई राष्ट्रीय शारीरिक शिक्षण संस्था १९५७ साली सुरू केली. तेथे शारीरिक शिक्षणाचे पदवी व पदव्युत्तर अभ्यासक्रम शिकविले जातात. पीएच.डी. पदवीसाठी संशोधन करण्याची व्यवस्थाही तेथे आहे. पंजाबमधील पतियाळा येथे राष्ट्रीय क्रीडा प्राधिकरणाची १९६१ साली स्थापना करण्यात आली. येथे विशिष्ट खेळातील मार्गदर्शक तयार केले जातात. अशीच केंद्रे नंतर कलकत्ता (कोलकाता), बंगलोर, गांधीनगर (गुजरात) या शहरांत सुरू करण्यात आली आहेत. विशिष्ट खेळातील मार्गदर्शकांसाठी सहा आठवड्यांचा अभ्यासक्रम महाराष्ट्र औरंगाबाद केंद्रावर मे-जून महिन्यांत चालविला जातो.

बी.पी.एड्. ह्या पदवी परीक्षेसाठी क्रीडा-मानसशास्त्र, शारीरिक शिक्षणाचे आयोजन, नियोजन व व्यवस्थापन, शरीरविज्ञान व गतिशास्त्र, खेळांचे नियम व मार्गदर्शनाची तत्त्वे, शारीरिक शिक्षणातील मार्गदर्शन असे विषय आहेत. एम.पी.एड्. या पदव्युत्तर परीक्षेसाठी वरील विषयांसह क्रीडा-वैद्यकशास्त्र, शारीरिक शिक्षणातील संशोधन, योग व योगिक क्रिया ह्यांसारखे इतर विषय नेमलेले आहेत.

ब्रिटिश कालखंडात १८३३ मध्ये मध्यवर्ती सरकारने, तर १८७० मध्ये प्रांतिक सरकारांनी शिक्षणाची जबाबदारी स्वीकारली; परंतु त्यामध्ये शारीरिक शिक्षण या विषयास स्थान नव्हते. १९१२ मध्ये मध्यवर्ती सरकारने शारीरिक शिक्षणाकरिता विशेष तरतूद केली. तेव्हापासून फुटबॉल, क्रिकेट यांसारखे खेळ सरकारी शाळांमधून शिकवले जाऊ लागले. १९३५ नंतर तत्कालीन मुंबई इलाख्यातील शाळांमध्ये प्रशिक्षित शिक्षक नेमून शारीरिक शिक्षण देण्यास प्रारंभ झाला.

स्वातंत्र्योत्तर कालखंडात शारीरिक शिक्षणास पंचवार्षिक योजनेत स्थान लाभले. १९४७ ते १९६२ ह्या कालावधीत अनेक समित्यांच्या शिफारशींवरून शारीरिक शिक्षणासाठी प्राथमिक शाळेत वर्गशिक्षक, तर माध्यमिक शाळेत शारीरिक शिक्षणाचे खास प्रशिक्षण घेतलेले शिक्षक नेमले जाऊ लागले. शारीरिक शिक्षणाचा स्वतंत्र अभ्यासक्रम आखण्यात आला. विद्यार्थ्यांच्या क्रीडानैपुण्यास वाव देण्यासाठी जिल्हा, राज्य व राष्ट्रीय पातळ्यांवरच्या स्पर्धा आयोजित करून

विविध पारितोषिके व शिष्यवृत्त्या देण्याची तरतूद करण्यात आली. पावसाळी व हिवाळी स्पर्धा या नावाने या स्पर्धा ओळखल्या जातात.

काय करायला हवं?

- शारीरिक व्यायाम रोजच्या राहणीमानात अंतर्भूत करून छोटे बदल घडवून आपले राहणीमान आरोग्यपूर्ण करायला हवे
- दैनंदिन जीवनात प्राथमिक शाळेपासून मुलांची शारीरिक स्वास्थ्य चाचणी घ्यायला हवी
- प्रत्येक जिल्ह्यात, तालुक्यात क्रीडानिकेतन स्थापन करायला हवे
- प्रत्येक जिल्ह्यात एक क्रीडा-अकादमी स्थापन करायला हवी
- क्रीडा प्रशिक्षकांना प्रशिक्षण घ्यायला हवे

समारोप

भारतीय शिक्षण प्रणालीमध्ये सर्वच स्तरावर व्यायाम, खेळ, योगासने, योगिक क्रिया, प्राणायाम, सूर्यनमस्कार, विहार नियंत्रण, आयुर्वेद इत्यादींचा समावेश करण्यात आलेला आहे. एन.सी.टी.ई. २०१४ नुसार शिक्षक प्रशिक्षणामध्ये योगशिक्षणाचा समावेश करण्यात आला आहे. तसेच या प्रात्यक्षिकातून मी कोण? माझ्या जीवनाचा हेतू काय? या योगातील मूलतत्वांचा स्वीकार शिक्षक प्रशिक्षण अभ्यासक्रमात केलेला आहे. डिसेंबर २०१४ मध्ये युनायटेड नेशनमध्ये भारत सरकारने मांडलेल्या योगविषयक ठरावाला जगातील १७७ देशांनी मान्यता देऊन योग हे भारतवर्षाचे परमतत्त्वज्ञान व परमशास्त्र असल्याचे मान्य केले. त्यामुळे दरवर्षी २१ जून रोजी आंतरराष्ट्रीय योग दिवस साजरा करण्यास मान्यता मिळाली. आंतरराष्ट्रीय योगदिनाच्या माध्यमातून भारतीय योग परंपरेचा प्रसार व प्रचार करण्याचे सुवर्णयुग सुरू झाले. वेद, उपनिषद, पुराण, गीता इत्यादी प्राचीन वाङ्मयामध्ये योगाचे तात्विक अधिष्ठान पाहायला मिळते. त्यामुळे योग ही भारतवर्षाची अमूल्य देणगी आहे, हे सर्वमान्य झाले आहे.

योगा हे व्यक्तिमत्त्व विकासाचे अत्यंत प्रभावी शास्त्र आहे. योगिक क्रिया या व्यक्तिगत अनुभूतीचे शास्त्र आहे. योगाद्वारे शारीरिक, मानसिक व आत्मिक विकासातून व्यक्तीविकास होतो. समाज उभारणीसाठी, जीवन जगण्याची, विश्वशांती प्रस्थापित करण्यासाठी अष्टांग योग हा महत्त्वपूर्ण ठरतो. यम, नियम, आसन, प्राणायाम, प्रत्याहार, धारणा, ध्यान, समाधी यांद्वारे व्यक्तीला आपल्या अस्तित्वाचा पूर्णबोध होऊन जीवनाचे अंतिम सत्य समजते व व्यक्ती अष्टावधानी बन

संदर्भ:

- मंडलिक विश्वास, योगसिद्धांत, नाशिक.
- स्वामी रामदेव, योगचिकित्सा रहस्य, हरिद्वार
- स्वामी रामदेव, प्राणायाम, हरिद्वार
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सॅद्रिय शेती पुढील आव्हाने व भारतातील सॅद्रिय शेती

संदर्भातील प्रगती व उपाय

युवराज वसंत पाटील

संशोधक

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ औरंगाबाद

डॉ.अशोक कोरडे

मार्गदर्शक

श्रीमती. एस.के.गांधी कला, अमोलक विज्ञान आणि
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प्रस्तावना : आज भारतीय शेती व्यवस्थेला मजबूत करण्यासाठी सॅद्रिय शेती हाच खरा व शाश्वत पर्याय आहे पण यासाठी शेतकऱ्यांनी स्वतःवर विश्वास आणि शेती व्यवस्थेवर श्रद्धा ठेवायला पाहिजे सॅद्रिय शेतीत उत्पादन घेणे अवघड आहे पण अशक्य नाही. जास्त उत्पादनाची अपेक्षा न करता उत्पादन खर्चातील बचतीतून वाढलेला नफा या मुद्यावर विचार होणे गरजेचे आहे. सूक्ष्मजीव सजीवांची मृत शरीरे व अवयव यांना कुजवून त्यातून अलग होणारी सूक्ष्म अन्नद्रव्ये वानस्पतींना उपलब्ध करून देतात या शृंखलेला सॅद्रिय पद्धती म्हणतात. तसेच सॅद्रिय शेतीत बाहेरून विकत घेऊन काहीही टाकावे लागत नाही, पिकांच्या वाढीसाठी लागणारे सर्व अन्नघटक शेतातच नैसर्गिकरित्या उपलब्ध करून घ्यावे असतात. या मुळे शेतीचा उत्पादन खर्च हा निम्म्यापेक्षा कमी करता येतो. अर्थात शेतीचा उत्पादन खर्च कमी करणे हा पहिला उद्देश असून नंतर उत्पादनातही वाढ व्हावी हा दुसरा उद्देश. थोडा संयम, अभ्यास, चिकाटी, व प्रयोगांद्वारे हे सहज साध्य करता येते.

भारतामध्ये सिक्किमने देशातले पहिले सॅद्रिय राज्य होण्याचा मिळवला आहे. सिक्किमच्या खालोखाल केरळनेसुद्धा सॅद्रिय शेतीला आपल्या राज्यामध्ये मोठा बढावा दिलेला आहे. कारण या दोन राज्यातल्या कृषीतज्ञांना आणि विशेषतः शेतकऱ्यांना सॅद्रिय शेतीचे महत्त्व लक्षात आले आहे. आज देशातले पहिले सॅद्रिय राज्य म्हणून सिक्किमला मान दिला जात आहे आणि त्यानिमित्ताने तिथे सॅद्रिय शेती परिषद होत आहे. तिला पंतप्रधान नरेंद्र मोदी उपस्थित आहेत. सिक्किममधील ७५ हजार हेक्टर क्षेत्रावर सॅद्रिय शेती सुरू करण्यात आली आहे. गेल्या काही वर्षांत भारतामध्ये जैविक शेतीमध्ये वाढ होत आहे. हे मुख्य कारण अधिक रसायनिक खाद आणि कीटनाशकांपासून दुष्प्रभाव होते, पर्यावरणीय आणि सामाजिकदृष्ट्या जबाबदार दृष्टिकोन असलेल्या रासायनिक खते आणि कीटनाशकांचा वापर केल्याशिवाय सॅद्रिय उत्पादनांचा विकास शेतीच्या व्यवस्थेखाली केला जातो.

सॅद्रिय शेतीची एक पद्धत आहे जी जमिनीच्या पुनरुत्पादक आणि मातीची पुनरुत्पादक क्षमता, चांगल्या वनस्पतींचे पोषण आणि माती व्यवस्थापन योग्यरित्या टिकवून ठेवण्यासाठी कार्य करते, ज्यामुळे पौष्टिक अन्नाची निर्मिती होते जे रोगांना प्रतिकार करतात.भारत सरकारने सॅद्रिय उत्पादनासाठी राष्ट्रीय कार्यक्रम (NPOP) लागू केला आहे. राष्ट्रीय कार्यक्रमात प्रमाणन संस्था, सॅद्रिय उत्पादनाचे मानके, सॅद्रिय शेतीची जाहिरात इत्यादींसाठी मान्यता प्राप्त कार्यक्रम यांचा समावेश आहे. उत्पादन आणि मान्यता प्रणालीसाठी एनपीओपी (NPOP) मानके युरोपियन कमिशन आणि स्विट्झर्लंड यांनी त्यांच्या देशाच्या मानकेप्रमाणे प्रक्रिया न केलेल्या वनस्पती उत्पादनांसाठी मान्यता दिली आहे. त्याचप्रमाणे, यूएसडीएने एनपीओपी (NPOP) अनुरूप मूल्यांकन प्रक्रियेस यूएसपेक्षा (US) समान मान्यता दिली आहे. या मान्यतांसह, भारतीय सॅद्रिय उत्पादने योग्य प्रमाणात प्रमाणित केलेल्या अधिकृत प्रमाणित संस्थांकडून आयातित देशांद्वारे ते स्वीकारले जातात.अलीकडेच केंद्रीय कृषी मंत्रालयाने नेमलेल्या अभ्यास गटाने सॅद्रिय शेतीचा

विस्तार, प्रचार आणि संस्थात्मक प्रोत्साहन अशा महत्त्वपूर्ण बाबींच्या फेरबदलातून २०२५ पर्यंत एकूण पिकाखालील क्षेत्रापैकी सुमारे १० टक्के क्षेत्र सेंद्रिय शेतीखाली येईल, असा आशावाद व्यक्त केला आहे. विशेषतः जगभरातील सेंद्रिय शेती खालील क्षेत्र क्रमवारीमध्ये भारत नवव्या क्रमांकावर असून, उत्पादनांच्या बाबतीत पहिल्या स्थानी आहे.

समस्या विधान: सेंद्रिय शेती पुढील आव्हाने व भारतातील सेंद्रिय शेती संदर्भातील प्रगती एक अभ्यास

उद्दिष्ट:

1. रासायनिक व सेंद्रिय शेती पुढील विविध आव्हानांचा अभ्यास करणे
2. सेंद्रिय शेतीच्या संदर्भातील भारताची विविध राज्यांमधील प्रगतीचा अभ्यास करणे.
3. सेंद्रिय शेतीची उत्पादकता वाढविण्यासाठी शासन स्तरावर केल्या जाणाऱ्या विविध उपाय योजनांचा अभ्यास करणे.
1. शेतीचा सेंद्रिय कर्ब १ ते २ टक्के असणे आवश्यक आहे. मात्र त्यामध्ये प्रचंड घसरण झाली असून हा कर्ब केवळ ०.३ टक्के एवढाच शिल्लक राहिला आहे. सेंद्रिय कर्ब कमी झाल्याने उपयोगी जिवाणू नष्ट होत आहेत. (उदा. गांजूळ, नत्राचे प्रमाण) यामुळे ओलावा टिकवून ठेवण्याची क्षमता कमी होत आहे. जैविक आणि भौतिक सुपीकता कमी होत आहे. पर्यायाने मनुष्याच्या आरोग्यावर विपरीत परिणाम होत आहे. युरिया, सुपर फॉस्फेट, अमोनियम सल्फेट यांसारखी 'एकेरी खते' (पिकांना फक्त एकाच अन्नद्रव्याचा पुरवठा करणारी खते) डायअमोनियम फॉस्फेट, नायट्रो फॉस्फेटसारखी संयुक्त खते (पिकांना दोन किंवा अधिक अन्नद्रव्यांचा पुरवठा करणारी खते) आणि दोन किंवा अधिक खतांचे मिश्रण असणारी 'मिश्र खते' (उदा. सुफला, संपूर्णा, उज्ज्वला, सम्राट,) या सर्व प्रकारच्या खतांमधील काही अंशदेखील उत्पादित झालेल्या मालामध्ये उतरत असतो. त्याचाही परिणाम आरोग्यावर होतो.
2. लहरी हवामानामुळे किडीचा प्रादुर्भाव मोठ्या प्रमाणात होत आहे. यासाठी कीटकनाशकांचा वापर सर्रास सुरू असतो. विशेषत फळे, भाज्या, डाळी यांवरही कीटकनाशकांचा सर्रास वापर केला जातो. त्यामधील अंश अन्नावाटे आपल्या शरीरात जातात. बदलती जीवनशैली आणि राहणीमान याचा आरोग्यावर विपरीत परिणाम झाल्याचे आपल्याला दिसून येते.
3. सरकारकडून देखील देशातील सेंद्रिय शेतीला प्रोत्साहन देण्यासाठी काही महत्त्वपूर्ण पावले उचलली जात आहेत. कृषी मंत्रालयाने विद्यमान वर्षात सेंद्रिय शेतीच्या अनुदानात दुप्पट वाढ करून वर्षाकाठी १३०० कोटी रुपयांचा प्रस्ताव ठेवला आहे तर पंधराव्या वित्त आयोगामध्ये पुढील पाच वर्षात अतिरिक्त २५ लाख हेक्टर क्षेत्र सेंद्रिय शेतीखाली आणण्याचे उद्दिष्ट ठेवले आहे. आजरोजी आपल्या देशातील सेंद्रिय शेतीखालील प्रमाणित व संक्रमण असे एकूण क्षेत्र १.९३ दशलक्ष हेक्टर आहे. अलीकडच्या काळामध्ये सेंद्रिय उत्पादनातही वाढ झाली आहे.
4. आपल्या देशात सध्या सुमारे १.७० दशलक्ष मेट्रिक टन प्रमाणित सेंद्रिय उत्पादन होते. यामध्ये तेलबिया, ऊस, डाळी, बाजरी, तृणधान्य, कापूस, औषधी वनस्पती, चहा, कॉफी, फळे-भाज्या, मसाले, ड्राय फ्रूट्स आदींचा समावेश आहे. त्यापैकी २०१७-१८ या वर्षात ४.५८ लाख मेट्रिक टन सेंद्रिय अन्नपदार्थांची यूएसए, युरोपियन युनियन, कॅनडा, स्वित्झर्लंड, ऑस्ट्रेलिया, इस्राईल, दक्षिण कोरिया, व्हिएतनाम, न्यूझीलंड आणि जपान आदी देशांमध्ये निर्यात केली गेली आहे. तर सेंद्रिय अन्न निर्यातीची प्राप्ती सुमारे ३४५३.४८ कोटी रुपये इतकी

असल्याचे दिसून येते. मध्य प्रदेश, गुजरात, महाराष्ट्र आणि सिक्कीम या राज्यांनी सेंद्रिय शेतीला चालना दिली आहे. मात्र सद्यःस्थितीत देशातील एकूण पिकाखालील क्षेत्रापैकी सेंद्रिय शेती खालील क्षेत्र केवळ २ टक्केच आहे.

5. सेंद्रिय शेती करणाऱ्या शेतकऱ्यांच्या संख्येमध्ये भारत सर्वात प्रथम आहे. तर सेंद्रिय शेतीच्या क्षेत्राचा विचार केला तर भारत नवव्या स्थानावर आहे. सिक्कीम या संपूर्ण राज्यामध्ये केवळ सेंद्रिय शेती केली जाते. पूर्णतः सेंद्रिय शेती करणारे हे जगातले पहिले राज्य आहे. आता त्यापाठोपाठ त्रिपुरा आणि उत्तराखंड या राज्यांनी आपल्या क्षेत्रात संपूर्णपणे सेंद्रिय शेती करण्याचे उद्दिष्ट निश्चित केले आहे. ईशान्य भारतामध्ये पारंपरिक पद्धतीने सेंद्रिय शेती केली जाते. या भागात रासायनिक खतांचा वापर इतर देशांच्या तुलनेमध्ये अतिशय कमी करतात. त्याचबरोबर आदिवासी आणि इतर लहान लहान बेटांवरही सेंद्रिय शेती करण्यात येत आहे.
6. सेंद्रिय उत्पादनांना मोबादला खूप चांगला मिळतो. त्यामुळे अशा पद्धतीने शेती व्यवसाय करण्याकडे आता कल निर्माण झाला आहे. यासाठी दोन योजना तयार करण्यात आल्या आहेत. यामध्ये 'मिशन ऑर्गेनिक व्हॅल्यू चेन डेव्हलपमेंट फॉर नॉर्थ ईस्ट रिजन (MOVCD) आणि परंपरागत कृषी विकास योजना (पीकेव्हीवाय). या योजना सन 2015 मध्ये सुरू करण्यात आल्या. रसायनमुक्त शेती व्यवसाय करणे, या उद्देशाला प्रोत्साहन देण्यासाठी या दोन्ही योजना तयार करण्यात आल्या आहेत. त्याच्याच जोडीला कृषी निर्यात धोरण 2018, तयार करण्यात आल्यामुळे सेंद्रिय कृषी उत्पादनांना जागतिक बाजारपेठेत खूप चांगली मागणी निर्माण होऊ लागली. जागतिक सेंद्रिय बाजारपेठेत भारत एक महत्त्वाचा भागीदार म्हणून उदयास येऊ शकेल, असा विश्वास आता निर्माण झाला आहे. भारताने सन 2018-2019 मध्ये 5,151 कोटींची सेंद्रिय कृषी उत्पादनाची निर्यात केली आहे. या निर्यातीमध्ये जवळपास 50 टक्के वाढ झाली आहे. यामध्ये प्रामुख्याने अंबाडीचे बी म्हणजे जवस, तीळ, सोयाबीन, चहा, वनौषधी, तांदूळ आणि डाळी यांचा समावेश आहे.
7. परंपरागत कृषी विकास योजनेमध्ये सुमारे 40,000 क्लस्टरस विकसित करण्यात आले असून त्यामध्ये 7 लाख हेक्टर क्षेत्रामध्ये लागवड करण्यात आली आहे. एमओव्हीसीडीअंतर्गत 160 कृषी उत्पादन संघटनांच्या माध्यमातून 80 हजार हेक्टर क्षेत्रामध्ये लागवड करण्यात आली आहे. हे सर्व शाश्वत क्लस्टरस ठरावेत यासाठी बाजारपेठेतल्या मागणीचा विचार करून उत्पादनाच्या कराराची पद्धती स्वीकारण्यात आली आहे. त्यामुळे आलेल्या उत्पादनाला तयार बाजारपेठ उपलब्ध होत आहे. तसेच गरजेनुसार उद्योजकांना योग्य गुणवत्तेचे उत्पादन मिळण्यास मदत होत आहे. मोठ्या प्रमाणावर उत्पादन घेणा-या शेतकरी बांधवांचे पीक मोठे उद्योजक घेत आहेत. यामध्ये वनस्पतींचा अर्क काढणा-या उद्योजकांना मोठ्या प्रमाणावर कृषी उत्पादन खरेदी करणे परवडते. यामध्ये आले, हळद, काळे तांदूळ, मसाले, पोषक तृणधान्य, अननस, औषधी वनस्पती, गव्हाचे तृण, बांबूचे कोवळे कोंब, इत्यादींचा पुरवठा उद्योगांना करण्यात येत आहे. मेघालयातून मदर डेअरी, रेवांता अन्न आणि मणिपुरातून बिग बास्केट या कंपन्यांना सेंद्रिय उत्पादने पुरवली जातात. सेंद्रिय उत्पादनाला बाजारपेठ निर्माण करणे, तसेच थेट विक्री करणे यासाठी महाराष्ट्र, कर्नाटक या राज्यांमध्ये काम केले जात आहे. त्यामुळे लोकांना आपल्या दारामध्ये ताजी सेंद्रिय उत्पादने मिळू लागली आहेत.
8. ज्या शहरी भागांमध्ये सेंद्रिय उत्पादने विक्रीसाठी मध्यस्थ नसतो. तिथे दलाली वाचते. आणि शेतकरी बांधवांना चांगली किंमत मिळू शकते. महाराष्ट्रामध्ये कृषी उत्पादन संघाच्या माध्यमातून लोकांच्या दारापर्यंत फळे आणि भाजीपाला विकला जात आहे. तसेच पंजाबमध्ये विशेष प्रकारे तयार करण्यात आलेल्या इलेक्ट्रिक व्हॅनच्या माध्यमातून लोकांना घरपोच सेंद्रिय उत्पादने मिळत आहेत.

9. नैसर्गिक शेती ही काही भारतामध्ये नवीन संकल्पना नाही. शेती करताना रसायनांचा वापर अजिबात न करता शेती करण्याची पद्धत आपल्याकडे अतिशय प्राचीन काळापासून अस्तित्वात आहे. यासाठी शेतीचे सेंद्रिय अवशेष, गाईचे शेण, पालापाचोळा कुजवून तयार करण्यात आलेले खत, यांचा वापर शेतीमध्ये केला जातो.
10. अलिकडच्या काळात सेंद्रिय शेतीचे प्रमाण सातत्याने वाढत आहे. ते पाहता जागतिक सेंद्रिय कृषी व्यापारामध्ये लवकरच भारताचे स्थान अधिकाधिक बळकट होण्याची शक्यता आहे.

सेंद्रिय शेती तील जैविक उपाय (सेंद्रिय खत)- सेंद्रिय शेती करण्याची इच्छा असते, परंतु असे शेतकरी विविध पिकांवरील रोग आणि कीड याने त्रस्त असतात आणि त्यामुळेच ते रासायनिक शेती कडे वळतात. अशा सर्व शेतकरी बांधवांसाठी सेंद्रिय शेती मधील जैविक उपाय जाणून घेणे गरजेचे आहे.

कडुनिंब - अनेक वनस्पती ह्या किडनाशक असतात, त्यातल्या त्यात कडुनिंबाचा वापर कीड घालवण्यासाठी सर्वात प्रभावी मानला जातो. कडुनिंबाच्या अर्काचा वापर हा किटक नियंत्रणात एक महत्त्वाचा घटक आहे. त्यामुळे तुम्ही कडुनिंबाचा अर्क हा किडनाशक म्हणून पिकांवर फवारू शकता.

गोमुत्र - कडुनिंबा बरोबरच तुम्ही देशी गाईचे गोमुत्र देखील किडनाशक म्हणून वापरू शकता. ज्या पिकावर कीड पडली असेल किंवा कीड सदृश कृमी तुम्हाला आढळत असेल तर त्याचावर पाण्यात गोमुत्र टाकून त्यामिश्रणाची फवारणी केल्याने ती कीड नाहीशी होण्यास मदत होते. साधारणपणे १:२ या प्रमाणात गोमुत्र पाण्यात मिसळावे आणि त्याची फवारणी करावी.

आरोग्याचे तत्व - हवा, माती, धान्याची रोपे, पशु, प्राणी, पक्षी, मनुष्यप्राणी व निसर्गचक्र याचे आरोग्य वाढवणे हा सेंद्रिय शेतीचा मुख्य उद्देश आहे. सेंद्रिय पद्धतीच्या शेतीचा अवलंब केल्यास आणि सेंद्रिय शेती च्या पद्धतीने पिकवलेल्या फळ भाज्या व धान्य खाल्ल्याने माणसाची रोगप्रतीकारक शक्ती वाढून माणसाचे आरोग्य अधिक चांगले राहण्यास मदत होते.

सेंद्रिय शेतीसाठी उत्तम खत - सेंद्रिय शेती पद्धतीने शेती करत असताना, पिकांची वाढ उत्तम व्हावी आणि जमिनीचा कस वाढावा म्हणून तुम्ही एक उत्तम खत बनवू शकता, तुम्ही एका लहान ड्रम मध्ये किंवा भांड्यामध्ये साधारण १५ किलो देशी गाईचे शेण घ्या, त्यामध्ये ३ किलो सेंद्रिय गूळ, साधारण ५ लिटर देशी गाईचे गोमुत्र, कडुनिंबाचा पाला आणि वडाच्या झाडाखालील थोडी माती हे सगळे चांगले मिक्स करून घ्या मिक्स करताना गरजेनुसार त्यामध्ये पाणी टाका आणि हे मिश्रण झाकून ठेवा. साधारण १५ दिवस हे मिश्रण सावलीच्या ठिकाणी ठेवा आणि एक दिवसाआड हे मिश्रण एखाद्या काठीने ढवळा. १५ दिवसांनंतर हे मिश्रण तुमच्या पिकाला पाणी देताना पाण्यातून सोडावरील प्रमाणे हे एक ऐकर क्षेत्राला पुरेसे आहे, आपल्याला जर अधिक क्षेत्रासाठी वापरायचे असेल तर आपण त्याप्रमाणात वाढ करावी. १५ दिवसांनंतर ज्यावेळी हे शेतात पाण्यातून सोडाल, तेंव्हा त्यामध्ये काही कृमी तयार झालेले दिसतील. या कृमीमुळे शेती सुपीक होते आणि पीक देखील जोमात येते.

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वर्तमान परिवेश में पर्यावरण का महत्व

प्रा. डॉ. विष्णु गव्हाणे

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वर्तमान परिवेश में विज्ञान के सतत नव-नवीन प्रयोग, अनुसंधान तथा अविष्कारों के कारण पर्यावरण अत्याधिक प्रभावित हो गया है। एक समय ऐसा भी था कि पेड़ों की पूजा होती थी तथा अस्था के अनेक प्रतीकों के कारण ही पर्याप्त मात्रा में प्रदूषण होता था। आजकल देखा जाए तो अनेक कारखानों, वाहनों, परमाणु विस्फोट से वायु मंडलीक परिवेश अत्यंत प्रभावित हो रहा है। परिणाम स्वरूप ओजोन क्षिद्र, अम्लीय वर्षा जैसी समस्याओं का सामना करना पड़ रहा है। विश्व की जनसंख्या तेजी से बढ़ रही है। फलस्वरूप प्राकृतिक संसाधनों पर मानव का दबाव तेजी से बढ़ रहा है। इन समस्याओं को समाप्त करने के लिए जागरूकता की आवश्यकता है। इसलिए विश्व में विविध कार्यक्रमों परिसंवादों और संगोष्ठीयों का आयोजन किया जा रहा है। इस विषय को लेकर ही आज यहाँ उपस्थित है। 20 वीं सदी विकास एवं उल्लास की रही है। लेकिन इस विकास ने प्रकृति के -हास को भी आमंत्रित किया है। यहीं नहीं विभिन्न पर्यावरणीय समस्याओं ने जिन त्रासदियों को जन्म दिया है वह निश्चय ही भयावह है, जिनके निर्माण होने से समस्त मानव जीवन का अस्तित्व खतरे की चपेट में आ गया है। वर्तमान समय में सबसे भयावह समस्या प्लास्टिक की है। उसके टिकाउपन, मनभावन रंग, आकार-प्रकार के कारण इसका प्रयोग मानव के जीवन में हर क्षेत्र में हो रहा है। इतना ही नहीं वैज्ञानिकों ने मानव के विविध अवयवों के साथ हृदय भी कृत्रिम बनाया है, वह भी प्लास्टिक से ही। दिन-ब-दिन प्लास्टिक की मांग बढ़ती ही जा रही है। मानव जीवन के साथ ही इसका असर पशु - पक्षियों के जीवन पर भी दृष्टिगत होता है। पत्तियों के सेवन से पशु अनेक बिमारियों का शिकार होते हैं। इसमें उनकी मृत्यु भी हो सकती है। अगर हम जल्दी ही सतर्क न हुए तो वह दिन दूर नहीं, हम पशुहीन हो जाएंगे।

प्लास्टिक नष्ट करने के अनेक उपाय अब तक ढूँढ निकाले हैं। लेकिन उससे भी प्रदूषण बढ़ता है। सामान्यतः प्लास्टिक को गड्ढों में भर दिया जाता है तथा जलाया जाता है। इसे जलाने से कार्बन डाईऑक्साईड जैसी विषैली गैसें निकलती हैं। इसे नष्ट करने का तीसरा तरीका इसका पुनःचक्रण है। इसका प्रथम प्रयोग 1970 में कॅलीफोर्निया में हुआ। पुनःचक्रण बहुत महंगा होने के कारण यह अत्यंत कम मात्रा में होता है। इसके निर्माण में रोक लगाना बढ़िया हल है, ऐसा मेरा मानना है। साथ ही मानव ने इसके उपयोग को त्यागना ही बेहतर रहेगा।

वायु प्रदूषण : -

समस्त जीवों का अनिवार्य तत्व वायु है। इसी से ही प्राणियों तथा जीव जन्तुओं को ऑक्सीजन और वनस्पतियों को कार्बन-डाय-ऑक्साईड नित प्राप्त होता है। वायुमंडल कई गैसों के मिश्रण से निर्मित है। इसमें गैसों का अनुपात इतना संतुलित होता है कि तनिक सा बदलाव भी इस चक्र को प्रभावित करता है और इसका सीधा प्रभाव पृथ्वी के जीव-जगत पर पड़ता है। विश्व स्वास्थ्य संगठन के निष्कर्ष के पर्यावरण में मानवीय कृति से प्राकृतिक स्वच्छ वायु प्रभावित हो गयी है। वर्तमान समय में मानव द्वारा अपने क्रियाकलापों में कोयला, पेट्रोल तथा अन्य इंधन का जिस प्रकार से प्रयोग किया जा रहा है। इससे वायुमंडल में कार्बन सल्फर ऑक्साईड तथा कार्बन मोनाऑक्साईड की मात्रा बढ़ती चली जा रही है। वाहनों के द्वारा उत्सर्जित धुंआ, औद्योगिक इकाईयों द्वारा उत्सर्जित धुंआ, परमाणु विस्फोट, अन्य घरेलू उपयोग से निकला धुंआ, जंगलो की आग से निकला धुंआ इससे वायु मंडल आज इतना

प्रभावित हो चुका है कि अस्थमा, दमा, एलर्जी तथा अन्य बीमारियों को आमंत्रित किया जा रहा है। दिन-ब-दिन वाहनों और कारखानों की संख्या तेजी से बढ़ती जा रही है। वृक्षों की कटाई से कार्बन डाय-ऑक्साइड की मात्रा बढ़ती ही जा रही है। जिसकी चपेट में पर्यावरण आ गया है। यह एक गंभीर समस्या बन गई है। नदी-घाटी परियोजनाएँ तथा बांध ये वनों के नाश के लिए उत्तरदायी हैं। यह परियोजनाएं पर्यावरण को बहुत अधिक प्रभावित करती हैं। बड़े-बड़े बांध निर्माण में बड़े भू-भाग से पेड़ों को काटा जाता है। तथा बांध निर्माण के पश्चात जंगलों का एक बड़ा भाग जलमग्न हो जाता है। साथ ही इन बांधों के कारण परिस्थितिक संतुलन प्रभावित होता है। भू-सखलन तथा भूकंप की संभावना इसके कारण बढ़ती है। इसमें जैव विविधता, तथा आर्थिक दृष्टि से महत्वपूर्ण वनस्पतियों का भी -हास होता है। इसका अच्छा उदाहरण सरदार सरोवर है। इस परियोजना के तहत 144731 हेक्टर भूमि जलमग्न हो गई है।

जल प्रदूषण : -

पृथ्वी पर जल के विस्तृत क्षेत्र हैं। लगभग 70 प्रतिशत भाग महासागरों से घिरा हुआ है। लेकिन खारेपन के कारण यह मानव उपयोगी नहीं है। पृथ्वी पर स्थित नदियाँ, झील, भूमिगत जलस्रोत आदि मानव की नित उपयोग की हैं। आज महानगरों के ड्रेनेज तथा कारखानों का दूषित जल नदियों में छोड़ा जाता है। जिससे यह जल संपूर्ण जिवों को हानिकारक है। जिससे मानव तथा पशु-पक्षियों को अनेक प्रकार की बिमारियों का सामना करना पड़ता है। रासायनिक दृष्टि से जल हायड्रोजन का मोनो ऑक्साइड है जिस में दोन भाग हाइड्रोजन व एक भाग ऑक्सीजन होता है। लेकिन प्रकृति में इस शुद्ध जल नहीं प्राप्त होता। जब बाष्प संघटित होकर वर्षा के रूप में वायुमंडल में प्रवेश करता है। तब उसमें अनेक गैस, धूल के कण एवं अन्य अशुधियाँ, मिश्रित होने लगती हैं। जैसे ही यह धरती पर बहने लगती है, इसमें अनेक रासायनिक तथा अन्य तत्व मिश्रित हो जाते हैं, इनमें से अनेक तत्व हानिकारक होते हैं।

जनसंख्या विस्फोट :-

आज पर्यावरण के क्षितिज पर जनसंख्या विस्फोट भी बड़ी समस्या है। इसने सभी देशों को परेशान किया है। जनसंख्या की तुलना में प्राकृतिक संसाधन अत्यंत कम पड़ने लगे हैं। इससे खनिज भंडार, खाद्य आपूर्ति, जल आपूर्ति आदि समस्याएँ निर्माण हो गयी हैं। महानगरों में भीड़ बढ़ती ही जा रही है। इससे परिवहन संकट के साथ ही जीवन की गुणवत्ता का -हास होने लगा है। सन 1950 के बाद विश्व की जनसंख्या में भारी वृद्धि हो गयी 18 वीं 19 वीं शताब्दी में यूरोप की जनसंख्या में भारी वृद्धि हो गयी और यह महाद्विप जनाधिक्य का शिकार हो गया।

इस विवेचन से हम इस नतीजे पर आ गए हैं कि भूपटल का तापमान बहुत ही बढ़ता जा रहा है। 1900 से 2000 तक के बीच भूपटल के तापमान में 0.3 डिग्री सें.ग्रे वृद्धि हो गयी है। इससे ध्रुवीय क्षेत्र से बर्फ पिघलेगी तथा सागरों का जलस्तर बढ़ेगा। दूसरी बात आम्नीय वर्षा से वहाँ के सूक्ष्म जीव तथा कीड़े, मकोड़े आम्नीयता के दुष्प्रभाव से मर जाते हैं। आम्नीय वर्षा से भूमि की उपजाऊ क्षमता क्षीन होती जा रही है। और इस वर्षा का बुरा परिणाम मानव तथा सृष्टि पर हो रहा है।

उपाय - पर्यावरण की सुरक्षा के लिए अनेक उपाय वैज्ञानिकों ने दिए हैं लेकिन उनका उपयोग अत्यंत कम मात्रा में हो रहा है।

1. कम प्रदूषण वाले वाहनों का निर्माण हो।
2. कारखानों तथा महानगरों का दूषित जल शुद्ध करने के पश्चात ही नदी में छोड़ा जाए।
3. हाल ही में दिल्ली सरकार का वाहनों के उपयोग का नियम - (सम-विषम) सभी शहरों में लागू किया जाए। विश्व के कई शहरों में यह नियम पहले से ही अपनाया है।
4. रेल में कोयले के अलावा विद्युत इंजन का उपयोग किया जाए।
5. वनों में लगने वाली आग एवं अन्य कांडों पर शीघ्र नियंत्रण की व्यवस्था हो।
6. उद्योग शहरों से दूर जगह पर निर्माण हो तथा उनके धुएं की चिमनियाँ निर्धारित उँचाई पर हो।
7. सबसे अहम उपाय वृक्षों की वृद्धि होनी चाहिए तथा प्रदूषण को रोकने के लिए विभिन्न तकनीकी साधनों का उपयोग तो आवश्यक है लेकिन उसके साथ ही जन जागृति की आवश्यकता है, जिसमें विश्व का हर व्यक्ति भागीदार हो।

अंत में हम यह कह सकते हैं कि पर्यावरण को हानि मानव से ही हो रही है तो पर्यावरण की रक्षा करना भी मानव की जिम्मेदारी है। अगर हम सब मिलकर इस समस्या का अध्ययन कर पर्यावरण सुरक्षा को महत्व देते हैं तो भविष्यकाल निश्चित ही उज्ज्वल रहेगा।

संदर्भ ग्रंथ -

1. पर्यावरण अध्ययन - डॉ. एच.एस. गर्ग
2. व्यावसायिक पर्यावरण - डॉ. एच.के. सिंह
3. मानव भूगोल - माजिद हुसैन
4. पर्यावरण भूगोलशास्त्र - डॉ. विठ्ठल धारपुरे
5. पर्यावरण - डॉ. कुलकर्णी

बदलते पर्यावरण आणि मराठी आत्मचरित्र वाङ्मय

प्रा. डॉ. गोपीनाथ पांडुरंग बोडखे

(मराठी विभाग प्रमुख)

आनंदराव धोंडे उर्फ बाबाजी महाविद्यालय

कडा ता. आष्टी जि. बीड

प्रस्तावना :

साहित्यामध्ये जसे कथा, कादंबरी, नाटक, काव्य, ललित लेखन इत्यादी वाङ्मयांना महत्त्वपूर्ण स्थान आहे. त्याप्रमाणे 'आत्मचरित्र' याही वाङ्मय प्रकाराला महत्त्वपूर्ण स्थान आहे. 'आत्मचरित्र' या वाङ्मयाला सन १९५० नंतर मान्यता मिळाली. तोपर्यंत आत्मचरित्रात्मक लेखन 'चरित्र' या वाङ्मय प्रकारातच अंतर्भूत करण्यात येत असे. अगदी पाश्चात्य साहित्यिकही आत्मचरित्राला चरित्राचा एक प्रकार मानूनच लेखन करत असत. मराठीत 'चरित्र-आत्मचरित्र' या विषयावर डॉ. अ. म. जोशी यांनी ग्रंथ लिहिला त्यातही आत्मचरित्र हा चरित्राचाच एक प्रकार मानला आहे; परंतु हे दोन्ही वाङ्मय प्रकार पूर्णतः वेगवेगळे आहेत. चरित्राचे निवेदन हे तृतीय पुरुषी अनेक वचनी असते. तर आत्मचरित्राचे निवेदन हे प्रथमपुरुषी एकवचनी असते. म्हणून आज या दोन्ही लेखनांना स्वतंत्र वेगवेगळे वाङ्मय प्रकार म्हणून मान्यता मिळालेली आहे. 'चरित्र' व 'आत्मचरित्र' लेखनाची प्रथा पाश्चात्यांची आहे. मराठी साहित्यात हे लेखन पाश्चात्य साहित्यामधून प्रेरणा घेऊनच आले. म्हणून इंग्रजीमध्ये चरित्राला 'बायोग्राफी' व आत्मचरित्राला 'ऑटोबायोग्राफी' असे म्हटले जाते. आत्मचरित्र हा चरित्राचाच एक प्रकार मानला गेला असला तरी चरित्रांत लेखक आणि चरित्रविषय हे भिन्न प्रकारचे असतात. यामुळे चरित्र आणि आत्मचरित्रात भेद निर्माण होतो. चरित्राप्रमाणे आत्मचरित्र संपूर्ण कधीच असू शकत नाही. दुस-या व्यक्तीची त्रयस्थ लेखकाने लिहिलेली कहाणी म्हणजे चरित्र होय व स्वतःच्या जीवनात स्वतः लिहिलेली कहाणी म्हणजे आत्मचरित्र होय. अशी चरित्र व आत्मचरित्रविषयक व्याख्या पाहताना त्यामधील मूलभूत फरक आपल्या लक्षात येतो. तो असा की, चरित्रात एक व्यक्ती दुस-या व्यक्तीच्या जीवनाचा शोध घेत असते. यामध्ये लेखक वेगळा व चरित्रनायक वेगळा असतो; तर आत्मचरित्रामध्ये लेखक आणि चरित्रनायक दोन्ही एकच असतात.

आत्मचरित्राच्या प्रमुख केंद्रस्थानी 'मी' व 'माझे जीवन' असते. हाच आत्मचरित्र लेखनाचा गाभा असतो. या आत्मचरित्र लेखनाला मराठी साहित्यात आत्मनिवेदन, आत्मवृत्तांत, आत्मकथा, स्व-कथन, आत्मनिवेदन, माझी जीवन कहाणी, माझी जीवनकथा, माझा जीवन प्रवास, अनुभवकथन, आत्मचरित्र इत्यादी वेगवेगळ्या नावांनी ओळखले जाते.

'आपण आपले अनुभव ग्रंथबद्ध करून करून ठेवणे ही प्रथा तशी जूनीच आहे. काही आत्मपरिक्षण करण्याच्या प्रवृत्तीमधून आत्मचरित्र लिहिण्याची प्रवृत्ती निर्माण झाली आहे. आपल्या जीवनात घेतलेले अनुभव माणसाला दुस-यास सांगावेसे वाटतात. त्याने त्याचे मन हलके होते या अनुभवांपासून इतरांना काही शिकावयास मिळेल असेही काही आत्मचरित्रकारांना वाटत असते. काही आत्मचरित्र लेखकांस आपल्या गतजीवनाचे सिंहावलोकन करून केवळ जुन्या आठवणींना उजाळा देण्यात आनंद वाटतो व या हेतूनेच ते आत्मचरित्र लिहितात. काहीजण आपली कैफियत मांडण्याच्या उद्देशाने आत्मचरित्राकडे वळतात. अशा विविध हेतूंनी आत्मचरित्राचे लेखन झालेले आहे.

आपल्या आठवणी शब्दबद्ध करणे ही प्रथा नवीन नाही. आत्मचरित्राचा खरा विकास इंग्रजी अमदानीत सुरु झाला असला तरी प्राचीन मराठी कवींपैकी नामदेव, तुकाराम, बहिणाबाई इत्यादी संतांनी प्रसंगानुसार आत्मपर लेखन केले आहे परंतु त्यांचे हे लेखन त्रोटक आहे. पेशवाईच्या अखेरीस बडोद्याचे गंगाधरशास्त्री पटवर्धन यांनी जुजबी आत्मवृत्तावर लिखाण केलेले आहे. या पुढील काळात विष्णुबुवा ब्रम्हचारी यांनी आपल्या 'वेदोक्त धर्मप्रकाश' (१९५९) या ग्रंथात आत्मपर लेखन केले आहे. इ.स. १८७९ मध्ये असाच त्रोटक आत्मचरित्रपर मजकूर लिहिलेला आहे परंतु यांचे लेखन आत्मचरित्र या प्रकारात मोडण्यासारखे नाही.

मराठी साहित्यातील आत्मचरित्रांचा खरा विकास इंग्रजी काळातच झाला. बाबा पद्मनजींनी प्रथमतः 'अरुणोदय' नावाचे आत्मचरित्र इ.स. १८८४ मध्ये लिहिले. बाबा पद्मनजींनी प्रथम हिंदू नंतर ख्रिश्चन धर्म स्वीकरला. त्यानंतर त्यांनी त्यांच्या मनाचा स्थित्यंतराचा इतिहास आपल्या या आत्मचरित्रात लिहिला. त्यांच्या या 'अरुणोदय' आत्मचरित्रात सत्यकथन, प्रांजळपणा, प्रामाणिकपणा, तटस्थवृत्ती, समरसता व भाषाशैली हे गुण सापडतात. त्यानंतर प्रसिध्द व्याकरणकार दादोबा पांडुरंग यांनी 'आत्मचरित्र' (१९८५) नावाचे आत्मचरित्र लिहिले. हे आत्मचरित्र अजून इंग्रजीतील बदलत्या सुधारीत समाजाची ओळख करून देणारे होते. दादोबांची भाषा साधी व घरगुती असून त्यात कोठेही आत्मगौरव दिसून येत नाही. तत्कालीन समाजजीवन व व्यक्तीजीवन यांच्या संघर्षाचे सुंदर चित्र त्यांनी रेखाटलेले आहे. एकोणिसाव्या शतकाच्या उत्तरार्धात निर्माण झालेली आत्मचरित्रे अल्प असली तरी आत्मचरित्रे लिहिण्याची प्रवृत्ती वाढत्या प्रमाणात निर्माण झाली. काहींनी परकीय भाषांतील आत्मचरित्रांचा अनुवाद केला. परकीय राज्यकर्त्याविरुद्ध झगडणा-या राजकारणी पुढा-यांना आपल्या जीवनाचा वृत्तान्त उघडपणे सांगण्यात त्या काळी राजकीय दृष्ट्या काहीशी अडचण भासत होती. या अडचणीचा परिहार म्हणून परकीय भाषांमधील आत्मचरित्रांचा अनुवाद समाजसुधारक लेखकांनी मराठी भाषेत केला. प्रसिध्द इटालियन देशभक्त 'जोसेफ मॅझिनी' यांच्या आत्मचरित्राचा अनुवाद वि. दा. सावरकर यांनी इ. स. १९०७ मध्ये केला हा ग्रंथ मुळात जशा स्फूर्तिदायक व ओजस्वी आहे. या आत्मचरित्राच्या रूपाने क्रांतिकारकांच्या भावनांना वाट मोकळी करून देण्याचा अप्रत्यक्ष मार्ग मिळाला. लाला लजपतराय यांच्या हृदपारीनंतर 'द स्टोरी ऑफ माय डिपॉरेशन' याचा अनुवाद 'माझ्या हृदपारीची कहानी' या नावाने ल.ब. भोपटकर यांनी केला.

विसाव्या शतकाच्या सुरुवातीस मराठी वाङ्मयाचे सुंदर लेणे म्हणून ज्याच्या उल्लेख केला जातो. ते आत्मचरित्र म्हणजे रमाबाई रानडे यांचे 'आमच्या आयुष्यातील काही आठवणी' (१९१०) हे आत्मचरित्र होय. पतिपत्नींच्या सहजीवनाचे कोमल व मधूर चित्रण यामध्ये आहे आपल्या जीवनापासून लोकांना काही बोध मिळावा या हेतूने धोंडो केशव कर्वे यांनी 'आत्मवृत्त' (१९१५) साली हा आत्मचरित्रपर ग्रंथ लिहिला. हा आत्मचरित्रपर ग्रंथ लेखनाचा उद्देश म्हणजे स्त्रियांच्या, विशेषतः विधवांच्या शिक्षणासाठी आपण करित असलेल्या कार्याची लोकांस माहिती भरून सहकार्य मिळवणे हे होय. या आत्मचरित्राचा हेतू काही अंशी प्रचाराचा व काही अंशी बोधाचा आहे. धोंडो केशव कर्वे यांच्याच आश्रमातील कार्यकर्त्या पार्वतीबाई आठवले यांनी 'माझी कहाणी' (१९२६) हे आत्मपर लेखन केले. याच काळी समाजसुधारक सी. ग. देवधर यांनीही 'माझा जीवनवृत्तान्त' (१९२७) हे आत्मचरित्र प्रसिध्द केले. या तीनही आत्मचरित्रपर ग्रंथांमधून समाजसुधारणेचा तत्कालीन पर्यावरणाचा भाग कथन केलेला आहे. विसाव्या शतकाच्या सुरुवातीचा काळ हा महाराष्ट्रात राजकीय उत्पन्नांचा काळ होता व राजकारणाच्या क्षेत्रात त्या काळी लोकमान्य टिळक, नामदार गोखले, शिवरामपंत परांजपे यांच्यासारखे काही कर्तबगार पुरुष कार्य करित होते. तथापि यापैकी कुणीही आत्मचरित्र लिहिले नाही. परकीय सत्तेविरुद्ध लढणा-या राजकीय पुढा-यांना आपले जीवनानुभव प्रकटपणे सांगता येणे कठीण होते. असा ग्रंथ सरकारी रोषास बळी पडणे उघड होते. वि. दा. सावरकर यांनी 'माझी जन्मठेप' हा आत्मचरित्रपर ग्रंथ इ.स. १९२७ मध्ये प्रसिध्द केला. अंदाजाने येथील दीर्घकालीन कारावास सोसून बाहेर आल्यावर

त्या कारावासातील अनुभवांचा वृत्तान्त या ग्रंथाच्या रूपाने सावरकरांनी जनतेपुढे मांडताच या पुस्तकावर बंदी घालण्यात आली. पारतंत्र्याच्या काळात आपल्या मनातील इच्छा-आकांक्षा प्रकट करण्याची ही चोरी होते. हे या आत्मचरित्रावरून आपणाला दिसते. रमाबाई रानडे यांच्याप्रमाणे पतिपत्नीच्या सहजीवनाचे चित्रण करणारे लक्ष्मीबाई टिळक यांचे 'स्मृतिचित्रे' हे आत्मचरित्र होय. सुप्रसिध्द कवी रेव्हरंड टिळक व यांच्या पत्नी लक्ष्मीबाई टिळक यांच्या स्मृती यामध्ये आहेत. साधी, घरगुती परंतु आकर्षक भाषाशैली, स्पृहणीय तटस्थ वृत्ती मनाचा मोकळेपणा व बदलते पर्यावरणाचे चित्रण या गुणांनी हे आत्मचरित्र नटलेले आहे.

लक्ष्मण रामचंद्र पांगारकर यांनी 'चरिचंद्र' (१९३८), न. चिं. केळकर यांनी 'गतगोष्टी' (१९३९) या आत्मचरित्रांनीही बोधवादी दृष्टी मराठी साहित्यात रुजविला. एका थोर लेखकाच्या व्यक्तिविकासाचे व वाङ्मयीन अनुभवांचे चित्र श्री. कृ. कोल्हटकर यांच्या 'आत्मवृत्त' (१९३५) या आत्मपर व भोवतालच्या बदलत्या वातावरणाचे चित्रण ग्रंथात पाहावयास मिळतात. अगदी क्षुल्लक व्यावहारिक गोष्टींना नसते महत्त्व देऊन त्यांबाबत दुस-यावर शब्दांचे कटू प्रहार करताना पाहून दारुण निराशा होते. याचा प्रत्यय प्रसिध्द नट गणपतराव बोडस यांच्या 'माझी भूमिका' या आत्मचरित्रात येतो. हिंगणे स्त्री शिक्षणसंस्थेच्या कार्यकर्त्या कमलाबाई देशपांडे यांनी 'स्मरणसाखळी' (१९४३) हे आत्मचरित्र लिहून वेगळ्याच सभोवतालच्या अनुभवाचे चित्रण केले आहे. या ग्रंथात पूर्व भाग अत्यंत चित्तवेधक असला तरी पुढील काळात संस्थेचे कार्य करताना आलेल्या कटू अनुभव! या अनुभवाचे वर्णन करताना त्यांचा संयम सुटलेला दिसतो. म्हणून पुढील भागात या आत्मचरित्राला कडवट चव आलेली आहे. याच सुमारास ना. सी. फडके यांच्या 'माझ्या साहित्यसेवेतील काही स्मृती' (१९४९) प्रसिध्द झाल्या. यामधून त्यांच्या सौंदर्यशोधक व्यक्तिमत्त्वाचे सम्यक् दर्शन घडते. याच सुमारास मामा वरेरकर यांनी 'माझा नाटकी संसार' ना. गो. चापेकर यांनी 'जीवनकथा' (१९४२), गो. स. टेंबे यांनी 'माझा जीवनविहार' व माधवराव बागल यांनी 'जीवनप्रवाह' हे आत्मचरित्रपर ग्रंथातही पर्यावरणाचे चित्रण लिहिले आहेत.

विसाव्या शतकाच्या पहिल्या अर्धकात सुरुवातीची आत्मचरित्रे बहुधा समाजकार्यकर्त्यांची आहेत. पुढील पिढीला मार्गदर्शन करणे या हेतूने बोधवादी दृष्टिकोन ठेवूनच लिहिलेली आहेत. काही कलावतांच्या आत्मचरित्राबरोबरच पर्यावरणाचे वास्तव चित्रण आत्मचरित्राला रोचकता प्राप्त झालेली दिसते.

कवी, नाटककार, वक्ता, समाजवादी इत्यादी प्र. के. अत्रे यांच्या जीवनातील विविध भूमिका कशा सिध्द केल्या याचे विनोदपूर्ण शैलीने वर्णन 'मी कसा झालो' (१९५३) या आत्मचरित्रामधून आलेले आहे. प्रसिध्द कथालेखक य. गो. जोशी यांनी 'दुधाची घागर' हा आत्मपर ग्रंथ रमाबाई रानडे यांच्या आठवणीप्रमाणे लिहिलेला आहे. स्वतःच्या आत्मचरित्रापेक्षा आपल्या आईची व्यक्तिरेखा चितारण्यावर लेखकाने अधिक भर दिला आहे. यामध्ये सत्यपूर्ण परंतु काहीसे काल्पनिक संवादाचे भरून वर्णिलेली लेखनपध्दती आहे. या पध्दतीमुळे निवेदनात जिवंतपणा निर्माण झालेला दिसतो. सत्याच्या गाभ्यास बाधा येऊ न देता लेखकाने आत्मचरित्रास निसर्ग चित्रणामुळे कथेची रोचकता प्राप्त करून दिली आहे. हाच प्रयोग काही अंशी चिंतामणराव कोल्हटकर यांनी 'बहुरूपी' (१९५७) या आपल्या आत्मचरित्रग्रंथात केला आहे. एका नटाने अतिशय समरसतेने लिहिलेला व उत्कृष्ट भाषाशैलीने नटलेला हा ग्रंथ मराठी आत्मचरित्रात उच्च पातळीवरचा ठरलेला आहे. १९६१ साली चित्रपटसृष्टीतील एक प्रमुख नट बाबुराव पेंढारकर यांनी 'चित्र आणि चरित्र' हा आत्मचरित्रपर ग्रंथ प्रसिध्द केला. त्यानंतर मराठी रंगभूमीवरील प्रसिध्द नट नानासाहेब फाटक यांनी 'मुखवट्याचे जग' (१९६६) हे आत्मचरित्र लिहिले. मराठी रंगभूमीच्या अभ्यासकांस हे ग्रंथ उपयोगी पडणारे आहेत. मराठीतील नामांकित लेखक, शिक्षक व तळमळीचे समाजकार्यकर्ते श्री. म. माटे यांनी 'चित्रपट मी व मला दिसलेले जग' (१९५७) हे एक नमुनेदार आत्मचरित्र लिहिले. शिक्षण, समाजकार्य व निसर्गातील बदलत्या

रुपाचे वास्तवदर्शन श्री. म. माटे यांना आलेले बरे वाईट अनुभव त्यांनी या आत्मचरित्रात सांगितले आहेत. दलितवर्गाच्या उध्दारासाठी आयुष्य वेचणारे कर्मवीर विठ्ठल रामजी शिंदे यांनी 'माझ्या आठवणी व अनुभव' हे आत्मचरित्र १९५८ मध्ये लिहिले. समाजकार्यात अनेक अप्रिय अनुभव आलेले असताना त्यांकडे अलिप्त वृत्तीने पाहणे आत्मचरित्रकारास शक्य आहे. हे सांगताना त्यांनी त्यांच्या आठवणी तुरुंगवासात एक मनाला विरंगुळा म्हणून हे आत्मचरित्र लिहिले आहे. कवी विठ्ठल दत्तात्रेय घाटे यांनी 'दिवस असे होते' या आत्मचरित्रात आपल्या जीवनाची कहाणी कालमय शैलीने सांगितलेली आहे. त्यानंतर ना.म.पटवर्धन यांनी 'विरंगुळा' (१९६०), कृ. भा. बाबर यांनी 'एका शिक्षकांची आत्मकथा' (१९६२) आणि ना. वि. पाटणकर यांनी 'समाधान' (१९६२) या तीन आत्मचरित्रांमधून अनुभवी शिक्षकांनी केलेल्या शिक्षणविषयक प्रयोगांची उपयुक्त माहिती सांगितलेली आहे. ही माहिती नवीन शिक्षकांना नक्कीच उपयुक्त अशी आहे. महाविद्यालयीन प्राध्यापक कृ. पा. कुलकर्णी यांनी 'कृष्णाकाठची माती' (१९६१), मा. दा. अळतेकर यांनी 'उलटलेली पाने' (१९६१), वा.गो. मायदेव यांनी 'वेचलेले क्षण' (१९६२) व के. ना. वाटवे यांनी 'माझी वाटचाल' (१९६४) हे आत्मचरित्रपर ग्रंथ लिहिले. यामधून या प्राध्यापक मंडळींनी चिंतनशील वृत्तीने 'स्वान्तसुखाय' काढलेल्या जुन्या आठवणीबरोबरच बदलते पर्यावरणाचे चित्रण केलेले आहे. त्यामुळे या आत्मचरित्रांना एक प्रकारची वैचारिक बैठक लाभलेली आहे.

आचार्य प्र. के. अत्रे यांनी १९५३ मध्ये 'मी कसा झालो' हे आत्मचरित्र लिहिले परंतु हे त्यांचे समग्र आत्मचरित्र नव्हते. आपल्या जीवनातील शिक्षक, लेखक, पत्रकार, वक्ता व बदलते पर्यावरण असे विविध पैलूचे दर्शन त्यांनी या आत्मचरित्रामधून दाखवलेले आहे. त्यानंतर त्यांनी १९६३ मध्ये 'क-हेचे पाणी' या शीर्षकाचे सात ते आठ खंड होतील असे आत्मचरित्र लिहिण्यास सुरुवात केली. या आत्मचरित्रात त्यांनी आपल्या घराण्याच्या इतिहासापासून सुरुवात करून आपले बालपण, विद्यालयीन व महाविद्यालयीन व्यावसायिक जीवन तसेच तत्कालीन निसर्ग व पर्यावरण इत्यादी भागांचे तपशीलवार वर्णन केले आहे. या आत्मचरित्राद्वारे प्र. के. अत्रे यांनी विनोदाचे शस्त्र स्वतःवर चालवून अलिप्त वृत्तीने स्वतःकडे पाहून स्वतः हसावयाचे व दुस-यास हसवावयाचे ही किमया साधली आहे. न. वि. गाडगीळ यांच्या 'पथिक' (१९६४) या आत्मचरित्राचेही दोन खंड आहेत. यामध्ये गाडगीळ यांच्या जीवन वृत्तान्ताबरोबर महाराष्ट्रातील काँग्रेसच्या राजकारणांचा पन्नास-साठ वर्षांचा इतिहास आलेला आहे. इ. स. १९६५ मध्ये सुप्रसिध्द गणितज्ञ रॅ. र. पू. परांजपे यांच्या वयाला ७९ वर्षे पूर्ण झाली. त्या सुयोगावर 'नाबाद ८९' हे आत्मचरित्र प्रसिध्द झाले. शिक्षणतज्ञ, विधिमंडळाचे सदस्य, मंत्री, भारत सरकारचे राजदूत इत्यादी विविध नात्यांनी गेली साठपासठ वर्षे त्यांनी देशाची सेवा केली. या विविध क्षेत्रात त्यांना आलेल्या अनुभवाबरोबरच बदलते पर्यावरणाचा सार या ग्रंथात आहे. हा आत्मचरित्र ग्रंथ वस्तुनिष्ठ आत्मपरिक्षणाचा उत्तम नमूना आहे, पूर्वीच्या मुंबई सरकारचे शेतकी अधिकारी रा. ब. पां. चि. पाटील यांनी लिहिलेला 'माझ्या आठवणी' (१९६५) हा आत्मचरित्र ग्रंथ वाचनीय व उद्बोधक आहे. श्रीमती गिरिजाबाई केळकर यांच्या 'द्रौपदीची थाळी' (१९५८) या ग्रंथात एक कर्तव्यदक्ष व कर्तबगार गृहिणी या नात्याने गिरिजाबाई यांचे अस्तित्व प्रकर्षाने उठून दिसते. कै. आपटे गुरुजी यांच्या पत्नी श्रीमती राधाबाई आपटे 'ढळला रे ढळला दिन सखया' (१९५६) या आत्मचरित्रपर ग्रंथामधून आपले स्वतंत्र अस्तित्व प्रकट करताना दिसतात. इ. स. १९६२ मध्ये राधाबाई आपटे यांनी 'उमटलेली पावले' हे आत्मचरित्र लिहून आपटे गुरुजी व स्वतःच्या सहजीवनाचे समग्र चित्रण केले आहे. काही पुरुषांनीही आपल्या कर्तबगार पत्नींचे व आपले सहजीवन सांगण्यासाठी आत्मचरित्र लिहिलेले आहेत. त्यामध्ये पु. बा. काळे यांचे 'अनुसूयाबाई आणि मी' (१९६२) हा आत्मचरित्र ग्रंथ होय. विषय स्वभावाचे स्त्रीपुरुष एकमेकांवर अनुरक्त असतील तर त्यांचे वैवाहिक जीवन संघर्षयुक्त असूनही परिणामी सुखकर कसे होते याचे जिवंत चित्र या ग्रंथात पहावयास सापडते. इ. स. १९६५ मध्ये मोरोपंत

जोशी यांच्या पत्नी यशोदाबाई जोशी यांनी 'आमचा जीवनप्रवास' हा आत्मचरित्र ग्रंथ लिहिला. यामध्ये यशोदाबाईंनी ७५ वर्षांच्या सहजीवनाच्या प्रवासाबरोबरच बदलत गेलेला निसर्गाचे चित्रही रेखाटले आहे.

स्वतःच स्वतःची सांगितलेली कहाणी म्हणजे आत्मचरित्र होय. आत्मचरित्र हे आयुष्याच्या उतरणीवर साधारणतः लिहिली जातात. तरुण वयात लिहिलेल्या आत्मकथेला आत्मकथन असे म्हणतात. आत्मकथन हे सामाजिक, शैक्षणिक, आर्थिक, सांस्कृतिक व पर्यावरण संदर्भाशिवाय असू शकत नाही. आत्मकथन हे व्यक्ती मनाचे असले तरी त्यातून समाजमनाचे दर्शन घडते. त्या व्यक्तीबरोबर जणू समाजच बोलत आहे, असे लक्षात येते. आत्मकथनात यापुढे काही सांगायचे राहिले नाही अशी भावना नसते तर त्यांचा प्रवास सुरुच असतो. एक विशिष्ट सामाजिक स्थिती अनुभवित असलेल्या तळागाळातल्या समाजाने जे भोगले, सोसले त्याचा उद्रेक, अविष्कार आणि त्याविरुद्ध ठाकण्याची वृत्ती दलित आत्मकथनांमधून प्रकट झालेली दिसते.

दलित आत्मकथनांची वाटचाल इ. स. १९४८ साली विठ्ठल बाबाजी पालवणकर उर्फ पी. विठ्ठल यांच्या 'क्रीडा जीवन' या आत्मचरित्रापासून झाली. यामधून त्यांनी आपले अनुभव दलितांच्या जीवनाचे प्रातिनिधिक चित्र उभे केले आहे. यानंतर १९७५ साली स. ना. सुर्यवंशी यांनी 'अगा जे कल्पिले नाही' हे आत्मचरित्र लिहिले. त्याअगोदर म्हटले १९६४ मध्ये प्र. ई. सोनकांबळे यांचा 'वाटाड्या' हा लेख प्रसिध्द झाला. नंतर ते १९७९ मध्ये 'आठवणीचे पक्षी' या नावाने प्रसिध्द आत्मकथन ठरले. साठोतरी कालखंडातील पहिले आणि महत्वाचे आत्मकथन म्हणजे दया पवारांचे 'बलुतं' (१९७८) हे होय. दगडू पवार ते दया पवार हा प्रवास, गाव, कारखाना, तिथले बकाल जग, पर्यावरण व शिक्षणाने आलेली नवी दृष्टी यांचा प्रत्ययकारी वेध यात घेतलेला आहे. यानंतर माधव कोंडविलकरांचे दैनंदिनीवजा आत्मकथन 'मुक्काम पोस्ट देवाचे गोठणे' हे १९७७ मध्ये प्रसिध्द झाले. टाक्यात टाकलेल्या चामड्याला चुना रंग चिकटावा तशी चिकटलेली जात लेखकाला जन्मल्यापासून नोकरीच्या ठिकाणीही उद्वेग देत राहते. शिक्षण घेऊन बाबासाहेबांच्या विचारांनी उन्नत झालेले मन चांभारकी नाकारते. वर्गातील चांभार गुरुजींचा विटाळ, मनात उठलेला अपमानाचा, संतापाचा डोंब व्यक्त करण्याचे साधन म्हणून लेखकाने हे आत्मकथनाबरोबर निसर्गही लिहिलेला आहे. त्यानंतर लक्ष्मण माने यांनी १९९० मध्ये 'उपरा' या आत्मकथनामधून कैकाड्याचे जगणे समाजापुढे आणले. मातंग समाजाचे जगणे उत्तम बंडू तुपे यांनी 'काट्यावरची पोटं' या आत्मकथनातून वाचकासमोर उभे केले. इ. स. १९८१ मध्ये शंकराराव खरात यांनी 'तराळ अंतराळ' हे आत्मकथन प्रसिध्द केले. महार - तराळ म्हणून जगताना सर्व कुटुंबाच्या वाट्याला अस्पृश्याचे जीणे येते. तसेच त्यांना शिक्षणासाठी करावी लागणारी धडपड व मराठवाडा विद्यापीठातील कुलगुरु पर्यंतचा प्रवास याचे चित्रण आलेले आहे. याशिवाय कुमुद पावडे - 'अंतःस्फोट' (१९८१), रामनगरकर - 'रामनगरी' (१९७५), नानासाहेब झोडगे - 'फांजर' (१९८२), दादासाहेब मोरे - 'गबाळ' (१९८३), मुक्ता सर्वगौड - 'मितलेली कवाडे' (१९८३), रुस्तुम अचलखांब - 'गावकी' (१९८३), शरणकुमार लिंबाळे - 'अक्करमाशी' (१९९४), शांताबाई काळे - 'माझ्या जन्माची चित्तरकथा' (१९६६), पार्थ शेळके - 'आभरान', श्रीरंग तलवारे - 'धुळपाटी', तुषार भाग्यवंत - 'कोंडाळ', ल. स. रोकडे - 'झळा', पां. उ. जाधव - 'मा- हुडा', गौतम कावळे - 'बावळट', आर. के. त्रिभुवन - 'दे दान सुटे गि-हान', नामदेव व्हटकर - 'कथा माझ्या जन्माची', अशोक व्हटकर 'मेलेलं पाणी', राम बसाखेत्रे - 'मातीचं आकाश', ना. म. शिंदे - 'जातीला जात वैरी', दादासाहेब मोरे - 'गबाळ', लक्ष्मण गायकवाड - 'उचल्या', आत्माराम राठोड - 'तांडा', भीमराव गस्ती - 'बेरड', जनाबाई गि-हे - 'मरणकळा', के. ओ. गि-हे - 'भटक्या', वैजीनाथ कळसे - 'आयरनीच्या घना', डॉ. किशोर शांताबाई काळे - 'कोल्हाट्याचं पोर' ही आत्मकथने आपल्या जीवनातील वेदनांचा, दैन्याचा, दारिद्र्याचा, शोषणाचा आलेख बरोबरच सभोवताली वातावरण मांडून जातात. महाराष्ट्रातील विविध भागातील विविध जाती-जमातीच्या जीवनाचे दर्शन यामधून आले आहे. त्यामुळेच वेगवेगळ्या भागातील निसर्गातील पर्यावरणाचे अवलोकन सुक्ष्मपणे झालेले दिसून येते. समृद्ध सांस्कृतिक वारसा लाभलेल्या

महाराष्ट्रातही हे जीवन असू शकतं? असा प्रश्न निर्माण करण्याचे सामर्थ्य या वरील आत्मकथनात दिसते. पर्यावरणाविषयीचा वेगळा आलेख मराठी साहित्यात आवतीर्ण केलेला पहावयास मिळतो.

थोडक्यात असे म्हणता येईल की, आत्मचरित्रांपेक्षा दलित आत्मकथने धगधगते वास्तव तसेच बदलते पर्यावरण समाजापुढे आणताना दिसतात. ही आत्मकथने समाजाला अंतर्मुख होऊन विचार करायला लावतात हे त्यांचे मोठे श्रेय आहे. आत्मकथनात्मक लेखन प्रकारात स्व-जीवनाचा वृत्तांत लेखक मांडत असतो. तो त्याचा वैयक्तिक व सामाजिक जीवनाचा तपशील असतो. साहित्यातील आत्मकथनांचा विचार केल्यास सोशिकता, त्याग आदि पारंपरिक मूल्यांचे. उदात्तीकरण पर्यावरणाचे चरित्र ओसरल्याने गेल्या दशकात आपली कैफियत चव्हाट्यावर निर्भयपणे मांडणा-या आत्मकथनांची संख्या ही हळूहळू कमी झालेली दिसून येते. प्रशासकीय सेवेत असणारे अधिकारी नीला सत्यनारायण - 'एक पूर्ण अपूर्ण', किरणबेदी - 'आय डेअर', ज्ञानेश्वर मुळे - 'माती पंख आणि आकाश', अविनाश धर्माधिकारी - 'अस्वस्थ दशकाची डायरी', संदीपकुमार साळुंके - 'धडपडणा-या तरुणाईसाठी', राजेश पाटील - 'ताई मी कलेक्टर व्हयन्', भरत आंधळे - 'गरुडझेप', रमेश घोष - 'इथे थांबले नाही', भालचंद्र मुणगेकर - 'मी असा घडलो' ही आत्मचरित्रे लिहिली. आपले गाव, बालपण, शिक्षण, शिक्षणासाठी केलेली धडपड व प्रशासकीय अधिकारी होण्यासाठी केलेली खडतर तपश्र्या आजू-बाजूच्या पर्यावरणाचे चित्रण या आत्मकथनांमधून आलेले आहे.

सारांश :-

एकूणच आत्मचरित्र व आत्मकथन, अनुभवकथनात आत्मशोध घेऊन गैरसमज दूर करणे, आपली सुखदुःखे इतरांना सांगणे, स्मृतिरूप अनुभवांना जिवंत करणे या प्रेरणा दिसत असल्या तरी बदलत्या पर्यावरणाचा वेध त्यांनी घेतला आहे. सत्यकथन, तटस्थता, प्रांजळपणा, 'स्व'ला केंद्रस्थानी ठेऊन यामधील अगोदरच्या कालखंडात या वाङ्मय प्रकाराची संख्यात्मक आणि गुणात्मक वाढ झालेली दिसते. स्वातंत्र्योत्तर मात्र त्यात वाढ झालेली दिसते. स्वातंत्र्यानंतर स्वतः बदल लिहिण्याचा संकोच दूर होऊन अनुभवाची क्षेत्रे विस्तारलेली दिसतात. स्वातंत्र्यानंतर आत्मचरित्र, आत्मकथन, अनुभवकथनामध्ये स्वतःच्या जीवनाकडे अंतर्मुख होऊन बघताना समकालीन जीवनाचे बदलत्या वातावरणाचे प्रतिबिंब ठळकपणे दिसतात.

संदर्भ ग्रंथ :-

१. जोशी अ.म.: 'चरित्र - आत्मचरित्र' (तंत्र आणि इतिहास), सुविचार प्रकाशन मंडळ, नागपूर, पहिली आवृत्ती - मार्च - १९८२.
२. यादव आनंद : 'आत्मचरित्र मीमांसा', मेहता पब्लिशिंग हाऊस, सदाशिव पेठ पुणे, आवृत्ती पहिली - फेब्रुवारी १९९८.
३. हस्तक उषा : 'मराठीतील आत्मचरित्रपर लेखन', स्नेहवर्धन पब्लिशिंग हाऊस, पुणे, प्रथमावृत्ती ३० मार्च २००६.

आत्मनिर्भर भारतामध्ये नवीन शैक्षणिक निती व स्त्रीवादी साहित्यातील धर्म, जात व लिंग यावर आधारित विषमतेचे चित्रण

प्रा. डॉ. लालासाहेब बाळनाथराव घुमरे

(मराठी विभाग)

नवगण कला व वाणिज्य महाविद्यालय,

परळी वै. जि. बीड (महाराष्ट्र)

प्रस्तावना :-

स्त्रीअधिकारवाद हा लिंगभेदावर आधारीत पितृसत्ताक व्यवस्थेला विरोध करतो व पुरुषप्रधान व्यवस्थेच्या विरुद्ध आवाज उठवितो. स्त्रीच्या हक्कांसाठी आवाज उठविण्याची सुरुवात हीच स्त्रीवादी चळवळीची आणि विचारसरणीची सुरुवात ठरू शकते.

स्त्री ही कोणत्याही देशाची, वर्गाची, जातीधर्माची त्यांच्यात एक भगिनीसमाज वृत्ती निर्माण करून सर्व स्त्रियांनी अन्यायी पुरुषवर्गाविरुद्ध एकत्रितपणे लढा उभारणे व स्त्री मुक्ती प्राप्त करणे हेच या चळवळीचे ध्येय आहे. स्त्रियांना पुरुषांबरोबर समानतेची वागणूक व हक्क प्राप्त करून देणे स्त्रीमुक्ती चळवळ देखील आहे.

प्राचीन कालखंडामध्ये स्त्री-पुरुष समानता आढळून येते. मध्ययुगीन कालखंडामध्ये राजेशाही व्यवस्थेचा उदय दिसून येतो. त्यामुळे या कालखंडामध्ये स्त्री ही अधिकच असुरक्षित दिसून येते. ती फक्त उपभोग्य वस्तु बनलेली दिसून येते. या कालखंडात या दुष्ट प्रवृत्तीला धर्ममार्तंडांनी आणि समाज प्रमुखांनी तिमूठ मान्यता दिली. म्हणून मध्ययुगीन कालखंड हा स्त्रीसाठी अंधारयुग ठरला.

वसाहतीच्या कालखंडामध्ये नवीन विचारांच्या प्रभावातून फ्रान्समध्ये १७८९ मध्ये क्रांती घडून आली, त्या क्रांतीचा आधार होता स्वातंत्र्य समता, बंधुभाव; या क्रांतीधोषाणे स्त्री वर्गात जागृती आली व अनेक समाजसुधारक पुढे आले. त्यांनी स्त्री मुक्तीसाठी नवीन विचार मांडले,

समाजसुधारकांचे प्रयत्न - फ्रेंच राज्यक्रांतीतून प्रेरणा घेऊन १७९२ मध्ये मेरी वालस्टोन काष्ट या स्त्रीने इंग्लंडमध्ये 'ओ व्हिडीकेहान ऑफ द राईट्स ऑफ वुमन या ग्रंथाद्वारे महीला अधिकारासाठी प्रथम आवाज उठविला व तीच स्त्रीमुक्ती आंदोलनाची प्रेरणा ठरली. राजाराममोहन रॉय सारख्या समाजसुधारकांनी स्त्री शिक्षणावर भर दिला. त्यातून स्त्री जागृती बडून आली. तसेच महात्मा ज्योतीराव फुले व सावित्रीबाई फुले यांनी स्त्री मुक्ती चळवळीचे मोलाचे कार्य केले. तसेच आगरकर, न्या. रानडे, म. गांधी, डॉ. बाबासाहेब आंबेडकर इ. समाजसुधारकांनी भारतात स्त्री मुक्ती आंदोलनासाठी मोठे योगदान दिले. आधुनिक काळ

१९ व्या शतकाच्या मध्यकाळानंतर स्त्री विमोचन कार्याला बऱ्यापैकी सुरुवात झाली. दोस्त राष्ट्रांनी युद्ध काळात स्त्रियांनी दिलेल्या योगदानामुळे त्यांना मतदानाचा हक्क बहाल केला. त्यामुळे स्त्रियांच्या राजकीय सहभागास प्रारंभ झाला. रशीयन राज्यक्रांतीने स्त्रीला पूर्ण समानता बहाल केली. त्याचा चांगला परिणाम जगातील वेगवेगळ्या देशातही दिसून आला.

१९४८ मध्ये युनोला मानवी हक्कांचा जाहीरनामा मान्य करावा लागला. या जाहीरनाम्याद्वारे स्त्री पुरुषांच्या हक्कांना मान्यता प्रदान करून वंश, वर्ण, लिंग, भाषा, धर्म, प्रदेश इत्यादिकातील भेद अमान्य करण्यात आला व सर्वांना हक्क व स्वातंत्र्य उपभोगण्याचा हक्क बहाल करण्यात आला. या सर्व ऐतिहासिक घडामोडीचा प्रभाव भारतीय राज्यघटनेवर पडणे साहजिकच दिसून येते. म्हणून भारतीय संविधानाने सर्व नागरिकांना समान, स्वातंत्र्य, न्याय व शोषणमुक्त व्यवस्था याची हमी दिली आहे.

स्त्रीवादाची व्याख्या-

विद्याबाळ यांच्या मते, स्त्रीवरती केवळ एक बाई आहे म्हणून लादलेल्या बंधनापासून स्त्रियांची मुक्ती करणे म्हणजे स्त्रीवाद होय. निलम गोरहे यांच्या मते - स्त्रीवाद म्हणजे पुरुषप्रधानतेपासून मुक्त व बाह्य तसेच आंतरिक पातळीवर बदलवाचा आग्रह धरणारी विचारसरणी होय. प्रीती सदावर्ते यांच्या मते स्त्रीवाद म्हणजे स्त्रियांच्या जिवनाविषयी समाजापुढे निर्माण झालेले प्रश्न, उपप्रश्न यांची सांगोपांग चर्चा करणारी विचारप्रणाली होय.

स्त्रीवादाची उद्दिष्ट्ये-वरील भुमीकेवरून स्पष्ट दिसून येते की, स्त्रियांना सामाजिक, आर्थिक तसेच राजकीय क्षेत्रात पुरुषांबरोबर अधिकार हवे आहेत. या अधिकाराद्वारे ही विचारसरणी स्त्री - पुरुष समानतेची मागणी करते. मध्ययुगीन भ्रामक गोष्टी नाकारणे व सामाजिक, आर्थिक आणि राजकीय क्षेत्रात पुरुषांच्या बरोबरीने सहभागाचे हक्क प्राप्त करून निर्णय प्रक्रियेतील आपला सहभाग वाढविणे ही स्त्रीवादी चळवळीचे काही उद्दिष्ट्ये आहेत.

तसेच स्त्रियांच्या हक्कासाठी आवाज उठवीणे स्त्रियांनी संघटित होऊन अन्यायाविरुद्ध लढा उभारणे. अनिष्ट चालीरीतीच्या गर्तेतून स्त्रियांची सुटका करणे ही उद्दिष्ट्ये आहेत.

स्त्रीवादाची वैशिष्ट्ये-

समाजसुधारक व स्त्रीमुक्तवादी विचारवंतानी तत्कालीन परिस्थितीनुसार स्त्रीवादाची वैचारीक मांडणी केली आहे.

स्त्रीवाद ही चळवळ आहे. त्याचबरोबर ती विचारसरणी देखील आहे. स्त्रीवादी चळवळीचा अभ्यास केला असता त्यात एकसंघता अभ्यासाला एकवाक्यता आढळत नाही. ती खंडीत स्वरूपात दिसून येते. स्त्रीवादी चळवळीवर पुरुषप्रधान व्यवस्थेकडून टीका केली जाते व तिला कडाडून विरोधही केला जातो. स्त्रीवादी चळवळी प्रामुख्याने फ्रेंच राज्यक्रांतीनंतर विकसित झाली आहे. स्त्रीवादी चळवळीचा मुख्य विचार वा आधार हा स्त्रीपुरुष समानता हा आहे. धर्मभेद, प्रवेशभेद इ. भेदाभेदांवर विश्वास ठेवत नाही. जगातील सर्व स्त्रीया समान आहेत यावर त्यांचा विश्वास आहे.

लोकशाही शासन व्यवस्थेत स्त्रियांचा सर्व क्षेत्रातील व प्रामुख्याने राजकीय प्रक्रियेतील सहभाग वाढला आहे.

प्रस्थापीत समाजव्यवस्था बदलल्याशिवाय स्त्रीमुक्ती यशस्वी होणार नाही यावर सर्वच स्त्रीवाद्यांचा विश्वास आहे.

पाश्चात्य देशात स्त्रीवादी चळवळ जास्त विकसित झालेली दिसून येते. फ्रेंच राज्यक्रांतीची स्वातंत्र्य, समता, न्याय ही तत्वे महत्वपूर्ण ठरली.

एकवाक्यतेचा अभाव स्त्रियांमध्ये दिसून येतो. स्त्रीया ह्या आपआपल्या देशाची संस्कृती समोर ठेवून जगत असते. म्हणून जगातल्या स्त्रियांमध्ये एकवाक्यतेचा अभाव दिसून येतो.

स्त्री चळवळीत भेद अमान्य आहेत. स्त्री पुरुष विषमता नष्ट करण्यासाठी उभ्या असलेल्या चळवळीत जातीभेद, वर्णभेद, धर्मभेद, प्रादेशिक भेद यांना स्थान नव्हते. स्त्री जात हीच चळवळीत प्रधान मानली गेली. या आधारावर स्त्री जीवनातील कौटुंबिक हिंसाचाराची समस्या इ. समस्यांना वाचा फोडण्याचे कामे स्त्रीवादी चळवळीने केले.

महिला सबलीकरण

२१व्या शतकात महिलांच्या सबलीकरणासाठी शासकीय व अशासकीय पातळीवर अनेक प्रयत्न केले जात आहेत. स्त्री जोपर्यन्त सक्षम होत नाही तोपर्यन्त शोषणमुक्त होणे नाही. म्हणून सबलीकरणासाठी प्रयत्न सुरु आहेत.

स्त्रीवादाची आव्हाने—

स्त्रीमुक्त होण्यासाठी प्रस्थापित समाज व्यवस्थेत सर्व अर्थाने परिवर्तन अभीप्रेत आहे. भाषा आणि साहित्यातील पारंपारिक स्त्रीविरोधी भूमिकाची मांडणी बदलावी लागेल. म्हणूनच म.फुले, डॉ.बाबासाहेब आंबेडकर, नवीन समाजव्यवस्थेची मांडणी करतांना परंपरागत समाज व्यवस्थेचे आधार असलेल्या ग्रंथावर टिका करतात, त्याची होळी करतात.

स्त्रीमुक्ती चळवळ सक्षम होण्यासाठी खऱ्या अर्थाने स्त्री सक्षमक रणे आवश्यक आहे. म्हणून स्त्री सबलीकरणावर अधिकाधिक भर देणे सर्व क्षेत्रातील स्त्रियांचा सहभाग वाढविणे आवश्यक ठरते.

आधुनिक काळातील स्त्री ही सध्याच्या परिस्थितीवर मात करून पुरुषांच्याबरोबर सर्व क्षेत्रात आघाडीवर आहे.

स्त्री स्वातंत्र्याऐवजी स्वैराचाराचा स्विकार करून लागते व विवाह, कुटुंब, संस्था नाकारते, त्यातून नवीन समस्या जन्माला येतात. स्त्री स्वतंत्र होण्याऐवजी अधिक असुरक्षित होण्याची शक्यता वाढते.

शोषण, मातृत्व नाकारण्याची वृत्ती यासाठी मार्गारिट मीड पांनी स्त्रीने सयंमी वृत्तीने वागावे यावर भर दिला आहे. त्यामुळे पुरुषी सहयोगातून स्त्री ती याची जाणीव ठेवून स्त्री चळवळ चालू ठेवणे महत्वाचे आहे. 'स्त्रीशक्ती' हा आधार पेनून राजकीय व्यवस्थेत सक्रीय होऊन आपले अधिकार, हक्क स्वातंत्र्य प्राप्त करू शकते. ती पुरुष समानतेवर आधारीत नागरी व्यवस्था प्रस्थापीत होऊन मानव जातीचे भवितव्य उज्वल ठरेल अशी आशा वाटते.स्त्रीवादाची उपाययोजना-

१)स्त्रीमुक्ती बरोबर स्त्री शक्ती विकसीत होण्यासाठी स्त्रीचे सबलीकरण होणे महत्वाचे आहे. स्त्री चळवळ एकसंघ स्वरूपात आणण्यासाठी प्रयत्न करणे महत्वाचे आहे. २) स्त्री चळवळ ही दबावगटात रूपांतरीत झाल्याशिवाय स्त्रीयांना त्यांचे हक्क प्राप्त होणार नाहीत.

३)आंतरराष्ट्रीय व राष्ट्रीय पातळीवर मान्यता दिलेले अधिकार स्त्रीयांना कसे उपभोगता येतील म्हणून उपाययोजना झाली पाहिजे.

पाहिजे.

४) शासकीय पातळीवर लैंगिक विषमता दूर करण्याच्या दृष्टीने उपाययोजना झाली

५)मुलांबरोबर मुलींनाही समान हक्क व वागणूक मिळाली पाहिजे.

६)शिक्षणाचा हक्क, कायद्याचे ज्ञान, अधिकार प्राप्ती इ. साठी अधिकाधिक स्त्री सशक्तीकरण घडवणे महत्वाचे आहे.

समारोप आजही वर्तमान काळात सुध्दा पुरुषप्रधान संस्कृतीचा प्रभाव असल्याने स्त्री मुक्ती चळवळीवर टीका केली जाते.

१) स्त्रीवादी चळवळीत एकवाक्यतेचा अभाव दिसून येतो,

२) स्त्रीवादी चळवळीचा दृष्टीकोण आणि कार्यपध्दती यातही विविध स्तरावर भिन्नता पहावयास सापडते.

३) काही स्त्रीवादी चळवळी या पुरुषांच्या सहकार्याशिवाय स्त्रियांचे स्वातंत्र्य अशक्य वाटते. तर दुसऱ्या गटाला वाटते एक ला चल ही भुमीका आहे. स्त्री पुरुष यांच्यात शारीरिक फरकाबाबतचा भेद स्वीकारण्याबाबतीत दोन्ही गटात भिन्नता दिसून येते.

५) स्त्री मुक्तीच्या नावाखाली स्त्री ही आपल्या नैसर्गिक जबाबदारीपासून दुर चालली आहे. प्रसार माध्यमातून स्त्रीचा स्वैर वापर, बीबल्स प्रदर्शन दिसून येते.

जोपर्यंत स्त्रियांमध्ये जागरूकता निर्माण होणार नाही. तोपर्यंत स्त्री मुक्ती होणार नाही. पुरुषांना विश्वासात घेऊन एकोप्याने ही चळवळ मुक्त करणे महत्वाचे आहे. त्यासाठी सामाजिक, शालेय स्तरावर स्त्री मुक्तीसाठीचे व्याख्याने, व बालसंस्कार करणे गरजेचे आहे. लहानपणापासूनच मुलामुलीमध्ये आई वडिलांनी भेद न करता मुला व मुलीस समान वागणूक देणे महत्वाचे आहे. परिस्थितीची जबाबदारी व कार्यक्षमता यांचे भान ठेवून वागल्यास आदर्श समाज निर्माण होण्यास वेळ लागणार नाही.

स्त्री-पुरुष एकत्र येवून आदर्श समाजाचे मजबुतीकरण केल्यास समाज, राष्ट्र व जग हे उन्तीकडे वाटचाल राहिल व नैसर्गिकरीत्या पशुपक्षी जसे निसर्गात विहार करतात त्यांच्यामध्ये कोणताच भेद नाही तसे वागून स्त्रीपुरुष वाद कायमचा मिटवणे काळाची गरज आहे असे मला वाटते.

महात्मा गांधी हे केवळ एका माणसाचे नाव नाही, तर भारतीय मातीत बेमालूमपणे मिसळून गेलेल्या फेनांमेनांचे नाव आहे. या नम्र जाणिवेतून त्यांच्या विराट रूपाचे एखादे तरी कवडसे पकडणे दिवसेंदिवस गरजेचे झाले आहे.

आज गांधी विचार जुने झाले आहेत की, अजूनही औचित्यपूर्ण आहेत; हा चर्चेचा मुद्दा असूच शकत नाही. कारण गांधी विचार हे वाहते पाणी आहे. विशिष्ट रंग, रूप, आकार यांच्या साच्यात त्यांना बसवण्याचा अट्टहास म्हणूनच निरर्थक आहे. गांधी विचारांच्या लवचीक, प्रवाही असण्यातच त्यांची ताकद आणि सौंदर्य दडलेले आहे.

आजही गांधींनी सुरु केलेल्या या प्रयोगशील शिक्षण पद्धतीसाठी शासन संवेदनशील नाही. त्यांच्या शाळेला अनुदान नाही. ही शाळा स्वयंपूर्ण पद्धतीने चालवली जाते. जवळजवळ ८० वर्षापूर्वी म्हणजेच १९४२ च्या ऑगस्ट महिन्यात बापूंनी बेसिक टीचर ट्रेनिंग या शाळेच्या परिसरात सुरु केले होते.

या कॅम्पसमध्येच पहिली जागतिक शांतता परिषद झाली होती. १९४७ साली खरतर देशाला स्वातंत्र्य मिळवून देण्यासाठी सुरु झालेल्या लढ्यासोबत शिक्षण हेसुद्धा तितकेच महत्वाचे साधन आहे, याचा वेगळा विचार करणे म्हणजे एक असाधारण विचार होता. गांधीजी म्हणायचे, 'नई तालीम हा विचार गावागावात पोहोचला पाहिजे.'

त्यांचे म्हणणे असे की, 'नुसती वर्णमाला शिकवली तर त्या विद्यार्थ्यांची बौद्धिक वाढ खुंटते. जोपर्यंत त्या विद्यार्थ्यांना इतिहास, भूगोल, कताई, कला, अंकगणित येत नाही, तोपर्यंत त्याला वर्णमाला समजणार नाही, असे त्यांचे नम्र मत होते.'

गांधींच्या मते, 'मन आणि आत्म्याचा सर्वोच्च विकास शक्य असेल तरच त्याला शिक्षण म्हणता येईल. विद्यार्थ्याला प्रत्यक्ष कृती करण्याचा अनुभव दिला तर कदाचित ही शिक्षण पद्धती यशस्वी ठरू शकते.' ३१ जून १९३७ मध्ये 'हरिजन' मध्ये गांधीजींनी 'नई तालीम'चा विचार मांडला होता. २३ ऑक्टोबर १९३७ मध्ये वर्धा येथे शिक्षण परिषद झाली. आणि शिक्षणाच्या विविध पैलूंवर चर्चा झाली.

गांधीजींच्या 'नई तालीम'चे शिक्षण समानता आणि लोकशाहीच्या स्वरूपात होते. ते एक तत्त्वज्ञान आहे आणि याच तत्त्वज्ञानाची बीजे सेवाग्राम येथे १९३७ मध्येच या प्रयोगातून रुजली. या शाळेचे पहिले आचार्य होते डब्ल्यू आर्यनायकम, ते श्रीलंकेचे होते. गुरुदेव रवींद्रनाथ टागोरांच्या शांतिनिकेतनच्या तालमीत ते घडले. त्यांच्या पत्नी आशादेवी यांनीदेखील अनेक वर्षे या प्रयोगाला बळ दिले. चार-पाच विद्यार्थ्यांवर सुरू झालेली ही शाळा अल्पावधीतच राष्ट्रीय शिक्षणाचे केंद्र बनली.

'वयाच्या चौदा वर्षांपर्यंत मुलांना सक्तीचे आणि विनामूल्य शिक्षण द्यावे, भारतीय पारंपरिक संस्कृतीचा प्रसार झाला पाहिजे, शिक्षण हे मातृभाषेतूनच दिले जावे. 'नई तालीम' ही समग्र प्रक्रिया हवी.

मन, मेंदू शरीर यांचा योग्य वापर करून दिलेले शिक्षण बालकाला स्वयंपूर्ण बनवू शकते', असा गांधींना विश्वास होता. स्थानिक गरजेनुसार 'नई तालीम'चा अभ्यासक्रम निवडण्यात आला. हस्तकला, विणकाम, सुतारकाम, शेती, फलोत्पादन, चामड्याचे काम,

मासे संवर्धन, मातीची भांडी, गवंडी काम, शेतीमधील छोटी-मोठी कामे आणि स्वयंपाक असा परिपूर्ण अभ्यासक्रम आखला गेला. आज गुजरात आणि महाराष्ट्र या दोन्ही राज्यांत 'नई तालीम'च्या जवळपास साडेतीनशे शाळा आहेत आणि इथे अभ्यासासोबत अशा अनेक कला शिकवल्या जातात. नवीन राष्ट्रीय शैक्षणिक धोरणसुद्धा गांधी यांच्या 'नई तालीम'वर आधारले आहे.

संदर्भ सूची:-

- १) प्रा. सुधाकर जोशी पाश्चिमात्य राजकीय विचारवंत, विद्या बुक्स पब्लिशर्स औरंगाबाद, पृष्ठ क्र. २२३,
- २) सौ. कुसूम शरणकुमार निंबाळे, दलित साहित्याचे सौंदर्यशास्त्र, दिलीपराज प्रकाशन, पुणे, पृष्ठ ५७,
- ३) आंबेडकर बाबासाहेब, बहिष्कृत भारत ४ डिसेंबर १९२९.
- ४) जगदीश चतुर्वेदी, धर्म और कार्ल मार्क्स.
- ५) सरला माहेश्वरी, नारी प्रश्न पृष्ठ क्र. २१

बदलते ग्रामीण जीवन आणि मराठी ग्रामीण साहित्य

प्रा.आर.ए.नेटके

ग्रामीण जीवनातील बदल आणि मराठी ग्रामीण साहित्य अशा व्यापक विश्वाची मांडणी करताना एक गोष्ट प्रकर्षाने जाणवते. ती अशी की, ग्रामजीवनातील परिवर्तन व साहित्य परिवर्तनशीलता याचा परस्पर संबंध एकाच वेळी होतो की, थोडा आधे-मागे? म्हणजे घाधीण जीवनात जे बदल होतात, ते स्थित्यंतर सर्वत्रवध आणि त्याचा परिणाम म्हणून साहित्यातील बदल नंतर की साहित्याच्या स्थित्यंतरानंतर ग्रामीण जीवनातील बदल? या प्रश्नाचा सखोल विचार केला तर तो किती गुंतागुंतीचा आहे हे लक्षात येते. समाजजीवनातले बदलच समकालीन साहित्यात अक्षरचारा शोधीत टिपले जात असते. स्वातंत्र्योत्तर काळात भारतात विशेषतः भाभीण जीवनात बदल होत आहे. हा बदल विशिष्ट सामाजिक, राजकीय, शैक्षणिक आधुनिकीकरणामुळे होत आहे. परिणामी साहित्यविचारही परिवर्तित होतो आहे, त्याचे सुस्पष्ट चित्र मराठी साहित्यात आविष्कृत होत आहे.

शेतीरथ आणि खेडभाला नवे रूप प्राप्त होऊ लागले. त्याला अनेक कारणे आहेत. स्वातंत्र्यानंतर राजकीय, सामाजिक, शैक्षणिक, आर्थिक, सांस्कृतिक क्षेत्रात बदल्याचे वारे वाहू लागले. त्या बदलाचा परिणाम खेड्यावर होऊ लागला, शहराजवळ असणारी खेडी झपाट्याने बदलत आहेत. तसेच शहरापासून दूर असणारी, जिथे कसल्याही प्रकारच्या प्राथमिक सुविधा पोहोचल्या नाहीत किंवा शासकीय सुधारणांपासून दूर अशी खेडी उपेक्षितच राहिली आहेत. तिथे बदलाचा वेग मंद आहे. अशा खेड्यांची संख्या जास्त आहे. तरी आज शेतीवर आणि खेड्यांवर होणारा बाह्य स्थित्यंतराचा परिणाम ग्रामीण साहित्याच्या बदलावर झपाट्याने जाणवत आहे.

स्वातंत्र्योत्तर काळात महाराष्ट्रात वीज आली. धरणे, कालवे, पाटबंधारे यांच्याद्वारे पाणी आले, ते उपसण्यासाठी नवी साधने आली. जोडीला नवीन बी-बियाणे आणि नवी अवजारे आली. बहुतांश सर्वच खेडी तालुके, जिल्हे, शहरे जोडणारे रस्ते आणि दळणवळणाची साधने आली. या सर्वांचा परिणाम जसा शेतीवर झाला, असाच खेड्यांच्या अंतरंग बदलावरही झाला. या नव्या काळात अर्थव्यवहार गतिमान झाला. नव्या उद्योगधंद्यांचे व्यापारी दळणवळण खेड्यांशी सुरू झाले. ग्रामीण राजकारणामुळे, ग्रामीण नवशिक्षणामुळे पैसा येऊ जाऊ लागला. त्यामुळे खेड्यातील माणसांचा संपर्क शहराशी येऊ लागला. शहरी राहणी, शहरी घरं, शहरी भाषा, शहरी पोशाख, शहरी आहार, शहरी कुटुंब, शहरी रीतीरिवाज, शहरी झगमगाट पाहून आपणही तसंच व्हावं, 'आपलंही सर्व तसं व्हावं' असं ग्रामीण माणसाला वाटू लागलं.

आज ग्रामीण भागात झपाट्याने बदल होत आहेत. फेटे, मांजरपाटाचे कपडे गेले, गांधी टोप्या, खादीचे नेहरू सदरे आले, तेही आज कमी होत जात आहेत आणि पांढऱ्या विजारींचे प्रमाण वाढत आहे. गोधड्या, घोंगड्या कमी झाल्या आणि चादरी, शाली, रंग यांचे प्रमाण वाढत गेले. रात्री शेतात जागतीसाठी जाताना काठी-कंदील वापरला जात होता, पण तो गेला आणि सेलच्या, विजेच्या बॅटऱ्या आल्या. गावातील, रस्त्यावरील ग्रामपंचायतीचे कंदील गेले आणि विजेचे ट्युबलाईट आले. त्यामुळे खेडे अंधारातून प्रकाशात आले. आज खेड्यात वीज आल्यामुळे दूरची खेडी विजेच्या दिव्यांची झगमगणारी तोरणे बांधल्यासारखी दिसू लागली. बैलगाड्या जाऊन मोटार सायकलीसारखी दुचाकी वाहने प्रकाशाचे झोत टाकत धावू लागली. ग्रामीण जीवनावर जागतिकीकरणाचा फार मोठा परिणाम जाणवू लागला.

यांत्रिक साधनांचा आणि विजेचा वापर शेतीवर फार मोठ्या प्रमाणात केला जाऊ लागला. शेतकऱ्याजवळील जनावरांची संख्या खूपच कमी झाली. शेतकऱ्यांचे गोठे पूर्वी जनावरांनी भरलेले असत. ते भरलेले गोठे शेतीचे जिवंत

वैभव होते. परंतु ते वैभव हळूहळू नष्ट होऊ लागले. हे गोठे पूर्वी सेंद्रिय खताचे कारखाने होते. जनावरांपासून उत्तमपैकी शेतखत मिळत असे. उत्तम पीक येण्यासाठी शेतकऱ्याला फुकट मिळणारे हे शेतखत शेतकऱ्याच्या गोठ्याबरोबर गेले आणि शेतजमिनीला निकस करणारी विकतची रासायनिक खते आली. त्यामुळे शेतजमिनी निस्तेज होऊ लागल्या. नैसर्गिक जीवनचक्रापासून शेती दूर गेली. याचा परिणाम ग्रामीण जनजीवनावर होऊन लागला.

शेतातल्या गोठ्याच्या सावलीत आता ट्रॅक्टर, मळणी यंत्रे, लोखंडी नांगर आणि शेतीस उपयोगी साधने, मोटार सायकली दिसू लागल्या. विहिरीवरील मोट गेली आणि मोटार पंप आणि इंजिन आले. साखरकारखाने आले. त्यामुळे शेतावरची गुन्हाळे बंद झाली. जनावरांनी, माणसांनी करायची मळणी बंद झाली. मळणी यंत्र आली. बलुतेदारी हळूहळू अनेक कारणांनी बंद पडत आहे. तिच्या मोडकळीला या काळात झपाट्याने गती आली. शेतकरी बलुतेदाराच्या साहाय्याने शेती करित होता, तो आज यंत्राच्या आणि सुधारलेल्या अवजारांच्या साहाय्याने शेती करू लागला. शेतीत लागणारे मनुष्यबळ कमी झाले आणि शेती तुकड्यात होऊ लागली. क्वचित प्रसंगी त्याला एखादा साथीदार पुरेसा पडू लागला. माणसांचा शेतीवरचा वावर कमी होत गेला. शेतजमिनीचे अनेक कारणांनी लहान लहान तुकडे पडू लागले. आकाराने लहान असलेली शेती करणे फायद्याचे न ठरता तोट्याचे ठरू लागले. परिणामी शेतकरी शेती विकू लागला अन् त्याच शेतीवर तो सालगडी म्हणून राबू लागला. पूर्वीचा शेतीमालक आज शेती कामगार म्हणून काम करू लागला.

शेतीत जसा बदल होत गेला, तसा गावातही बदल होत गेला. हा बदल १९७०-८० नंतर झपाट्याने जाणवू लागला. १९७०-८० पूर्वी खेड्यात दगड मातीची घरे होती. वरल्या छपरासाठी बांबू, कठीण आणि टणक स्वरूपाचे लाकूड, खांब, मेढी, फळ्या इत्यादीचा वापर घरे, गोठे यांच्यासाठी केला जात होता. १९७०-८० नंतर यात हळूहळू बदल होत गेला. नव्या अधिकारांच्या आमपंचायती आल्या. खेड्यांना रूप, आकार प्राप्त होत गेला. हळूहळू सिमेंट काँक्रीटची घरे, श्रीमंत पैसेवाले बांधू लागले. शहराचं अनुकरण करू लागले.

१९६०-७० नंतर खेड्यातील कुटुंबसंस्था बदलली. एकत्र कुटुंब पद्धती जाऊन विभक्त कुटुंब पद्धती आली. शेतकऱ्याला शेती करण्यासाठी संयुक्त कुटुंब पद्धती उपयुक्त होती. पण ही संयुक्त कुटुंबपद्धती आज नष्ट होऊ लागली आहे. याला अनेक कारणे आहेत. लोकशाही आली, प्रत्येकाला आपल्या हक्काची जाणीव झाली. शिक्षणामुळे आधुनिक मूल्यांचा परिचय झाला. व्यक्तिस्वातंत्र्याच्या कल्पना दृढमूल होऊ लागल्या. लोकसंख्या झपाट्याने वाढत गेली. त्यागापेक्षा, कौटुंबिक सौख्यापेक्षा स्वतःचे सुख पाहण्याकडे, ज्याचे सुख त्याने पाहावे, याकडे जास्त ओढा वाढला. त्याचा परिणाम एकत्र कुटुंबपद्धतीवर झाला. त्याचबरोबर वाटण्या होऊन शेतीचेही अनेक तुकडे झाले. वाट्याला आलेल्या ५-६ एकर शेतीत त्याला जीवन जगणं अवघड झालं, म्हणून तो शेती विकू लागला. या सर्वांचा एकत्रित परिणाम खेड्यातील माणसाच्या मानसिकतेवर झाला. त्यानुसार चालीरीती बदलत गेल्या. नी संसारातील चीजवस्तू बदलल्या. जर्मन, पितळ, तांबे यांची भांडी आणि उपकरणे गेली आणि स्टेनलेस स्टील आणि प्लॅस्टिकची साधने आली. त्या साधनांचा वापर ग्रामीण भागात फार मोठ्या प्रमाणात केला जाऊ लागला. आज खेड्याखेड्यात गॅस आणि गॅसच्या शेगड्या पोहोचल्या आहेत. विज्ञानाच्या प्रचार आणि प्रसाराने खेडी आपले रूप बदलत आहेत. ग्रामीण समाजजीवनात सामाजिक, राजकीय, आर्थिक आणि सांस्कृतिक परिवर्तन झालेले दिसून येते.

स्वातंत्र्योत्तर काळातही साधनांत बदल झालेला जाणवतो. स्वातंत्र्यपूर्व काळात तमाशे, जलसे, पोवाडे ही मनोरंजनाची साधने होती. आज या कला इतिहासजमा होत आहेत. खेड्यापर्यंत रेडिओ, दूरदर्शन, व्हि. डी. ओ. हाउस, निरनिराळ्या गाण्या-सिनेमांचे किती खेळ खेड्यापर्यंत पोहोचले आहेत. लोक त्यात रमत आहेत. शेतावर कामे

करताना स्वतः गाणे गाण्यापेक्षा सहज उपलब्ध असलेला रेडिओ शेतात गुराढोरांच्या पाठीमागे, माळावर, नदीकाठी, कुठेही लावतात आणि काम करतात, मन रमवतात. परिणामी खेडे आणि तेथील संस्कृती बदलत गेली. आज ग्रामीण संस्कृतीत फार मोठ्या प्रमाणात बदल होत आहे. या सार्या बदलाचा परिणाम मराठी ग्रामीण साहित्यावर झालेला दिसतो. मराठी ग्रामीण साहित्यही बदलत गेले. म्हणून अशा ग्रामीण जीवनातील बदलापाठोपाठ बदलत जाणाऱ्या ग्रामीण साहित्याची चिकित्सा करून त्याचे स्वरूप तपासणे अपरिहार्य आहे.

एकूणच साहित्य विचाराला पोषक ठरणारा हा दृष्टिकोन लक्षात घेऊन बदलते. ग्रामीण जीवन आणि मराठी ग्रामीण साहित्याचा स्थित्यंतराच्या अंगाने स्थूल स्वरूपात आढावा घेणे आवश्यक वाटते. त्यानिमित्ताने कथात्मक ग्रामीण साहित्याची वाटचालही ऐतिहासिक दृष्टीने तपासता येईल आणि त्यातून स्थित्यंतराच्या पाऊलखुणाही शोधता येतील, असे वाटते.

स्वातंत्र्यपूर्व काळात ग्रामीण जीवन पारंपरिक वळणाचे होते. स्वातंत्र्योत्तर काळात यात आमूलाग्र बदल झाला असे काही म्हणता येत नाही. तरी पण या पारंपरिक जीवनात बदल होत गेले. त्रि. ना. आत्रे यांनी 'गावगाडा' हे पुस्तक लिहिले. हे पुस्तक म्हणजे पारंपरिक आमरचना, या भागातील शासनव्यवस्था, बलुतेदारी, अलुतेदारी संबंध या सार्याचा अभ्यास व निरीक्षण आहे. त्रि. ना. आत्रे यांची या पुस्तकाला दिलेले नाव अतिशय मार्मिक आहे. जणू 'गावगाडा' हे एक सांगरूपकच आहे. ग्रामीण जीवनातील समूह जीवन आणि पारंपरिकता ही या गावगाड्याची दोन चाके आहेत. ग्रामीण जीवनातील शेती व्यवस्था हा या गावगाड्याचा कणा आहे. शेतकरी आणि शेतमजूर ही या गावगाड्याचे दोन चाके आहेत. पाटील, कुलकर्णी, देशपांडे ही ग्रामीण भागातील शासक मंडळी या गावगाड्याची मार्गदर्शक आहेत. अलुतेदार, बलुतेदार हे या गावगाड्याच्या चाकाचे आरे आहेत. या सर्वांशिवाय हा गावगाडा चालू शकत नाही. या गाडा सर्वांनी मिळून ओढायचा असतो. त्याचप्रमाणे मुख्य भाग म्हणजे निसर्ग. पारंपरिक शेती व्यवसाय निसर्गावर म्हणजे पावसावर अवलंबून आहे. त्यामुळे गावगाड्याचे भवितव्य या पावसावर अवलंबून आहे. असे पारंपरिक चित्रण पूर्वीच्या गावगाड्याचे होते. स्वातंत्र्योत्तर काळात पाटबंधारे, धरण योजनांमुळे साधनांत फरक पडला आहे. पण मूलतः बदल झाले असे मात्र म्हणता येत नाही. या पारंपरिक गावगाड्याचे चित्रण मराठी साहित्यात केव्हापासून येऊ लागले? प्रथम चित्रण धनुर्धारी यांची 'पिराजी पाटील' आणि हरिभाऊ पाटील यांची 'काळ तर मोठा कठीण आला' या कथेत आलेले दिसते. धनुर्धारींनी 'पिराजी पाटील' या कादंबरीत दुष्काळापुढे पिराजी पाटलांची जी उपासमार झाली, त्यांची जी वणवण झाली, त्याचे चित्रण मुख्यतः आले आहे. हरिभाऊ आपटे यांची 'काळ तर मोठा कठीण आला' या कथेतही दुष्काळाचे चित्रण आले आहे. रामजी धायगुडे व जयाबाई या शेतकरी कुटुंबावर दुष्काळात कोसळलेल्या आपतीचे व त्या कुटुंबाच्या विनाशाचे अत्यंत करुण, अत्यंत भीषण चित्र साद केले आहे. या दोन्हीही ललित साहित्य कलाकृतीची प्रेरणा दुष्काळ ही आहे. ग्रामीण जीवनात दुष्काळ हे मोठे अस्मान्नी संकट असते. या दोन्ही साहित्य कलाकृतीत ग्रामीण जीवनाचे सखोल प्रतिबिंब उमटलेले नाही तरी पण हा साहित्याचा प्रारंभ होता. या ज्या पहिल्यावहिल्या ग्रामीण साहित्याचा उद्गार कृषिकेंद्री आणि कृषीसंबंधी दुष्काळ हे राक्षसी संकट आहे, या राक्षसी संकटाचा परिणाम सांगण्याचा प्रयत्न हरिभाऊ आपटे आणि धनुर्धारींनी प्रथमतः केला.

हरिभाऊ आपटेंनंतर वि. स. सुकटणकर, लक्ष्मणराव सरदेसाई या लेखकांनी जाणीवपूर्वक ग्रामीण साहित्याचे लेखन केलेले दिसते. त्यांनी आपल्या साहित्यातून ग्रामीण जीवन-जाणिवा चित्रित करण्याचा प्रयत्न केला. धनुर्धारी व हरिभाऊ आपटे यांचे लेखन 'रिपोर्टवजा' होते तर नंतरच्या काळातील लेखन अनुभवलेले ग्रामीण जीवन त्यांनी आपल्या कथात्मक साहित्यातून आविष्कृत केले. वरील लेखकांनी गोमंतकालीन ग्रामीण जीवन चित्रित केले. सुकटणकरांचा 'सह्याद्रीच्या पायथ्याशी' हा कथासंग्रह, लक्ष्मणराव सरदेसाई यांचा 'कल्पवृक्षाच्या छायेत' हा कथासंग्रह

लक्षात घेण्यासारखा आहे. कोकणातील विशेषतः गोमंतकातील ग्रामीण जीवन शेतकरी, शेती, सावकार, निसर्ग, अंधश्रद्धा, संस्कृती, परंपरा या सार्या गोष्टी या कथांच्यामध्ये घटनाक्रमाने साकार होतात. गांधीवाद, स्वदेशीप्रेम इत्यादी प्रेरणा या कथात्मक साहित्याच्या मागे आहेत. तरीपण ग्रामीण जीवनाचे व्यापक अनुभवविश्व या कथांमधून आकारास आलेले दिसते. त्यामुळे या कथा ग्रामीण साहित्यात महत्वाच्या ठरतात. १९२० नंतरच्या काळात ग्रामीण भागाला गांधीवादाचे वारे लागले होते याची कल्पना या कथांमुळे येऊ शकते.

१९२० नंतर महात्मा गांधींनी देशात सुरू केलेली ग्रामोद्धार चळवळ देशवासीयांना प्रेरणादायी ठरली. या चळवळीचे लोण खेड्यापर्यंत गेले. ही चळवळ हेच एक मोठे परिवर्तन होते. संपूर्ण कालखंड या चळवळीने भारावून गेलेला होता. या कालखंडातच कलावाद आणि जीवनवाद या फडके-खांडेकर प्रणीत वादांना भरती आल्याचे दिसते. १९३० ते १९५० या कालखंडातील मराठी साहित्यविश्व या आवर्तात सापडले होते व मराठी साहित्याला एक उधाणच आले होते. म. गांधींच्या 'खेड्याकडे चला' या संदेशामुळे मध्यवर्ती साहित्याभिरुची, मध्यमवर्गीय जाणिवाही प्रकर्षाने आकर्षित झाल्या याचे चित्र याच कालखंडातील साहित्यातून उमटलेले दिसते. हे एक नवे आकर्षण होते. 'खेडे' हा घटक देशाच्या उन्नतीचा केंद्रबिंदू मानला गेला. ही गोष्ट देशाच्या सर्वांगीण जागृतीची आणि प्रगतीची होती. म. गांधींनी देशाच्या नेमक्या वर्मावरच बोट ठेवले. त्या काळाचा त्यांचा 'ग्रामोद्धार' हा एक कायमस्वरूपी पायाभूत ठरणारा असा एक प्रयोग होता. या प्रयोगामागे नेमकी कोणती धारणा होती, याकडे साहित्यिकांनी दुर्लक्ष केले. याचा परिणाम असा झाला की, मराठी साहित्यात रोमँटिक पद्धतीचे लेखन अधिक झाले. खेड्यामधले घर कौलारू, खेड्यातील हवा चांगली असते. तिथे नदी, डोंगर, प्रसन्न निसर्ग असतो, इत्यादी स्वप्नील कल्पनाच साहित्यिकांच्या डोक्यात अधिक भिन्नत गेल्या,

या काळात ना. वि. कुलकर्णी, म. भा. भोसले, द. र. कवठेकर, ग. ल. ठोकळ, र. वा. दिघे इत्यादी लेखक ग्रामीण जीवनातील अनुभव 'तंत्राच्या खिडकीतून पाहून' आपल्या कथा-कादंबरीतून साकार करित होते. र. वा. दिघे यांची 'सराई', ग. ल. ठोकळ यांची 'गावगुंड', म. भा. भोसले यांची 'समरांगण', र. वा. दिघे यांची 'पाणकळा', ना. वि. कुलकर्णी यांची 'माणिक' या कादंबऱ्यांतून ग्रामीण जीवनाचा स्वच्छ सुंदर आविष्कार घडतो पण त्यांच्या लेखनामागे सखोल ग्रामीण जीवन-जाणीव, प्रेरणा असल्याचे दिसत नाही. या कादंबरी लेखकाची प्रेरणा मध्यवर्ती मराठी साहित्य जाणिवांचीच होती आणि मांडणी ग्रामीण जीवनावरची होती. अर्थात म. गांधींच्या 'खेड्याकडे चला' या संदेशामुळे खेडी एकदम जागी झाली आणि खेड्यातही फार मोठे स्थित्यंतर झाले, असे म्हणता येईल असे नाही. खेड्यापर्यंत या संदेशाचे वारे वाहू लागले. पण पारंपरिकता आणि खेड्यातील गावगाडा त्या काळात कायम होता. शेतकरी, शेतमजूर, बलुतेदारी, जातव्यवस्था, सण-वार-उत्सव, सारे पूर्वापार होते. शेती व्यवसायात फारसा फरक पडलेला दिसून येत नाही. खेड्यात बदल झालेला जाणवत होता. जो गांधींच्या ग्रामोद्धार चळवळीच्या कार्यक्रमाचे ग्रामसफाई, सूतकताई असे उपक्रम क्वचित खेड्यात सुरू झाले होते पण या कार्यक्रमाचा कृषी जीवनावर फारसा परिणाम झालेला दिसून येत नाही. ग्रामोद्धार हा विषय केंद्रस्थानी ठेवून फार मोठी साहित्यकृतीही या कालखंडात लिहिली गेली नाही. कथाकादंबरीत क्वचित प्रकरणी या चळवळीचा संदर्भ येत असे पण मोठ्या क्रांतिकारी चळवळीवरचा अनमोल कलात्मक ठेवा वाटावा अशी साहित्यकलाकृती निर्माण झालेली दिसत नाही. या काळात ग्रामीण जीवनाच्या अंगाने साहित्य लिहिले जात होते पण ते सारे स्वप्नरंजनपरच साहित्य होते. खेड्याच्या जीवनावर शहरी जीवनाकडून वेगळे असे साहित्य म्हणजे ग्रामीण, जानपद, प्रादेशिक असे साहित्य असा दृष्टिकोन या काळात व्यक्त केला जात होता.

म. गांधींच्या काळात मराठी ग्रामीण साहित्याची प्रेरणा 'ग्रामोद्धार'ची चळवळ ही आपल्याला हवी होती. पण या काळात दिघे, कुलकर्णी, ठोकळ, कवठेकर इत्यादींच्या साहित्यात मात्र ग्रामीण भागातील शेतभाताची, तिथले निसर्ग, खेड्यातील स्त्रियांच्या अनागर रांगड्या सौंदर्याची आणि खेडूत माणसांच्या हेव्यादाव्याची, त्यांची राकट, दणकटपणाची वर्णने मात्र विपुल प्रमाणात केलेली दिसतात. ग्रामीण जीवन, म. गांधींच्या विचारांमुळे बदललेली मानसिकता, अंधश्रद्धा या सर्वव्यापी कर्दमात रुतून असलेल्या गावगाड्याचे यथार्थ चित्रण तत्कालीन साहित्यिकांनी आपल्या साहित्यात केलेले दिसत नाही. या काळातील साहित्यिकांची खेड्याविषयीची एक विशिष्ट धारणा होती. साचेबंद, शहरी कृत्रिम जीवनाविषयीची नावड निर्माण झालेली होती आणि याच प्रेरणेने त्या काळातील ग्रामीण साहित्यही लिहिले गेलेले दिसते. मराठी साहित्यात १९४० ते १९५० या दशकात नवसाहित्य अवतरले. या नवसाहित्यामागे औद्योगिकीकरणाचा उबग, दुसऱ्या महायुद्धोत्तरकाळात माणसांच्या अस्तित्वाविषयीच येणारी नवता आणि ढासळत जाणाऱ्या मूल्यांतून नष्ट होऊ पाहणारी संस्कृती, परंपरा यांच्या भीषण आवर्तात संवेदनशील मनाची एक वैफल्यग्रस्त, अगतिक स्थिती बनून गेली होती. अशा स्थितीत बाह्य वास्तवाने भांबावून व्यक्तिकेंद्रित, आत्मकेंद्री अशा प्रेरणा निर्माण झाल्या. यातूनच मर्दकरांची कविता, कार्यकारी, गंगाधर गाडगीळ याची कथा उदयास आली. या काळात शंकर पाटील, संकटेश माडगूळकर, रणजित देसाई, द. मा. मिरासदार, उद्धव शेळके, वा. भ. बोरकर इत्यादी लेखक ग्रामीण जीवनाचे जिवंत अनुभव आपल्या की कार्यवरीतून साकार करू लागले, व्यंकटेश माडगूळकरांची 'बनगरवाडी', 'पावर' या कार्यबया, 'माणदेशी माणसं' हा कथासंग्रह, शंकर पाटील यांची 'टारफूल्य' ही कादंबरी, 'वळीच', 'आभाळ' कथासंग्रह, द. मा. मिरासदार यांचे 'भूताचा जन्म', 'माझ्या बापाची पेंड' इत्यादी कथासंग्रह, उद्धव शेळके यांची 'धग', रणजित देसाई यांची 'माझ्या गाव', गो. नि. दांडेकर यांची 'माचीवरचा बुधा', हमीद एललाई भांची 'इंधन' ही कादंबरी, ग्रामीण साहित्याच्या जोमदार प्रवाहातील या श्रेष्ठ काशकृतीधी नंधि निःशंक मनाने घ्यावीच लागेल. हे सर्व लेखक आपल्या गावाकडच्या गोष्टी लिहीत होते. या लेखकांचे वास्तव्य शहरात असले तरी त्यांच्या मनातला गाव त्या वास्तव्यात हरवलेला दिसत नाही. या साहित्यिकांचा रुचिपालट म्हणून लेखन करणे हा हेतू नव्हता, उलट एक व्यापक ग्रामीण सामाजिकता था ग्रामीण लेखकांच्या ठिकाणी होती. यातील काही लेखकांनी कथेत ग्रामीण जीवनातील प्रसंग, किस्से, चित्रित केलेले असले तरी 'धग', 'बनगरवाडी' या कादंबऱ्या ग्रामीण जीवनाचे वास्तव चित्रण करणाऱ्या आहेत, या काव्यतील ग्रामीण लेखकाने ग्रामीण जीवनातील स्थित्यंतराचा अंतर्बाह्य आविष्कार आपल्या साहित्यातून अतिशय जोमदारपणे आविष्कृत केलेला दिसतो.

मराठी साहित्याच्या प्रवाहाचा विचार करता साठोतरी मराठी साहित्य अशी एक संज्ञा सभिक्षकांनी रूख केलेली. या संज्ञेच्या पाठीमागे एक व्यापक संदर्भ आहे. १९६० नंतर नवमहाराष्ट्राची स्थापना झाली, याच काळात मराठी माणसाला स्वतःचा असा चेहरा मिळाला, मराठी माणसांची अस्मिता जागृत झाली. महाराष्ट्रातील ग्रामीण भागातील गावगाड्याची पुनर्बांधणी झाली. जुनी ग्रामशासन प्रणाली गेली आणि चनी लोकशाहीप्रणीत 'पंचायत राज' व्यवस्था आली. परिणामतः खेड्याकडे अर्थकारणाची आणि राजकारणाची सूत्रे आली. या अर्थकारणामुळे ग्रामीण भागाचा कायापालट करणारी कल्याणकारी चळवळ म्हणून सहकारी चळवळीकडे पाहिले जाते. या चळवळीने खेड्याचा चेहरा बदलला, पण बदल तसा वरवरचा असा आहे, मूलतः त्याचा परिणाम ग्रामीण अर्थव्यवस्थेवर झाला पण ग्रामीण माणसांची जी सामाजिक जाणीव होती, ती पारंपरिकच राहिली असे दिसते, पाटील गेला, सरपंच आल्या, कुलकर्णी गेला, ग्रामसेवक आला. जुनी सावकारी गेली आणि सहकारी बँका आल्या, सुताराने तयार केलेला नांगर गेला, नंतर लोखंडी नांगर आला आणि तोही गेला, त्याठिकाणी ट्रॅक्टर, मोटरपंप आले. विजेवरच्या पिठाच्या गिरण्या आल्या, असा ग्रामीण जीवनात बदल होत गेला पण डोके तेच, फेटा बदलला असाच प्रकार ग्रामीण समाजजीवनात झालेला दिसून येतो. पूर्वी खेड्याची सत्ता उच्चवर्णीयांकडे होती. नव्या पंचायत राज्यात ती सत्ता उच्चवर्णीयांकडेच राहिली,

ग्रामीण जीवनातील प्रश्न, समस्या, अन्याय इत्यादी प्रकारात बदल झाला. पण त्यात सुधारणा मात्र झाली नाही. या गोष्टी पूर्णतः नष्ट झाल्या नाहीत. उलट नव्याने त्यात भर पडत गेली. ग्रामीण माणसांचे पिळवणुकीचे स्वरूप बदलले. १९६० नंतर पहिल्या एक दोन दशकात जेवढ्या गतीने कृषी क्षेत्रात औद्योगिक क्रांती झाली, सहकाराचे जाळे विणले गेले, तेवढ्या गतीने ग्रामीण जीवनातील पारंपरिक जीवनप्रणाली बदलली किंवा ग्रामीण भागात मानसिक बदल झाला नाही. ग्रामीण भागातील जातव्यवस्था नष्ट झाली नाही पण काही प्रमाणात सैल झाली. शेतीतील जुनी अवजारे अडगळीत पडली, त्याजागी नवीन आली पण शेतीचे आणि शेतकऱ्याचे दैन्य काही संपले नाही. ज्या भागात धरणे झाली तेथे पाण्याची सोय झाली. तिथला शेतकरी बागाईतदार झाला. जिथे पाणी नाही तो शेतकरी पारंपरिक शेती करू लागला. जिथे पाणी नाही तिथला शेतकरी अल्पभूधारक व दरिद्री बनला. हा श्रीमंत शेतकरी कोरडवाहू शेतकऱ्याचे शोषण करू लागला. अशा बदलत्या ग्रामीण जीवनाचे चित्रण आनंद यादव, रा. रं. बोराडे यांनी 'गोतावळा', 'पाचोळा', सदानंद देशमुख 'तहान', 'बारोमास', भारत काळे यांची 'ऐसे कुणबी भूपाळी', शांता शेळके यांची 'गव्हाणी' या कादंबऱ्यांत चित्रित केले आहे. १९८० नंतर महाराष्ट्रात शेती व्यवसायाकडे पाहण्याचा दृष्टिकोन बदलत गेला. १९७२ साली महाराष्ट्रात दुष्काळ पडला. या दुष्काळाचे स्वरूप भयंकर होते. याची झळ ग्रामीण तरुणाला भोगावी लागली. या तरुण पिढीतील काही तरुण उच्च शिक्षण घेऊन बाहेर पडले होते तर काही जण उच्च शिक्षण घेत होते. शिक्षणाचे पंख लावून, नव्या आशा घेऊन भरारी मारायच्या ऐन मोक्यातच दुष्काळी स्थिती पडल्याने तो आपल्याच कुटुंबाची, गावाची, शेतीची चाललेली होरपळ पाहून खचून गेला. यातून त्याची एक वेगळी मानसिकता घडत गेली. दुष्काळ हे बाह्य स्थित्यंतर होते पण त्याचा शेतीवर, शेतकऱ्यावर, शेतकऱ्याच्या जनावरांवर, खेड्यावर आणि पर्यायाने ग्रामीण जीवनावर मूलगामी परिणाम झाला. पुढे दुष्काळ हटला पण त्याचा परिणाम म्हणून जी मानसिकता तयार झाली ती अधिकच बळकट बनत गेली. शेती व्यवसाय किफायतशीर झाला तरी तो परवडणार नाही, तर शेती पिकत नसेल तर ती विकून दुसरा धंदा बघावा अशी मानसिकता बनत गेली. ग्रामीण कुटुंबातील तरुण वर्गाला नोकरी ही चरितार्थासाठी महत्त्वाची वादू लागली, त्यासाठी तो शेती विकू लागला. १९८० नंतर शेतकरी कुटुंब केवळ शेतीवर तग धरनासे झाले. शेतीला पूरक जोडधंद्याची गरज भासू लागली. निव्वळ शेतीतून कुटुंबातील सर्वांना पुरेसे धान्य मिळेल किंवा गरजा भागवू शकेना. म्हणून शेतीविषयी प्रेम राहिले नाही. शेतीकाम म्हणजे घाण काम अशी वृत्ती तयार होत गेली. सुटा-बुटातली नोकरी, शहराचे नवे आकर्षण अशा अनेक बाजूंनी ही एक विचित्र मानसिकता निर्माण होत आहे. अशा बदलत्या ग्रामीण मानसिकतेचे चित्रण कथा-कादंबऱ्यांत येऊ लागले.

ज्या ठिकाणी सुविधा आहेत, नवीन योजनांचा लाभ होण्याची शक्यता आहे, तेथे शेती व्यवसायात नव्याने बदल होत आहे. फळशेती, फुलशेती, ग्रीन हाउस, मत्स्यशेती, कुक्कुटपालन, अन्य पैसे देणारे शेती धंदे उदयाला आले. आधुनिक शेतीतंत्रातही वर्षागणिक बदल होत आहे. एकूण शेतीतून अधिक पैसा कसा मिळेल, याची लाभक्षेत्रात एक जीवघेणी स्पर्धाच निर्माण झाली. अनेक नवीन प्रश्न, नवा संघर्ष निर्माण होत आहे.

या उलट लाभक्षेत्रापासून वंचित असलेल्या शेतकऱ्यांच्या जीवनात अनेक प्रश्न, समस्या या नव्या यंत्राने आणि तंत्राने निर्माण केले आहेत. अशा फायद्यापासून, शासकीय योजनांपासून दूर राहिलेल्या खेड्यांमध्ये एक वेगळेच अर्थकारण उदयाला येत आहे. या भागातील शेतीकडे भांडवलदारी वर्गाचे लक्ष गेले. त्यांनी अशा अडलेल्या-नडलेल्या शेतकऱ्यांकडून शेती विकत घ्यायला सुरुवात केली. शहरातील कारखानदार, श्रीमंत वर्ग, भ्रष्ट राजकारणी, सरकारी नोकरी करणारा नोकर वर्ग या पैसेवाल्या वर्गाने शेती खरेदी केली. अशा बदलत्या ग्रामीण जीवनाचं चित्रण मराठी ग्रामीण कादंबरीत समर्थपणे आज येऊ लागले आहे.

या काळात निर्माण झालेल्या साहित्यातील काही साहित्यिकांच्या आणि साहित्य कलाकृतींचा निर्देश या संदर्भात करता येईल. 'मायलेकरं' आणि 'पेरा', 'पीकपाणी', 'पाडा', 'अंधाराचा गाव माझा' इत्यादी कवितासंग्रहातील कविता ग्रामीण जीवनातील स्थित्यंतराचे नवे भान प्रकट करणारी कविता आहे.

बाबाराव मुसळे यांची 'हाल्या हाल्या दूधू दे', 'पखाल', पुरुषोत्तम बोरकर यांची 'मेड इन इंडिया', आनंद यादवांची 'नटरंग', रा. रं. बोराडे यांची 'चारापाणी', वासुदेव मुलाटे यांची 'विषवृक्षांच्या मुळ्या', मोहन पाटील यांची 'बस्तान', सदानंद देशमुख यांची 'बारोमास' इत्यादी कादंबऱ्यांत ग्रामीण जीवनातील परिवर्तनाचे वास्तवदर्शी चित्रण केलेले दिसते. ग्रामीण माणसाची होत असलेली ससेहोलपट मोठ्या ताकदीने साकार करण्याचा यशस्वी प्रयत्न केला गेला आहे..

येथे काही साहित्यिकांच्या व साहित्य कलाकृतींचा केवळ निर्देश केला आहे. हे सगळेच लेखक-कवी ग्रामीण जीवनासंबंधीचे भान ठेवून लेखन करणारे आहेत.

म्हणून त्यांचे लेखन १९७० पूर्वीच्या ग्रामीण साहित्यापेक्षा फार वेगळे आहे. जाणिवांच्या शैलीच्या बाबतही वेगळेपण प्रकट करणारे आहे. विशेष म्हणजे ग्रामीण जीवनाकडे पाहण्याच्या त्यांच्या दृष्टीत आमूलाग्र बदल झालेला आहेत, असे दिसते. त्यामुळे हे वेगवेगळ्या परिणामांनी मराठी भाषेस समृद्ध करित आहेत, असे वाटते. म्हणून ग्रामीण साहित्यात आवर्त निर्माण झाले आहे असे म्हणताच येत नाही. उलट ते समृद्धीच्या दिशेने वाटचाल करित आहे.

शेती आणि शेतकरी, गाव आणि गावगाडा, शेतकरी आणि शेतमजूर यांमध्ये १९८० नंतर झालेले व्यापारीकरण, तरुणांची बदललेली मानसिकता, बागायती शेतीवरील बागाईतदारांची मिजास, त्यांचे ग्रामीण जीवनावर होणारे बरे-वाईट परिणाम यांचे चित्रण मराठी ग्रामीण साहित्यात पुरेसे आलेले नाही असे म्हणावे लागते. नाही म्हणायला या बदलत्या ग्रामीण जीवनाचे वास्तव चित्रण नागनाथ कोतापल्ले, राजन गवस, भारत काळे, शेषराव मोहिते, दादाभाऊ गावडे, सदानंद देशमुख इत्यादींच्या साहित्यकलाकृतींतून आढळून येते. हे या बदलत्या ग्रामीण जीवनाचे साक्षी आहे. बदलत्या वास्तव ग्रामीण जीवनात यांची मानसिकता घडलेली आहे. म्हणून त्यांच्या साहित्यकृतीत बदलत्या ग्रामीण जीवनाचे नेटके चित्रण आलेले दिसून येते. ही स्वागताह बाब आहे. आजच्या आणि कालच्या बदलत्या ग्रामीण जीवनातील वास्तव-स्थित्यंतरे आणि परिवर्तन यांचे स्थूल स्वरूप असे आहे.

संदर्भ :

-) सूर्यवंशी नानासाहेब, ग्रामीण साहित्य मूल्य आणि अभिरूची, पद्मगंधा प्रकाशन प्रथम आ.२०१५ पुणे.
-) यादव आनंद, मराठी साहित्य आणि संस्कृती मेहता प्रकाशन, पुनर्मुद्रण २०१६, पुणे.
-) कुळकर्णी अरविंद वामन, साहित्यविचार, द्वितीयावृत्ती १५ जुलै १९९७, प्रतीमा प्रकाशन, पुणे.
-) नलगे चंद्रकुमार, ग्रामीण साहित्य अपेक्षा आणि उपेक्षा, मेहता प्रकाशन, पुणे.
-) यादव आनंद, साहित्याची निर्मिती प्रक्रिया, तृतीयावृत्ती, २००२ मेहता प्रकाशन, पुणे.

भारतातील स्थलांतराचे सामाजिक परिणाम

डॉ.आव्हाड भगवान भानुदास

आनंदराव धोंडे ऊर्फ बाबाजी महाविद्यालय कडा
ता.आष्टी जि.बीड

गोषवारा: स्थलांतर ही एक समतोल प्रक्रिया आहे जी विकासाच्या वेगवेगळ्या टप्प्यांवर प्रादेशिक असमानता कमी करते आणि मानवी सभ्यतेइतकी जुनी प्रक्रिया आहे. शीतयुद्धाच्या समाप्तीपासून निर्वासितांचा प्रवाह, आश्रय शोधणारे, अंतर्गत विस्थापन आणि विकास प्रेरित विस्थापन यासह स्थलांतराचे प्रमाण आणि राजकीय महत्त्व मोठ्या प्रमाणात वाढले आहे. हे उत्तर दक्षिण संबंधांचा अविभाज्य भाग बनले आहे आणि जागतिक सामाजिक परिवर्तनाच्या वर्तमान प्रक्रियेशी जवळून जोडलेले आहे. यामुळे समाजशास्त्रज्ञांना स्थलांतरावरील प्रायोगिक संशोधन आणि विश्लेषण विकसित करणे जितके महत्त्वाचे आहे तितकेच ते समकालीन समाजाच्या त्यांच्या सैद्धांतिक समजांमध्ये समाविष्ट करणे आवश्यक आहे. स्थलांतराचा अभ्यास हा आर्थिक स्थलांतरावरील संशोधनाशी निगडित आहे परंतु त्याचे स्वतःचे विशिष्ट संशोधन विषय, पद्धतशीर समस्या आणि वैचारिक समस्या आहेत. स्थलांतराचे एक सामाजिक प्रक्रिया म्हणून विश्लेषण करणे आवश्यक आहे; ज्यामध्ये मानवी एजन्सी आणि सोशल नेटवर्क प्रमुख भूमिका बजावतात. या संदर्भात, तुलनेने स्वायत्त राष्ट्रीय समाजांच्या तत्वावर आधारित असलेल्या संपूर्ण समाजशास्त्रीय दृष्टिकोनांवर प्रश्नचिन्ह निर्माण करत आहे.

परिचय: भारतातील स्थलांतर नवीन नाही. इतिहास दाखवतो की लोक कामाच्या शोधात, पर्यावरणीय धक्के आणि तणावांना प्रतिसाद म्हणून, धार्मिक छळ आणि राजकीय स तथापि, सुधारित दळणवळण, वाहतूक नेटवर्क, नैसर्गिक संसाधनांवरील संघर्ष आणि नवीन आर्थिक संधींमुळे गतिशीलतेची अभूतपूर्व पातळी निर्माण झाली आहे. परंतु आपण पुढील विभागांमध्ये चर्चा केल्याप्रमाणे, मोठ्या सर्वेक्षणांमध्ये गतिशीलतेतील वाढ पूर्णपणे पकडली जात नाही, ज्यामुळे भारतातील गतिशीलता पातळीबद्दल चुकीचे निष्कर्ष निघतात, अलिकडच्या काळात लक्षणीय असले तरी, गुजरातसारख्या विकसित राज्यांमध्ये उद्योगाने वैशिष्ट्यीकृत केलेली वाढ भारतात असमान आहे. महाराष्ट्र आणि पंजाब हे पूर्व उत्तर प्रदेश, बिहार, दक्षिण मध्य प्रदेश, पश्चिम ओरिसा आणि दक्षिण राजस्थान यांसारख्या कृषीदृष्ट्या मागासलेल्या गरीब प्रदेशातून मजूर आणतात. उच्च उत्पादकता कृषी क्षेत्रे ही महत्त्वाची मजूर आयात करणारी ठिकाणे आहेत, परंतु ग्रामीण-शहरी स्थलांतर हा सर्वात वेगाने वाढणारा प्रकार आहे कारण अधिक स्थलांतरित शहरी भागात आणि औद्योगिक क्षेत्रांमध्ये चांगल्या पगाराच्या बिगरशेती व्यवसायांमध्ये काम करणे निवडतात. दिल्ली, गुजरात आणि महाराष्ट्र ही राज्ये आंतरराज्यीय स्थलांतरित मजुरांची प्रमुख ठिकाणे आहेत. कामगार गतिशीलता वाढली आहे आणि अर्थव्यवस्था वाढू लागली आहे. कोणत्याही मूल्यांकनाचा महत्त्वाचा घटक म्हणजे स्थलांतराचा समाजातील सामाजिक संबंधांवर कसा परिणाम होतो हे पाहणे. एका स्तरावर नोकऱ्या, सार्वजनिक सेवा आणि अशाच गोष्टींमध्ये जाणवलेले परिणाम अप्रत्यक्षपणे ज्या पद्धतीने व्यक्ती राहतात आणि काम करतात त्या समु स्थलांतरितांनी स्थानिक समुदायांमध्ये स्पर्धा किंवा निवड आणली आहे काहीना हे जाणवू शकते. वस्तुनिष्ठपणे मोजल्या गेलेल्या रोजगाराच्या बाजारपेठेतील दबाव स्थानिक समुदायांबद्दल व्यक्तिनिष्ठ वाटलेल्या चिंतांमध्ये वाढू शकतो. स्थलांतराबद्दल राष्ट्रीय राजकीय वादविवादांमुळे स्थानिक समुदाय संबंध कसे पाहिले जातात आणि प्रभावित होतात हे पाहताना देखील हेच खरे आहे. स्थलांतराचे सामाजिक परिणाम अधिक जाणवतात. लोकांच्या त्यांच्या स्थानिक परिसरांबद्दलच्या भावना तपासताना आणि विशेषतः त्यांच्या आजूबाजूचे लोक एकत्र खेचत आहेत असे

त्यांना किती वाटत आहे हे तपासताना हे पाहिले जाऊ शकते आणि जेव्हा "एकत्रनेस" आवश्यक असेल तेव्हा त्यावर विश्वास ठेवला जाऊ शकतो आणि संशोधकांनी हे वारंवार तपासले आहे. या भावनेला बळकट करण्यासाठी किंवा अस्वस्थ होण्याची शक्यता काय आहे ते वेगळे पाहण्यासाठी सामान्य हेतूच्या भावना हे बहुधा कार्यक्षम सार्वजनिक स्थलांतर हा गतिशीलतेचा समानार्थी शब्द आहे. ज्यामध्ये सर्व प्रकारच्या प्रादेशिक हालचालींचा समावेश होतो. स्थलांतर हा शब्द एका ठिकाणाहून दुसऱ्या ठिकाणी लोकसंख्येच्या हालचालींना सूचित करतो. स्थलांतरावर मोठ्या प्रमाणावर चर्चा लोकप्रिय धारणांद्वारे केली जाते. अभ्यास स्थलांतरासाठी जबाबदार घटकांचे वर्णन करतो. ग्रामीण भागात, रोजगाराच्या कमी संधी, कमी वेतन, सामाजिक घटक इत्यादींमुळे लोक अधिक रोजगाराच्या संधी, जास्त उत्पन्न, चांगले वेतन आणि चांगल्या सुविधा मिळण्यासाठी शहरी भागात स्थलांतर करतात. स्थलांतरित लोकसंख्येचा एक मोठा भाग विशेषतः मोठ्या आणि महानगरीय शहरांमध्ये किरकोळ वस्त्या, झोपडपट्ट्या आणि निवांत भागात राहतो आणि त्यामुळे मर्यादित पायाभूत सुविधांमुळे आरोग्य, शहरी भागातील पर्यावरणाचा र्हास, वाहतूक आणि शहरी भागातील इतर समस्यांना धोका निर्माण होतो. स्थलांतरास कारणीभूत किंवा नियंत्रित करणारे घटक प्रदेशानुसार आणि व्यक्तीनुसार बदलतात. स्थलांतर प्रक्रियेसाठी दोन प्रकारचे घटक जबाबदार असतात ज्यांना पुश आणि पुल फॅक्टर म्हणतात. यामध्ये विशेषतः स्थलांतरितांची संख्या आणि त्यांचा गंतव्य क्षेत्रांवर होणारा परिणाम यावर चर्चा समाविष्ट आहे. दुर्दैवाने, स्थलांतराचा वाढ आणि संचय यावर होणाऱ्या परिणामांवर फारसे अभ्यास झालेले नाहीत. हा पेपर फक्त काही सामान्य तथ्ये प्रदान करतो. या अभ्यासातून असे दिसून आले आहे की लोकांचे स्थलांतर हे लग्न, शिक्षण आणि नोकऱ्यांमुळे होते पण इथे आपण कुटुंबाचा, जन्मानंतर आणि व्यवसायाचाही अभ्यास करतो. आम्ही एका राज्यातून दुसऱ्या राज्यात होणाऱ्या अंतर्गत स्थलांतराचा अभ्यास करतो. तसेच २००१ आणि २०११ च्या जनगणनेच्या डेटाच्या मदतीने स्थलांतराचा समाजावर होणारा परिणाम देखील जाणून घेतला आहे.

उद्दिष्टे:

- * स्थलांतर करण्यापूर्वी आणि नंतरच्या स्थलांतरित मजुरांच्या सामाजिक-आर्थिक परिस्थितीचा अभ्यास करणे.
- * स्थलांतराच्या कारणांचा अभ्यास करणे.
- * सर्व राज्यांतील स्थलांतर, स्थलांतराची पातळी समजून घेण्यासाठी.
- * राज्य ते राज्य स्थलांतराचे परिणाम समजून घेणे.
- * अंतर्गत निर्धारकांवरील काही अंतर्दृष्टी समजून घेण्यासाठी.

भारतात स्थलांतर: या वर्तमान काळात स्थलांतर हा एक सामान्य कल आहे. त्याचप्रमाणे या दिवसात शेतमजुरांचे स्थलांतरही सामान्य आहे. मजुराला त्याच्या राहणीमानात अनेक समस्यांना सामोरे जावे लागते आणि या समस्या त्याला त्याच्या मुळापासून खेचून घेतात.

माहिती स्रोत: सामाजिक-आर्थिक चलांसाठी, कागदासह विविध स्रोतांचा डेटा वापरला जातो. भारतीय रिझर्व्ह बँक, केंद्रीय स्थिर संस्था आणि भारतीय नियोजन आयोगाचे प्रकाशन, स्थलांतर आणि आरोग्य यांच्यातील संबंध बहुआयामी आणि द्विदिशात्मक असल्याचे दिसून येते. आरोग्यस्थिती स्थलांतराचा निर्णय घेऊ शकते परंतु अशा पुनर्स्थापनेचा आरोग्यावर परिणाम होऊ शकतो. वर्तुळाकार स्थलांतर पुढे आरोग्य स्थिती किंवा वर्तन यांच्या प्रसारशी संबंधित आहे. मूळ क्षेत्र इतरांच्या आरोग्य स्थितीवर परिणाम करतात. शहरी आणि ग्रामीण यांची रचना

भारतातील लोकसंख्या आणि स्थलांतराचा गतिशील घटक कोविड-१९ वाढवण्याची शक्यता आहे. देशात महामारी मोठ्या संख्येने स्थलांतरित जे ग्रामीण भागातील आहेत परंतु शहरात काम करतात. अकार्यक्षम परिणाम कारण बरेच स्थलांतरित रोगाच्या केंद्रांमधून पळून जाणे पसंत करतात, परिणामी इतर असंक्रमित लोकांवर नकारात्मक बाह्य प्रभाव पडतो. प्रवासावरील निर्बंधांचा साथीच्या रोगांच्या प्रसारावर फारसा परिणाम होत नाही. मोठी समस्या अशी आहे की सामान्यतः महामारीबद्दल जागरूकतेने पुरेशी प्रकरणे 'सीड' केली गेली आहेत. अनेक मॉडेल्स विकसित केली गेली आहेत आणि अवकाशात महामारीच्या प्रसाराचा अभ्यास करण्यासाठी वापरली गेली आहेत. यापैकी बहुतेक एकतर संपर्क वितरणावर किंवा स्थलांतर किंवा हालचालींचे वर्णन करणाऱ्या प्रक्रियांवर आधारित आहेत. सार्वजनिक आरोग्य हस्तक्षेप प्रामुख्याने तीन प्रकारच्या लोकसंख्येवर लक्ष केंद्रित करतात.

उदयोन्मुख संसर्गजन्य रोगाचा प्रसार आणि त्याचे नकारात्मक परिणाम टाळण्यासाठी किंवा कमी करण्यासाठी: अ) स्रोत क्षेत्रातील लोकसंख्या, ब) स्रोत क्षेत्र सोडणारी तरंगणारी लोकसंख्या आणि क) लोकसंख्यासंक्रमित क्षेत्रातून इतर भागात प्रवास करणे. कसे यावर अनेक अभ्यास झाले असले तरी स्थलांतर महामारीच्या प्रसारावर परिणाम करते, तथापि, समस्येचा आणखी एक महत्त्वाचा परिमाण म्हणजे साथीच्या रोगांमुळे केवळ सार्वजनिक आरोग्य संकटच नाही तर अनेकदा आर्थिक संकटात आणि स्थलांतराच्या संकटातही रूपांतरित होते. महामारीच्या परिस्थितीत, मोठ्या संख्येने अंतर्गत स्थलांतरित कामगारांनी केलेल्या उपाययोजनांमुळे कामावरून कमी केल्यानंतर शहरांमध्ये अडकले आहे. यातील बहुतेक कामगार उदरनिर्वाहापेक्षा थोडे जास्त कमावतात. वेतन आणि त्यांच्या नोकऱ्या गमावल्यास त्यांच्या उत्पन्नाचे संरक्षण करण्यासाठी त्यांच्याकडे दुसरे कोणतेही साधन नाही. या प्रश्नाकडे लक्ष वेधले प्रशासक आणि संशोधकांनी हे लक्षात घेतले की २१ दिवसांच्या देशाच्या घोषणेनंतर-भारतात कोविड-१९ मुळे व्यापक लॉकडाऊन, हजारो स्थलांतराची गर्दी झाली. दिल्ली शहरातील कामगार, उत्तर प्रदेश, बिहारमध्ये जाण्यासाठी बस टर्मिनलकडे चालत आहेत. तर इतर शेजारच्या राज्यांतील त्यांच्या गावी जाण्यासाठी ते हजारोंच्या संख्येने जमले. बहुतेक वाहतूक बंद झाल्यामुळे, बरेच लोक शेकडो किलोमीटर चालत त्यांच्या ग्रामीण भागात परत जाण्याचा प्रयत्न करत होते. ज्या सरकारने सुरुवातीला सर्व सार्वजनिक वाहतूक बंद केली होती, आणि 'घरीच राहण्यावर' भर दिला,

लोकांना बस रेल्वेस्टेशन पर्यंत पोहोचू देण्याचा निर्णय घ्यावा लागला आणि शहराच्या सीमा आणि सेवेत शेकडो बसेसची व्यवस्था केली. शिवाय केंद्र सरकारने राज्याला विचारणा केली. देशाच्या पार्श्वभूमीवर स्थलांतरित कामगारांचे मोठ्या प्रमाणावर होणारे स्थलांतर रोखण्यासाठी सरकारे उपाययोजना करणे इ. लॉकडाऊन अनेक राज्यांतील शहरांमधून त्यांच्या खेड्यांकडे स्थलांतरित कामगारांचे सामूहिक प्रस्थान कोविड-१९ चा उद्रेक मानवतावादी संकटात बदलू शकतो. सरकारने एक नवीन योजना सुरू केली, ती म्हणजे स्थलांतरित कामगार परतीची नोंदणी. या दैनंदिन मजूर आणि प्रवासी कामगारांची संख्या मोजणे हे योजनेचे मुख्य उद्दिष्ट आहे. इतर राज्ये, तसेच त्यांना १४ दिवसांच्या क्वारंटाईन सुविधा आणि देशभरातील राज्य सरकारांनी त्यांचे पोर्टल सुरू केले. कोविड-१९ मुळे मंदी येण्याची भीती आहे. तात्पुरत्या कमाईच्या तोट्याच्या पलीकडे विस्तारित असाधारण मानवी टोल भारतात घेऊ शकतो. पूर्वीच्या मंदीच्या अभ्यासातून असे सूचित होते की मंदीच्या काळात नोकरी कमी होते. काही वेळा दीर्घकालीन बेरोजगारी आणि पगारातील अडथळे यामुळे बेरोजगारांचे आरोग्य बिघडते. कामगार आणि वाढती गरिबी हे परिणाम कमी उत्पन्न असलेल्या कुटुंबांसाठी सर्वात त्रासदायक आहेत, ते मंदीच्या काळात कमाईच्या तोट्याचा सामना करण्यासाठी पर्यायी कमाई नाही. कोणतीही सामाजिक सुरक्षा उपलब्ध नाही. स्थलांतरित कामगारांची संख्या मोठी आहे. स्थलांतराचा प्रभाव स्थलांतरित आणि त्यांच्या कुटुंबांबद्दल गरीब स्थलांतरित कामगार, श्रमिक बाजाराच्या खालच्या टोकापर्यंत गर्दी करतात. त्यांच्याकडे अल्प वैयक्तिक संपत्ती आहे आणि गंतव्य

क्षेत्रामध्ये त्यांना अनेक प्रकारच्या वंचितांचा सामना करावा लागतो. स्रोत क्षेत्रामध्ये, स्थलांतराचे स्थलांतरित आणि त्यांच्या कुटुंबांसाठी नकारात्मक आणि सकारात्मक दोन्ही परिणाम होतात. राहण्याच्या परिस्थिती स्थलांतरित मजूर, मग ते शेती असो वा बिगरशेती असो, ते अत्यंत वाईट परिस्थितीत जगतात. सुरक्षित पिण्याच्या पाण्याची किंवा स्वच्छतेची व्यवस्था नाही. कंत्राटी कामगार कायदा असूनही बहुतेक लोक मोकळ्या जागेत किंवा तात्पुरत्या आश्रयस्थानात राहतात. ज्यात नियोक्त्याने योग्य निवास व्यवस्था केली पाहिजे. हंगामी कामगारांव्यतिरिक्त, नोकरीसाठी शहरांमध्ये स्थलांतर करणारे कामगार उद्याने आणि फुटपाथमध्ये राहतात. झोपडपट्टीतील रहिवासी, जे बहुतेक स्थलांतरित आहेत, ते अपुरे पाणी आणि खराब ड्रेनेजसह दयनीय परिस्थितीत राहतात. तात्पुरती शिधापत्रिका मिळू न शकलेल्या स्थलांतरित कामगारांसाठी अन्नाची किंमत जास्त आहे.

मजूर कठोर परिस्थितीत काम करतात आणि अस्वच्छ परिसरात राहतात. गंभीर व्यावसायिक आरोग्य समस्यांनी ग्रस्त आहेत. खाणी, बांधकाम साइट्स आणि खाणींमध्ये काम करणाऱ्यांना आरोग्याच्या विविध धोक्यांमुळे, मुख्यतः यांना फुफ्फुसांचे आजार असतात. नियोक्ता सुरक्षा उपायांचे पालन करत नसल्यामुळे, अपघात बरेचदा होतात. स्थलांतरित त्यांच्या तात्पुरत्या स्थितीमुळे विविध आरोग्य आणि कौटुंबिक काळजी कार्यक्रमांमध्ये प्रवेश करू शकत नाहीत. मोफत सार्वजनिक आरोग्य सुविधा आणि प्रोग्रामर त्यांच्यासाठी प्रवेश योग्य नाहीत. महिला कामगारांसाठी प्रसूती रजेची कोणतीही तरतूद नाही, त्यांना बाळंतपणानंतर लगेचच कामावर परत जाण्यास भाग पाडले जाते. कामगार, विशेषतः टाइल कारखाने आणि वीटभट्ट्यांवर काम करणारे व्यावसायिक आरोग्य धोक्यात जसे की शरीर दुखणे आणि त्वचेची जळजळ होणे. मुलांच्या समस्या क्रेच सुविधा नसल्यामुळे, मुले अनेकदा त्यांच्या कुटुंबासमवेत कामाच्या ठिकाणी जातात ज्यामुळे आरोग्यास धोका निर्माण होतो. ते शिक्षणापासून देखील वंचित आहेत: घरातील शालेय शिक्षण प्रणाली त्यांच्या स्थलांतरण पद्धतीचा विचार करत नाही आणि गंतव्य क्षेत्रामध्ये त्यांची तात्पुरती स्थिती त्यांना तेथे शालेय शिक्षणासाठी पात्र बनवत नाही. केवळ पुरुषांच्या स्थलांतराच्या बाबतीत, त्याचा परिणाम कौटुंबिक संबंधांवर होतो आणि महिला, मुले आणि वृद्ध मागे राहतात.

भौतिक आणि मानसिक असुरक्षितता, ज्यामुळे मोठ्या कुटुंबासह दबाव आणि वाटाघाटी होतात. हंगामी स्थलांतरित हंगामी किंवा वर्तुळाकार स्थलांतरितांनी करारानुसार एका ठिकाणाहून दुसरीकडे जाण्याची किंवा वर्षानुवर्षे त्याच ठिकाणी परतत राहण्याची शक्यता असते. स्थलांतरितांच्या अशा चक्राकार प्रवाहामध्ये स्थलांतरितांचा समावेश होतो जे एका वेळी सहा महिने किंवा त्याहून अधिक काळ त्यांच्या गंतव्यस्थानी राहू शकतात आणि म्हणून त्यांना त्यांच्या गंतव्यस्थानी सामाजिक सेवांची आवश्यकता असते. विद्वानांनी बऱ्याच काळापासून या स्थलांतराला एखाद्या व्यक्तीचे कायमस्वरूपी निवासस्थान म्हणून ओळखले आहे. लग्नासाठी स्थलांतर करणाऱ्या अनेक स्त्रिया देखील या बाजारपेठेत सहभागी असतात, जरी त्यांचे स्थलांतराचे प्राथमिक कारण लग्न असले तरी स्थलांतर हे झपाट्याने वाढणारे क्षेत्र आहे जे महिलांना रोजगार देते, त्यापैकी बहुतांश ग्रामीण ते शहरी, स्थलांतरित आहेत.

स्थलांतर आणि मानवी समाज: स्थलांतराचा मानवी समाजांवर मोठा परिणाम होत आहे. लोक ज्या समाजातून निघून जातात, त्यांना पाठवणाऱ्या सोसायट्या म्हणतात आणि ज्या समाजात ते स्थायिक होतात, त्यांना स्वीकारणाऱ्या सोसायट्या म्हणतात. हे समाज नेहमीच देश किंवा राष्ट्र नसतात. उदा, लोक ग्रामीण समाजातून, जसे की खेड्यातून, शहरासारख्या, त्याच देशात जाऊ शकतात. या अंतर्गत हालचालींचे परिणाम गावांसाठी तितकेच गंभीर असू शकतात जितके आंतरराष्ट्रीय चळवळी कल्पनेसाठी आहेत. स्थलांतराचे परिणाम आता इतके महत्त्वाचे आहेत की मानवी चळवळीच्या एक शैक्षणिक शिस्त विकसित झाली आहे. अंतर्गत किंवा देशांतर्गत स्थलांतर या संज्ञा राष्ट्रामधील मानवी हालचालींचा संदर्भ घेतात. हे सहसा ग्रामीण भागातून, लहान केंद्रांमध्ये राहण्यासाठी, लहान

केंद्रांपासून मोठ्या शहरांमध्ये, शहरांमधून ग्रामीण भागात जेथे नवीन उद्योग नवीन नोकऱ्या निर्माण करतात. यातील काही अंतर्गत स्थलांतर तात्पुरते आहे कारण शेतकरी त्यांची पिके आणि उत्पादन विकण्यासाठी शहरात जातात आणि नंतर त्यांच्या शेतात आणि लागवडीकडे परत जातात. काही अर्ध-कायमस्वरूपी असतात कारण लोक कामासाठी शहरात जातात आणि त्यांच्या नंतरच परत येतात. भारतातील स्थलांतराचे स्वरूप चार स्थलांतर प्रवाह आहेत. ग्रामीण-ग्रामीण, ग्रामीण-शहरी, शहरी-ग्रामीण आणि शहरी-शहरी. पुढे प्रवाह आंतर-जिल्हा, आंतर-राज्य, असू शकतो. बहुतेक स्थलांतरित राज्यांतर्गत स्थलांतरित होतात हे स्पष्ट आहे, म्हणजे त्याच जिल्ह्यांमध्ये स्थलांतरित होतात किंवा त्याच राज्यातील इतर जिल्ह्यांमध्ये स्थलांतर होतात. भारतातील आंतरराज्यीय स्थलांतर प्रामुख्याने कमी शेती असलेल्या राज्यांमधून होते. पंजाब, हरियाणा आणि पश्चिम उत्तर प्रदेशात कापणीच्या वेळी आणि कृषी कार्यासाठी हंगामी शेतमजूर आवश्यक आहेत. देशभरातील सिंचन प्रकल्प, प्रमुख रस्ते आणि रेल्वे प्रकल्पांमध्ये गुंतलेले बांधकाम कामगार. मध्य प्रदेशातील वीटभट्ट्यांमध्ये ओरिया मजूर, दक्षिण गुजरात आणि इतर किनारी राज्यांमध्ये ऊस तोडणी मजूर, सुरत आणि भिवंडी येथील कापड मजूर यासारखे विशेष कामगार.स्थलांतरित कामगारांच्या स्थितीत एकसमान पॅटर्न नाही कारण ते ठरवणारे व्हेरिबल्स वेगळे असतात.क्षेत्र ते क्षेत्र आणि राज्य ते राज्य.त्यामुळे नियोक्ता आणि कामगार यांच्यात एक ते एक संबंध असल्याचे स्पष्ट कारण आहे आणि कृषी क्षेत्राच्या बाबतीत एक प्रकारची सातत्य आहे. कामाच्या स्वरूपामुळे हे संबंध प्रस्थापित होतात. बांधकाम कामगारांच्या बाबतीत हे दोन्ही घटक अनुपस्थित आहेत. स्थलांतरित कामगाराला मालकाला माहिती नसते किंवा कामाचे स्वरूप आणि ठिकाण आधी माहीत नसते. एकदा प्रकल्प संपला की, कामगार आणि नियोक्ता यांचा करार कमी होतो आणि दोघांनाही नवीन कामाच्या ठिकाणी जावे लागते.

आंतरराज्यीय स्थलांतर: सामाजिक-आर्थिक निर्धारक भारतामध्ये सर्वांगीण विकासांमध्ये देश वेगाने वाटचाल करत असल्याचे सूचित करणारे पुरावे वाढत आहेत. २००१ च्या दशकातील संरचनात्मक परिवर्तनाने अर्थव्यवस्थेच्या वाढीला चालना दिली. दारिद्र्यरेषेखालील लोकांची टक्केवारी कमी झाली आहे आणि प्रति भांडवली वापर एकाच वेळी सुधारला आहे. भारतीय अर्थव्यवस्था प्रामुख्याने कृषीप्रधान असली तरी कृषी कार्यात गुंतलेल्या श्रमशक्तीचे प्रमाण लक्षणीय घटले आहे. ही कपात कदाचित इतर क्षेत्रातील नोकऱ्यांच्या वाढीव संधींचे लक्षण आहे.

भारतातील अंतर्गत स्थलांतराचे प्रकार : कामगार स्थलांतर प्रवाहांमध्ये कायम, अर्ध-स्थायी आणि हंगामी किंवा वर्तुळाकार स्थलांतरितांचा समावेश होतो. उपलब्ध डेटाचा बराचसा कायमस्वरूपी आणि अर्ध-स्थायी श्रेणीतील स्थलांतरितांचा आणि लक्षणीय प्रमाणात कमी मोठ्या प्रमाणात सांख्यिकीय, डेटा, परिपत्रक, स्थलांतरितांच्या संख्येवर आणि वैशिष्ट्यांवर उपलब्ध आहे. अर्ध-स्थायी स्थलांतरित असे आहेत ज्यांना त्यांच्या गंतव्य क्षेत्रांमध्ये अनिश्चित नोकऱ्या असण्याची शक्यता आहे. किंवा कायमस्वरूपी हालचाल करण्यासाठी संसाधनांचा अभाव. ते त्यांच्या गंतव्य शहरांमध्ये वर्षानुवर्षे किंवा दशके राहत असले तरी, त्यांच्या पाठवणार्या जिल्ह्यात त्यांची घरे आणि कुटुंबे असतील. याउलट हंगामी किंवा वर्तुळाकार स्थलांतरित, रोजगाराच्या शोधात एका ठिकाणाहून दुसरीकडे जाण्याची किंवा परत जाण्याची शक्यता असते. वर्षानुवर्षे त्याच ठिकाणी. अशा गोलाकार प्रवाहांमध्ये स्थलांतरितांचा समावेश होतो जे त्यांच्या गंतव्यस्थानी राहू शकतात. एका वेळी सहा महिने किंवा अधिक आणि म्हणून त्यांना त्यांच्या गंतव्यस्थानी सामाजिक सेवांची आवश्यकता आहे. एखाद्या व्यक्तीचे कायमस्वरूपी निवासस्थान असे या स्थलांतराचे वैशिष्ट्य आहे. अनेक महिलांजेलगनासाठी स्थलांतर करतात ते देखील बाजारातील सहभागी असतात, जरी त्यांचे स्थलांतराचे प्राथमिक कारण असले तरी ही लग्न उदाहरणार्थ, झपाट्याने वाढणारे क्षेत्र आहे जे महिलांना रोजगार देते, त्यापैकी बहुतेक ग्रामीण-ते-शहरी, स्थलांतरित.गृहनिर्माण स्थलांतर आणि झोपडपट्ट्या बाहेरून जोडलेल्या आहेत, कारण शहरांमध्ये कामगारांची मागणी आणि परिणामी ग्रामीण ते शहरीस्थलांतरामुळे अधिक

लोकांना सामावून घेण्यासाठी अधिक दबाव निर्माण होतो. २०११ जनगणनेनुसार भारतात ६.५५ कोटी व्यक्ती झोपडपट्टीत राहत होते. तर महाराष्ट्रात झोपडपट्टीत १.१८ कोटी, तर आंध्र प्रदेशात १.०२ कोटी व्यक्ती झोपडपट्टीत राहत होते. रहिवाशांचे अनुभव अचानक बेदखल केल्यामुळे वैशिष्ट्यीकृत आहेत पुरेसे पुनर्वसन न करता आणि स्थानिक सरकार जे शहरी लोकांसाठी कमी किमतीची घरे देत नाहीत गरीबची मूळ समस्या ओळख प्रस्थापित करणे ही आहे.

वैयक्तिक स्थलांतर : हे अनेक कारणामुळे हालचाल करणाऱ्या व्यक्तींच्या सतत हालचालींचा संदर्भ देते. काही वैयक्तिक स्थलांतराचे नियोजन केले आहे. लोक त्यांच्या आयुष्यातील एका विशिष्ट टप्प्यावर स्थलांतर करण्याची योजना आखतात आणि दीर्घ कालावधीसाठी या भेटीसाठी बचत आणि तयारी करतात. काही वैयक्तिक स्थलांतर उत्स्फूर्त आहे: लोक अचानक भेट देण्यासाठी किंवा अंत्यसंस्कार किंवा लग्नाला उपस्थित राहण्यासाठी परदेशात जाण्याचा निर्णय घेतात. या सहली करण्यासाठी ते त्यांच्या बचतीचा वापर करतात किंवा मित्रांकडून कर्ज घेतात. स्थलांतर करणाऱ्या व्यक्तींचे हेतू खूप भिन्न असू शकतात. काही लोक स्थलांतर करतात जेणेकरून ते त्यांच्या कुटुंबासाठी चांगल्या सामाजिक, आर्थिक आणि शैक्षणिक संधी प्रदान करू शकतील. या व्यक्ती दूरच्या शहरांमधून आणि देशांतून त्यांच्या कुटुंबांना आधार देत राहू शकतात. इतर लोक कुटुंबे आणि त्यांच्या अपेक्षांपासून वाचण्यासाठी हलतात. या हालचाली कधीतरी वाद आणि संघर्षानंतर घडतात आणि लोकांना त्यांच्या कुटुंबांशी कमी-अधिक प्रमाणात संबंध तोडण्यास प्रवृत्त करतात आणि कधीही परत येत नाहीत. इतर व्यक्ती वैयक्तिक उद्दिष्टे साध्य करण्यासाठी अल्प कालावधीसाठी जातात, जसे की घर बांधण्यासाठी किंवा व्यवसाय सुरू करण्यासाठी पैसे वाचवणे आणि नंतर घरी परतणे. इतर लोक त्यांच्या कर्जदार समाजात टिकून राहण्यासाठी किंवा त्यांच्या स्वतःच्या समाजात पाळण्यास असमर्थ असलेल्या जीवनशैलीचे अनुसरण करण्यासाठी पुढे जातात.

स्थलांतराची संज्ञा: विविध प्रकारच्या स्थलांतराचे परिणाम भिन्न आहेत, विविध प्रकारच्या स्थलांतरांमध्ये फरक करण्यासाठी विशेष अटी आवश्यक आहेत. जे स्थलांतराचा अभ्यास करतात त्यांनी स्थलांतराचे विविध प्रकार आणि परिणामांचा संदर्भ देण्यासाठी संज्ञांचा संच तयार केला आहे. जेथे लोक त्यांच्या घरी परतण्यापूर्वी तीन महिने ते तीन वर्षे दुसऱ्या ठिकाणी घालवतात. या प्रकारच्या स्थलांतराचे ते ज्या समुदायातून निघून जातात आणि ज्या समाजात ते स्थायिक होतात त्या दोन्हीमध्ये अधिक लक्षणीय परिणाम करतात. अल्पकालीन स्थलांतरितांच्या कुटुंबांना अधिक पैसे मिळू शकतात परंतु ते पालक नसलेले किंवा कुटुंबासाठी महत्त्वपूर्ण सामाजिक आणि आर्थिक कर्तव्य अशाप्रकारे, मागे असलेले मूल त्यांच्या आयुष्यातील महत्त्वाच्या भागात पालकांशिवाय स्वतःला शोधू शकते. कुटुंबासाठी अल्पकालीन स्थलांतराचे फायदे काही खर्चाद्वारे ऑफसेट केले जाऊ शकतात. अल्प-मुदतीच्या स्थलांतरामुळे त्यांची परिस्थिती दीर्घकालीन सुधारेल की नाही हे ठरवण्यासाठी कुटुंबांनी खर्च आणि फायदे मोजले जाणे आवश्यक आहे. पाठवणाऱ्या समाजासाठी दीर्घकालीन स्थलांतराचा परिणाम अधिक गंभीर आहे जेथे मोठ्या संख्येने लोक दीर्घ मुदतीसाठी निघून जातात. देणगीदार समुदाय त्यांचे श्रम आणि कौशल्ये मानवी किंवा "सामाजिक भांडवल", स्थलांतरितांनी उत्पादित केलेले उत्पन्न, स्थलांतरितांनी उत्पादित केलेले अन्न, वस्तू आणि सेवा आणि त्यांचे कुटुंब आणि समुदायासाठी त्यांचे सामाजिक आणि धार्मिक योगदान गमावतात.

निष्कर्ष: भारतातील अंतर्गत स्थलांतर प्रवाहाची तीव्रता आणि विविधता तसेच त्यांच्याशी संबंधित संकटे प्रचंड आहेत. या जटिल घटनेचे मूलभूत गावलोकन हे स्पष्ट करते की अफाट असूनही भारताच्या अर्थव्यवस्थेत स्थलांतरितांचे योगदान त्यांना उपलब्ध सामाजिक संरक्षण अजूनही परिपूर्ण नाही. वरील चर्चेवरून असा निष्कर्ष

काढता येईल की, देशातील लोकसंख्येची गतिशीलता जी १९९१ पर्यंत होती ती नवीन आर्थिक धोरणाने वाढले आहे. देशाची अर्थव्यवस्था शेतीवर आधारित आहे. तरीही स्थलांतर प्रक्रियेत ग्रामीण ते शहरी प्रवाहाचे वर्चस्व आहे.

संदर्भ

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जागतिक हवामान बदलाचा पेशवेकालीन वाडे या वास्तूवर होणारे परिणाम

भिमा दिगंबर शिंदे

संशोधक विद्यार्थी
चिस्तिया कला, वाणिज्य आणि विज्ञान
महाविद्यालय खुल्दाबाद,
महाविद्यालय खुल्दाबाद

प्रा. डॉ. हरी नारायण जमाले

मार्गदर्शक
(इतिहास विभाग)
चिस्तिया कला, वाणिज्य आणि विज्ञान

प्रस्तावना :-

जागतिक स्तरावरील हवामानाच्या रचनेत सातत्याने होणाऱ्या बदलास हवामान बदल असे म्हणतात. आज जागतिक हवामानात दिवसेंदिवस खूप मोठ्या प्रमाणावर बदल होत आहे. यास ग्लोबल वॉर्मिंग कारणीभूत आहे. आज मानवाच्या गरजा ह्या न संपणाऱ्या आहेत. त्या सातत्याने वाढणाऱ्या आहेत. आज सातत्याने औद्योगीकरण मोठ्या प्रमाणात होत आहे. यासाठी प्रचंड ऊर्जेची गरज आहे. परंतु यातून नैसर्गिक पर्यावरणाची खूप मोठ्या प्रमाणात प्रचंड हानी होत आहे. ग्रीन हाऊस गॅसेस यामध्ये कार्बन डाय-ऑक्साइड, मिथेन, नायट्रस ऑक्साईड, क्लोरोफ्लोरोकार्बन्स या वायूंचे प्रमाण खूप मोठ्या प्रमाणात वाढलेले आहेत. यातून पृथ्वीचे तापमान सातत्याने वाढत जाऊन पृथ्वीवरील क्रम जीव सृष्टीच्या प्रजाती नष्ट होण्याच्या मार्गावर आहे. वातावरणाच्या बदलाच्या परिणामामुळे सर्वात मोठा प्रभाव हा शेती क्षेत्रावर पडणार आहे. जागतिक तापमान वाढ व प्रदूषणामुळे शेती क्षेत्रातील अन्नधान्याची उत्पादनात घट होण्याची शक्यता आहे. म्हणजेच जमिनीची उत्पादक क्षमता कमी होणार आहे. ऋतुमानात होणारे बदल, दुष्काळ यासाठी येणाऱ्या काळात मानवास नियमितपणे सामोरे जावे लागणार आहेत. तसेच सूर्यापासून पृथ्वीकडे येणारी अतिनील किरणे ओझोन मुळे अडवली जातात. या ओझोन थराला खूप मोठ्या प्रमाणात छिद्रे पडल्यामुळे ही सूर्यापासून निघणारी अतिनील किरणे थेट जमिनीवर पोहचत आहे. यातून येणाऱ्या काळात खूप मोठ्या प्रमाणात बदल होणार आहे. हवामान बदलामुळे बांधकाम साहित्याचा टिकाऊपणा कमी होतो. वादळे, जोरदार पाऊस, अति तापमान वाढ, प्रदूषण, विषारी वायूंचे हवेतील जास्त प्रमाण यातून वाडे व इतर ऐतिहासिक वास्तूंमध्ये कमकुवतपणा, ढिसूळपणा निर्माण होतो.

▪ महत्त्वाचे शब्द : वाडे , वास्तू,

▪ उद्देश :

- ✓ जागतिक हवामान बदलांचा किल्ले, वाडे, मंदिरे व इतर वास्तूवर परिणाम अभ्यासणे.
- ✓ जागतिक हवामान बदलांचा परिणाम या वास्तूवर होत असल्यामुळे काय उपाययोजना करता येईल हे अभ्यासणे.
- ✓ पेशवेकालीन वाडे या वास्तूचे संवर्धन करणे.
 - गृहीतके :
 - ✓ आजही पेशवेकालीन किल्ले, वाडे, गडी या वास्तू आजही सुस्थितीमध्ये टिकून आहेत.
 - ✓ पेशवेकालीन या वास्तूंचे येणाऱ्या पिढीसाठी जतन व संवर्धन करणे काळाची गरज आहे.
 - ✓ जागतिक तापमान वाढ, हवामान बदल, प्रदूषण यामुळे पेशवेकालीन वाडे या वास्तूंचे आयुष्यमान कमी कमी होत आहे.

• **संशोधन पद्धती :-**

विक्षेपणात्मक प्रत्यक्ष क्षेत्रभेट, वारसदारांच्या मुलाखती व विक्षेपात्मक संशोधन पद्धतीचा वापर संशोधन लेखात करण्यात आला आहे.

१. पेशवेकालीन वाडे

पूर्व पेशवाई व उत्तर पेशवाईत बांधलेल्या वास्तू आजही आपणास सुस्थितीमध्ये पाहण्यास मिळतात. त्या स्थापत्य कलेचा उत्तम नमुना म्हणून त्यांच्याकडे पाहिले जाते. या वास्तूमध्ये प्रामुख्याने किल्ले, गढी, वाडे, मंदिरे, इमारती यांचा समावेश होतो. या वास्तूमध्ये नक्षीकाम, कोरीव काम कमी प्रमाणात असून या वास्तूंच्या भक्कम पणावर व टिकाऊ पणावर मोठ्या प्रमाणात भर दिलेला आहे. पेशवेकालीन वाडे म्हणजे मोठ्या सरदारांचे किल्ले वजा घर. परंतु किल्ला इतके ते मजबूत किंवा भक्कम नसत. या वाड्यांच्या चारही बाजूंनी भक्कम अशी तटबंदी आपणास आजही पाहावयास मिळते.

आज अनेक भागात वाडे विखुरलेल्या स्वरूपात आपणास पाहावयास मिळतात. यामध्ये भोरवाडा, वाईचा फडणीसवाडा, कोपरगावचा राघोबा दादांचा वाडा, वाईचा फडणवीसवाडा, विश्राम बागवाडा, पळशीकरांचा वाडा, शनिवार वाडा, बापट वाडा, मेणवली वाडा, कायगाव टोके येथील वाडा, श्रीगोंदा, पंढरपुर येथील वाडा.

पेशवाईच्या उत्तरार्धातील दुसऱ्या बाजीरावाच्या कारकिर्दीत अशी बरीच सरदार मंडळी होऊन गेली. त्यांनी स्वतःच्या कार्यकर्तृत्वावर दुसऱ्या बाजीरावाच्या विश्वास संपादन केला. यामध्ये अहमदनगर जिल्ह्यातील राहता तालुक्यात परशुराम खंडेराव राहतेकर यांनी स्वतः खूप मोठा वाडा बांधला होता. आजही या वाड्याचे दोन बुरुज व वाडा सुस्थितीमध्ये पाहावयास मिळतो. हा वाडा राहतेकरांचा वाडा म्हणून प्रसिद्ध आहे.

अहमदनगर जिल्ह्यातील संगमनेर तालुक्यातील निमगाव जाळी या ठिकाणी दुसऱ्या बाजीरावाचा अत्यंत विश्वासू सरदार त्रिंबकजी डेंगळे यांचा वाडा आजही सुस्थितीमध्ये पाहावयास मिळतो. या ठिकाणी सरदार त्रिंबकजी डेंगळे यांचे वारस आजही या वाड्यात राहतात. या वाड्याला चारही बाजूंनी भक्कम अशी दगडी तडबंदी आहे.

बाळूजी कुंजीर यांचा वाघापूर या ठिकाण सुद्धा वाडा आपणास पाहावयास मिळतो. आज या वास्तू आपणास सुस्थितीमध्ये पाहावयास मिळतात परंतु जागतिक हवामान बदल प्रदूषण तापमान वाढ अतिप्रजन्य या सर्वांचे आघात या वास्तूवर पडत असतात यातून या वास्तूंचे आयुर्मान कमी होत आहे.

२. पेशवेकालीन वाड्यांची वैशिष्ट्ये

मराठी काळात वाडे दगड व विटांनी बांधलेली आहेत. कच्च्या व पक्क्या अशा दोन्ही प्रकारच्या विटांचा वापर होत असे. विटांच्या जोडीला लाकडी खांब, तुळ्या, पाट यांचा वापर केला जात. मोठ्या गावातील वाड्यात संबंध तळमजला दगडी बांधणीचा असे. त्यावरचे बांधकाम लाकूड विटा मातीचे असे वाड्यांच्या भिंतींना चुन्याचे प्लास्टर केलेले असे. वाड्यांच्या भिंती तीन फुट किंवा त्यापेक्षाही जाड असून खिडक्या आकाराने व संख्येने कमी असे वाड्याचा मुख्य दरवाजा हा भक्कम अशा सागवानी लाकडांचा बनवला जाई. वाड्यामध्ये सजावटीसाठी चित्रकाम रंगकाम करण्यात येत असत.

३. पेशवेकालीन मंदिरे

पेशव्यांचे सर्वात मोठे श्रद्धास्थान हे गणपती असल्यामुळे पेशवे काळात मोठ्या प्रमाणात गणपतीचे मंदिरे बांधण्यात आली होती. यात प्रामुख्याने पुण्यातील आंकारेश्वर मंदिर हे पेशवे काळातील सर्वात जुने मंदिर आहे. श्रावण सोमवारी या मंदिरामध्ये भाविकांची खूप मोठ्या प्रमाणात गर्दी होते. या मंदिराला नऊ कळस आहे. ठाणे जिल्ह्यातील भिवंडी तालुक्यातील श्री वज्रेश्वरी मातेचे मंदिर चिमाजी आप्पांनी बांधले.

४. पेशवेकालीन वाड्यांची वैशिष्ट्ये

श्री सिद्धिविनायक मंदिर अणजुर, शनिवारवाड्याच्या शेजारील गणेश मंदिर, पुण्यातील अमृतेश्वर मंदिर, पार्वतीचे देवदेवेश्वर मंदिर, रामेश्वर मंदिर तुळशीबाग मधील राम मंदिर ही मंदिरे वैशिष्ट्यपूर्ण आहेत. तसेच अहमदनगर जिल्ह्यातील नेवासे तालुक्याच्या शेजारी कायगाव टोके या ठिकाणी सिद्धेश्वराचे मंदिर हे स्थापत्यशैलीचा उत्तम नमुना आहे. याच ठिकाणी पेशवांनी उत्कृष्ट अशा घाटाची बांधणी केलेली आहे. आजही हा घाट मजबूत स्थितीमध्ये आहे. दुसरे बाजीराव यांचे विश्वासू सरदार परशुराम खंडेराव राहतेकर यांनी राहता या त्यांच्या गावी मुरली मनोहर या श्रीकृष्णाच्या सुंदर मंदिराचे बांधकाम केलेले आहे. मंदिराच्या सभोवताली लाकडी सभामंडप असून तो सागवानी लाकडांचा आजही तो सभामंडप त्या मंदिराच्या सभोवताली पाहावयास मिळतो.

■ सारांश

जागतिक हवामान बदलांचा पेशवे काळातील वाडे, गढी, किल्ले, इमारती, मंदिरे यावर खूप मोठ्या प्रमाणावर बदल होत असतात. आज जागतिक तापमान वाढ, पर्जन्य, वादळ, प्रदूषण याचे परिणाम या वस्तूवर होत असतात. यातून येणाऱ्या पिढीसाठी या वास्तूंचे संगोपन व संवर्धन करणे ही काळाची गरज आहे. यासाठी जागतिक तापमान प्रदूषण कमी करण्यासाठी मोठ्या प्रमाणात वृक्ष लागवड, सौर ऊर्जाचा वापर, औद्योगीकरणातून प्रदूषण कमी होण्यासाठी विविध उपाय योजना करून त्याच ठिकाणी उद्योगधंद्यामधून निघणारे विषारी वायू कसे नष्ट करता येतील यासाठी प्रयत्न करणे आवश्यक आहे. समाजात जागतिक हवामान बदल याविषयी जागरूकता घडून आणणे ही काळाची गरज आहे.

■ निष्कर्ष व उपाय

- ✓ हवामान बदलामुळे पेशवेकालीन वाडे, किल्ले गढी, मंदिरे या वास्तूंची मोठ्या प्रमाणात झीज होत आहे.
- ✓ जागतिक तापमान वाढ, प्रदूषण, अतिपर्जन्य याचे आघात या पेशवेकालीन वास्तूवर होत असल्यामुळे त्या नष्ट होण्याच्या मार्गावर आहे.
- ✓ औद्योगीकरण, वृक्षतोड, तापमान वाढ, प्रदूषण थांबवली तरच या वास्तू पुढील पिढ्यासाठी जतन करून ठेवता येतील.
- ✓ विकासाकडे झेप घेत असताना या वास्तूंचे संगोपन व संवर्धन करणे अत्यावश्यक आहे.
- ✓ विकास कामे करताना ऐतिहासिक वस्तूंचे पुस्त्यापन करावे.

■ संदर्भ

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साहित्यात पर्यावरणीय जणीव

भोगे ज्योती नामदेव

डॉ. व्ही. डी. सपकाळ

विभाग-मराठी

श्री ज्ञानेश्वर महाविद्यालय, नेवासा

गोषवारा – पर्यावरण हा विषय आज जागतिक स्तरावर ऐरणीवर आलेला विषय आहे. मानवी जीवनच नव्हे तर संपूर्ण जग आणि समग्र जीवसृष्टी पर्यावरणातील विघातक बदलामुळे हादरून गेली आहेत. शास्त्रज्ञ, पर्यावरणप्रेमी हे आपापल्यापरीने या जाणीवजागृतीसाठी प्रयत्नरत आहेत. अशावेळी साहित्यानेही आपली भूमिका पार पाडली पाहिजे आणि भरीव योगदान दिले पाहिजे.

मध्ययुगीन साहित्यात पर्यावरणीय जाणीव स्पष्टपणे दिसते. त्यानंतरच्या साहित्यात निसर्गवर्णन असले तरी ही जाणीव धूसर होताना दिसते. अलीकडे मात्र मारुती चित्तमपली प्रभृतींनी ही जाणीव आपल्या वाङ्मयातून विकसित केली आणि 'पर्यावरणीय साहित्य' आता बहरू लागले आहे. स्वतंत्र वाङ्मयीन प्रवाहाचे स्वरूप त्याला येत आहे. त्यामुळं त्याची दखलही इथे घेण्याचा प्रयत्न आहे.

हा पहिलाच प्रयत्न असल्यामुळे तो परिपूर्ण नाही, हे स्पष्टच आहे. जाणकारांचे लक्ष वेधणे आणि त्यांना प्रेरित करणे हा मूळ उद्देश या संशोधनामागे आहे.

शब्दसूची – नैसर्गिक, साहित्य, स्फूर्ती, बुद्धी, वाङ्मय, स्वरूप, शास्त्रज्ञ, वाङ्मय

प्रस्तावना-मानवी जीवनाच्या जडणघडणीत सामाजिक वातावरणाबरोबर नैसर्गिक वातावरणाचाही प्रभाव पडत असतो समाजात सतत विविध घडामोडी घडत असतात, बदल होत असतात आणि मानवी जीवनावर त्याचा प्रभाव पडत असतो. ह्या सर्व घडामोडींचे चित्रण निश्चितच साहित्यातून उमटत असते. समाज हा सभोवतालच्या निसर्गांनी व्यापलेला आहे.

समाजाचा सर्वांगीन विकास पर्यावरणावर अवलंबून असतो आणि या समाजातूनच मानवनिर्मित पर्यावरण आकाराला येते. साहित्य, समाज व संस्कृती यांचा पर्यावरणाशी घनिष्ठ संबंध येत असल्यामुळे मानवी जीवनावर निसर्गातील बदलणाऱ्या वातावरणाचा कळत न कळत प्रभाव पडत असतो. त्या-त्या भौगोलिक प्रदेशानुसार वातावरणाशी निगडित मानवाची बोली-भाषा, त्यांचे रंग-वर्ण, उंची, राहणीमान, संस्कृती, व्यवसाय त्यांची विचारपद्धती इत्यादी आकाराला येत असतात.

उद्दिष्ट्ये-

- १) पर्यावरणात साहित्याचे महत्त्व स्पष्ट करणे.
- २) साहित्यातून पर्यावरण जाणीव जागृती करणे.
- ३) साहित्य आणि पर्यावरण' या दोन ज्ञानशाखांचा परस्परसंबंधांचा शोध घेणे.

निसर्गाचे संरक्षण, संवर्धन करणे, पर्यावरणाचा समतोल राखणे हे सर्वस्वी मानवावर अवलंबून आहे. हे फादर दिब्रिटो पटवून सांगतात. साहित्यातही ह्या चर्चा होत असतात. प्रत्येक कालखंडातील साहित्यकृतीत समाजाचे व संस्कृतीचे विशेष प्रकट होत असतात. जसे अगदी 16 व्या शतकातच संत तुकारामांनी मानवी जीवनात पर्यावरणाचे असलेले महत्त्व स्पष्ट केले आहे. व वृक्षसंवर्धनाचा सल्लाही दिला आहे.

वृक्ष वल्ली आम्हां सोयरीं वनचरें ।

पक्षी ही सुस्वरें आळविती ॥

येणें सुखें रुचे एकांताचा वास ।

नाही गुण दोष अंगा येत॥

आकाश मंडप पृथुवी आसन ।

रमे तेथें मन क्रीडा करी ॥

कंथाकुमंडलु देहउपचारा ।

जाणवितो वारा अवसरु ॥

हरिकथा भोजन परवडी विस्तार ।

करोनि प्रकार सेवूं रुची ॥

तुका म्हणे होय मनासी संवाद ।

आपुला चि वाद आपणांसी॥

संत तुकाराम महाराज चित शुद्धीसाठी निसर्गाच्या सानिध्यात जातात निसर्गाशी एकरूप होऊन अंतर्मुख पावतात. जीवनातील सुख-दुःख, मानसिक ताण-तणाव निसर्गातील पवित्र रम्य वातावरणाने मनुष्य दूर करू पकतो. एक प्रकारचा निसर्ग हा अनादिकाळापासून मानवाचा सखाच आहे. हे संतांनी सुद्धा मान्य केले आहे.

मराठी साहित्यात सामाजिक परिस्थितीचे चित्रण करतांना अनेक कथा-कादंब-यात व वैचारिक ग्रंथात

पर्यावरणाच्या अनुकूल व प्रतिकूल परिणामाचे वर्णन आलेले आहे. संताप्रमाणेच थोर समाजसुधारक, शेतक-याचे तारणहार महात्मा फुले यांनी सुद्धा पर्यावरणाच्या प्रतिकूल परिस्थितीचे मानवी जीवनावर होणारे परिणाम त्यांच्या 'शेतकऱ्याचे आसूड' या ग्रंथात स्पष्ट केले आहे. दुष्काळामुळे शेतकऱ्याची जी दयनिय अवस्था होत असते त्याचे अत्यंत भेदक वर्णन म. फुलेंनी केलेले आहे. दुष्काळामुळे हवालदील झालेला शेतकरी कसा कर्जबाजारी होतो. ही वास्तविकता त्या ग्रंथाद्वारे लक्षात येते, यासंबंधी महात्मा फुले लिहीतात, "मुळात चारापाण्यावाचून लक्षावधी बैलांचा सरसकटीने खप होऊन त्याचे वाटोळे झाले. दुसरे असे की, शेतकऱ्याजवळ उरलेल्या खल्लड बैलास फॉरेस्ट खात्याच्या अनिवार त्रासामुळे व गायरानाच्या कमतरतेमुळे पोटभर चारा-वैरण मिळेनाषी होऊन त्यांची संतती दिवसेंदिवस होत चालल्या रोगाने दरवर्षी शेतकऱ्यांचे गोठ्यातील दावणीचे खुंटे उपटले जातात. "5

परंतु फुले हे चित्रण करून थांबत नाही तर शेतक-यांसाठी व शेतीसाठी निसर्गाच्या सहय्याने, पर्यावरणातील नैसर्गिक साधन-संपत्तीचा संचय करून मानवी विकास, शेती व्यवसाय कसा योग्य रीतीने करता येईल याबद्दल अनेक उपाययोजना शेतकर्यांना पर्यावरणीय संकटाचे निवारण कसे करता येईल याची कारणमीमांसा त्यांनी केली.

पर्यावरणातील दुष्काळजन्य स्थिती शेतक-यांचे जीवन जगणे कसे कठीण करते व त्यांच्या गुरा-ढोरासहीत समग्र जीवनाला विस्कळीत करते. हे फुलेंनी अतंत्य तळमळीने त्यांच्या ग्रंथात लिहीले आहे. शेतकर्यांची अवनती सर्वप्रथम म.फुलेंनी अनुभवली. महाराष्ट्रातील दुष्काळ स्थिती गतीचे वर्णन हरि नारायण आपटे यांनी ही काळ तर मोठा कठीण आला (1898) या कथा संग्रहात केले आहे. निसर्गाच्या कोपामुळे तत्कालीन शेतकरी दुष्काळ परिस्थितीचा कसा सामना करतो. पाऊसा अभावी मानवी जीवन कसे प्रभावीत होते. याची वास्तविकता हरिभाऊनी पटवून दिली.

महाराष्ट्रातील शेतकरी संपूर्णतः शेतीवर अवलंबून असतो आणि शेती निसर्गावर काही-काही दुर्गम भागात निसर्गाच्या वाईट परिस्थितीचाच सामना शेतक-यांना करावा लागतो. कृष्णराव भालेराव यांच्या 'बळीबा पाटील' (1888) या कादंबरीतून त्यांनी दुष्काळग्रस्त शेतक-यांची अतंत्य भेदक परिस्थितीची वास्तविकता चित्रीत केली आहे. दुष्काळ पर्यावरणाचा एक भाग आहे. त्यामुळे मानवाच्या संपूर्ण जगण्यावर त्यांचा गंभीर परिणाम होतो. पावसाअभावी सर्वसामान्य जनजीवन, सामाजिक, आर्थिक स्थिती विस्कळीत होते. हे अगदी खरे आहे. परंतु या संकटातून वाचण्याचा मार्ग शासनाने व मानवाने काढायला पाहिजे हे विचार प्रकर्षाने मराठी साहित्यातून व्यक्त होते.

शेतकरी हा ग्रामीण जीवनाचा अविभाज्य अंग असल्यामुळे शेतक-यांचा विचार करतांना त्यांच्या भोवतालच्या वातावरणाचा त्यांच्या जीवनाशी सुसंगत असलेल्या घटकांचा विचार प्रामुख्याने करावा लागणार आहे. शेतक-यांच्या जीवनात पर्यावरणामुळे वाईट प्रसंग येतात तसेच काही आनंददाही प्रसंग येतात. ना.धो. महानोरांच्या 'रानातील कविता' मध्ये रानाचे सौंदर्य, निसर्गाचे वेगळेपण, रान आणि शेतकरी यांचे अखंड नाते व्यक्त केले आहे. डॉ. रविन्द्र ठाकूर लिहितात त्याप्रमाणे, "महानोरांच्या कवितेत शहरी ताण प्रथमच कमी झालेला दिसतो हे रान शेतक-यांचे आहे. त्यांच्या कवितेत घेत व शेतकरी दोघेही बीजारोपण, अंकुरसंवर्धन करतात व या निर्मितीचक्रात रानात राबणाऱ्या माणसाच्या जीवनाचा एक भाग बनलेला आहे. रानाची व मानसाची निर्मिती पक्ती, सर्जनयक्ती एकमेकांशी बांधलेली आहे. या जाणिवेतूनच महानोरांची कविता जन्म घेते."

घेते.

या नभाने या भुईला दान द्यावे

आणि या मातीतून चैतन्य गावे

कोणती पुण्ये अशी येती फळाला

जोधळ्याला चांदणे लगडून जावे

या नभाने या भुईला दान द्यावे

आणि माझ्या पापणीला पूर द्यावे

पाहता सुगंध कांती सांडलेली

पाखरांशी खेळ मी मांडून गावे

गुंतलेले प्राण या रानात माझे

फाटकी ही झोपडी काळीज माझे

मी असा आनंदून बेहोष होता

शब्दगंधे तू मला वाहून घ्यावे

ग्रामजीवनाचा ठाव घेण्यापेक्षा ही कविता नागर अभिरुचीता सुखावणाऱ्या रोमँटीक भाषाविलासाकडेच अधिक झुकली. त्यामुळे महानोरांच्या रानातल्या कविता रान, निसर्ग, सौंदर्य, प्रेम व प्रणयभावना इ. भाव व्यक्त करून साहित्यातून आपले वेगळेपण जपते. पर्यावरण खऱ्या अर्थाने ग्रामीण भागात जीवत आहे. ग्रामीण भागातील साध्या भोळ्या मानसानीच निसर्गावर खरे प्रेम केले आहे. निसर्गावर संपुर्णतः अवलंबून असणारे ग्रामीण क्षेत्रातील माणसांना कधी कधी पर्यावरणाच्या भीषण परिस्थितीचा ही सामना करावा लागतो याचे दर्शन मराठी साहित्यातून घडते. वन्यप्रेमी प्रसिद्ध कादंबरीकर व्यंकटेश माडगुळकर व पक्षीतज्ञ मारुती चित्तमपल्ली यांनी मानवी जीवनात पर्यावरणाचे महत्त्व तसेच मानव व निसर्ग यांचे दृढ नाते अधोरेखित करून, मराठी साहित्याला वैज्ञानिक दृष्टीकोन देऊन साहित्याचे दालन समृद्ध केले आहे.

पर्यावरण कशाप्रकारे मानवी जीवनात सौंदर्य करून समृद्धता घेऊन येतो, तर कधी विपरीत स्थितीचाही दाखला देतो. व्यंकटेश माडगुळकर यांनी ग्रामीण भागातील साधे-भोळे माणसं त्यांची भौगोलिक परिस्थिती, सामाजिक व्यवस्था, तिथल्या रूढी-परंपरा, व्यवसाय त्यांच्या बनगरवाडी' या कादंबरीद्वारे प्रत्ययास येते. 'बनगरवाडी या गावातील भौगोलिक प्रदेशाची हुबेहुब वातावरण निर्मिती माडगुळकरांनी त्यांच्या शब्दात वर्णन केल्यामुळे अजूनही वाचकांच्या मनात 'बनगरवाडी' घर करून आहे. माणदेषी माणस ह्या पुस्तकांत माडगुळकरांनी अनेक व्यक्तीरेखाद्वारे तिथल्या भौगोलिक प्रदेशाची व त्या खानदेशातील माणसाना पर्यावरणाच्या संकटामुळे करावा लागणारा संघर्ष अतंत्य वेधकपणे चित्रित केलेला आहे. ग्रामीण भागात राहणाऱ्या माणसाचे बावळे, अशिक्षित असूनही निसर्गाचे असणारे ज्ञान, त्यांची भाषाशैली, रूढी-परंपरा, त्यांची संस्कृती इ. चे दर्शन तर घडते परंतु निसर्गाच्या सानिध्यात राहणा-या ह्या साध्या माणसात जो जीव्हाळा, प्रेम आहे, ती दगडासारखी आहेत. तरी हे भांडवली कारणामुळे बदलणाऱ्या पहरातील माणसात बघायला मिळत नाही

निसर्गप्रेमी, वनअभ्यासक व पक्षीतज्ञ मारुती चित्तमपल्ली यांनी सुद्धा मराठी साहित्याद्वारे पर्यावरणाचे खरे महत्त्व पटवून दिले आहे. चित्तमपल्ली यांनी आयुष्यात तब्बल 40 वर्ष महाराष्ट्रातील, विदर्भातील राना-वणामध्ये घालविले आहे. त्यांनी जंगल आणि निसर्ग अगदी जवळून पाहिले. जंगलातील वास्तव्यातून त्यांनी वृक्षवल्ली, वन्यप्राणी, पशुपक्षी, त्यांच्या प्रजाती यांचे अती पुष्कमाती युक्त निरीक्षण करून त्यांनी मराठीत अनुभवसिद्ध ग्रंथसंपदा लिहून साहित्यात मोलाची भर घातली आहे. मारुती चित्तमपल्ली यांनी, घरट्यापलीकडे (1995), पक्षी जाय दिगंतरा (1983), रातवा (1993), रानवाटा (1991), चैत्रपालवी (2004), जंगलाची दुनिया (2002) इत्यादी ग्रंथसंपदाद्वारे पर्यावरणातील बदलत्या ऋतूंचे, घनदाट वनराईचे रम्य वर्णन, ऋतूमानाप्रमाणे बदलणाऱ्या पशु -पक्ष्यांचे जीवन, जंगलातील फुला-पानाचे सौंदर्य, वृक्षवल्लीचे रम्य देखावे, पक्ष्यांची गुंजारव, वातावरणातील बदलांचे, मानवासहित निसर्गातील विविध घटकावर होणारे परिणाम अत्यंत हुबेहुब शब्दात चित्तमपल्ली यांनी चित्रित केले आहे जणुकाही निसर्गाचा सुंदर, मनोहारी देखावाचा डोळ्यासमोर तरळतो. याबद्दल चित्तमपल्ली लिहीतात, तब्बल चार दशकांचा काळ

मी जंगलात घालवला त्यामुळे स्वाभाविकपणे निसर्गाच्या इतक्या निकटतम सानिध्यात वातावरणातील बदलाचे, निसर्गातील विविध घटकावर होणारे परिणाम अतंत्य जवळून अनुभवले. या अवलोकातून अनेक आश्चर्यकारक गोष्टी उमगल्या, जंगलातील मुक्कामात असंख्य वन्यजीव, पक्ष्यांच्या, प्रजातीचे मी बारकाईने निरीक्षण केले, कोकणच्या समुद्रकिनार्यावरील समुद्री पक्षी तसेच समुद्री जीवांच्या हालचालीचाही अभ्यास केला. त्यातूनही पावसाळ्यापूर्वीचे सृष्टीतील असंख्य आश्चर्यजनक बदल टिपता आले. मारुती चितमपल्ली यांची ग्रंथसंपदा म्हणजे साहित्याद्वारे केलेली निसर्गाची पुजा आहे. संघोधन आहे, अभ्यास आहे व निसर्गाचे विज्ञान आहे. निसर्गाचे विविधांगी मनोवरी वर्णन करणारा चितमपल्ली सारखा ललित लेखक मराठी साहित्यात दुसरा नाही. त्यांनी मेळघाट व्याघ्रप्रकल्प, नागझिरा अभयारण्य, नवेगांव राष्ट्रीय उद्यान, कर्नाळापक्षी अभयारण्य ईत्यादींच्या विकासात त्यांचे संपूर्णतः योगदान राहिले आहे. चितमपल्ली यांनी निसर्गाचा मनसोक्त आस्वाद घेऊन पर्यावरणाचे खरे योगदान, नराठी साहित्यात नोंदविले आहे.

एकूणच मराठी साहित्यात पर्यावरणाचे स्थान अनादीकाळापासून अबाधित आहे. मग ते मानवाच्या सामाजिक जीवनात असो की, सांस्कृतिक जीवनात असो. मानवाच्या संस्कृतीलाही पर्यावरणाचे संदर्भ आहेत. संस्कृती ही मानवाद्वारेच निर्माण होत असते. भोवतालच्या भौगोलिक परिसरानुसार एक विचारपद्धती जन्माला येते. आणि यातूनच सांस्कृतिक जिवनपैलीचा उदय होतो. पर्यावरणाचा जसा सामाजिक जीवनावर परिणाम होतो, तसा सांस्कृतिक जीवनावरही प्रभाव पडतो. मराठी साहित्यात प्रादेशिक, ग्रामीण, दलित-आदिवासी समाजाच्या सांस्कृतिक जडणघडणीत पर्यावरणाचा मोठा वाटा आहे. भौगोलिक प्रदेशानुसार पर्यावरणातील जीवनातही विविधता आढळून येते. याचे प्रत्यक्ष दर्शन मराठी साहित्यातून घडते मानवी विकास बऱ्याच अंशी निसर्गावरच कसा अवलंबून असते हे स्पष्ट करतांना डॉ. विठ्ठल घारपूर म्हणतात, "मानवी विकासावर नैसर्गिक पर्यावरणाचा केवळ परिणामच होतो असे न मानता मानवी विकासामध्ये कार्यरत असलेल्या मानवाची ईच्छा व स्फूर्ती सुद्धा निसर्गावर अवलंबून असते. अगदी टोकाची भूमिका म्हणजे मानव हा निसर्गाचाच अविभाज्य भाग असून इतर प्राणी मात्राप्रमाणेच त्याच्या सर्व हालचाली नैसर्गिक घटकानुसार होत असतात ?

अर्थात प्रत्येक मानवी घटना ही निसर्गामुळे बदलते. सतत बदलणाऱ्या निसर्गचक्रानुसार मानवाचे जीवन प्रवाहीत होत असते. तसेतसे मन-बुद्धी, विचार या मनुष्याच्या मुळ वृत्ती-प्रवृत्तीत फरक पडतो, तसेच मानवी प्रगती किंवा अधोगती, सुख-दुःख इत्यादींवर या पर्यावरणाचा प्रभाव पडत असतो. एकंदरच मानवी विकास-अविकास निसर्गाशी , पर्यावरणाशी संबंधीत आहे आणि म्हणून साहित्य याला अपवाद नाही.

पर्यावरणशास्त्रात निसर्ग आणि मानव या गोष्टी घटकांचा अभ्यास केला जातो. निसर्ग आणि मानव हे परस्पर एक दुसऱ्यावर अवलंबून आहेत. नैसर्गिक पर्यावरणातूनच मानवी संस्कृती आकाराला येत असते अर्थातच मानव निसर्गाशी जुळलेला असल्यामुळे सहाजिकच साहित्यातून नैसर्गिक पर्यावरणाचे प्रतिबिंब उमटत असते. रा. ग. जाधव यांनी व्यापक दृष्टीने पर्यावरणाची संकल्पना मांडली आहे. मानव हा देखील पशुपक्षी व वनस्पती यांच्यासारखाच एक सजीव आहे. तथापी हा सजीव प्राणी बुद्धीमान आहे. नैसर्गिक पर्यावरणावरती प्राणी व वनस्पती यांच्याप्रमाणेच मानव हा देखील बांधलेला आहे हे खरेच. पण हे नैसर्गिक पर्यावरण स्वतः अनुकूल करून घेण्याची क्षमता त्यात अधिक आहे. अर्थात मानवाने बदलत्या ऋतुमानानुसार स्वतःच्या जीवनशैलीत बदल केला आहे. तसेच पर्यावरणात हस्तक्षेप करून स्वतःच्या बुद्धिसामर्थ्याने तो अनुकूल-प्रतिकूल परिस्थितीचा सामना करित असतो याचे चित्रण मराठी साहित्यात आलेले आहे.

साहित्य हा पर्यावरणाचा एक अविभाज्य भाग आहे. निसर्ग आणि मानव यांचे दृढ संबंध असल्यामुळे सातत्याने प्राचीन साहित्यापासून ते अर्वाचीन साहित्यापर्यंत कवी लेखकांनी कथा, कादंबऱ्या, कविता, नाटक व प्रवासवर्णने ह्या साहित्यप्रकाराद्वारे मराठी साहित्यात निसर्गाचे सुंदर, रमणीय, मनोहारी, वेधक चित्रण केले आहे. याबरोबरच पर्यावरणातून आकार घेणारे मानवी जीवन, निसर्गातून उदयास आलेली संस्कृती, पर्यावरणाचा सामाजिक जीवनावर पडणारा प्रभाव इ. प्रमुख घटकांचा साहित्यात अभ्यास झालेला आहे. निसर्ग आणि मानव व मानव आणि साहित्य, पर्यावरण आणि साहित्य यांचे जिव्हाळ्याचे अतुट नाते उलगडून सांगताना, 'अखिल भारतीय साहित्य संम्मेलनात अध्यक्षीय भाषण करतांना फादर दिब्रिटो म्हणतात, "मी निसर्गाच्या सानिध्यात वाढलो आहे. निसर्गाने मला घडविले आहे. आपले पर्यावरण आपल्याला घडवत असते. त्यामुळे मी निसर्गाच्या प्रेमात आहे. निसर्ग वाचला तरच माणूस वाचणार आहे.

निष्कर्ष- वरील विवेचनावरून आपणास असे निश्चित होते की पर्यावरणाची संरक्षण संवर्धन करणे ही प्रत्येकाची जिम्मेदारी आहे प्रत्येकाने जर आपण आपले पर्यावरण वाचवण्यासाठी एकत्रितपणे आवश्यक पावले उचलली नाहीत तर नजीकच्या भविष्यात आपण थेट हवेचा श्वास घेऊ शकणार नाही किंवा आपण जमिनीवर उघड्या पायांनी बोलू शकणार नाही. म्हणून, पर्यावरणाच्या समस्येबद्दल आपण जितके बोलू शकतो तितके कमी आहे. कार्य करत राहिल्यास पर्यावरण एकदम सुख सफल संपूर्ण होण्यास वेळ लागणार नाही आणि मानव जीवन निरोगी आनंदमयी जीवन सतत जगत राहिल. पर्यावरण संरक्षण प्रत्येकाचे कर्तव्य आहे या जाणिवेतून सक्रीय बनल्यास पर्यावरणाची गुणवत्ता उंचावण्यास मदत होईल यात काही शंकाच राहणार नाही. आणि यात साहित्यानेही मागे राहता कामा नये.

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स्पर्धात्मक युगातील प्रभावी जीवन कथन - 'आजचा दिवस माझा'

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प्रास्ताविक :

प्रशासकीय अधिकारी विजय कुलांगे यांच्या उत्तुंग जिद्दीचा लोकविलक्षण पट म्हणजेच 'आजचा दिवस माझा' हे आत्मकथन होय. प्रशासकीय अधिकारी विजय अमृता कुलांगे यांचे 'आजचा दिवस माझा' हे आत्मकथन आहे. हे आत्मकथन मार्च २०१८ मध्ये सिनर्जी स्टडी पॉईंट पुणे व दीपस्तंभ प्रकाशन यांच्या संयुक्त प्रकाशनाने प्रकाशित केलेला आहे. एकूण २४६ पानांचे हे आत्मकथन वाचकांना आपलेसे करणारे आहे. विजय कुलांगे हे राळेगण (म्हसोबाचे) ता. नगर जि. अहमदनगर या गावी जन्मले. त्यांच्या जीवनात आलेल्या यशापयशांच्या द-या त्यांनी पार केल्या आणि यशाचे उत्तुंग शिखर त्यांनी गाठले. त्यांनी जीवनामध्ये पार केलेली स्पर्धात्मक परीक्षा व इतर कसोट्या कशा पार केल्या? या प्रश्नाचे उत्तर आपणाला या आत्मकथनातून मिळते. एकूणच विजय कुलांगे यांचा जि.प.शिक्षक ते आय.ए.एस. अधिकारी असा जीवनाचा प्रवासच या आत्मकथनात आहे.

जन्म व बालपण :

प्रशासकीय अधिकारी विजय अमृत कुलांगे यांचा जन्म राळेगण म्हसोबाचे ता. नगर जि. अहमदनगर येथे झाला. गावातील म्हसोबाच्या नावावरून राळेगण म्हसोबाचे असे या गावास म्हटले जाते. त्यांचा जन्म गणेश चतुर्थीच्या दिवशी घरीच झाला. घरी अठराविश्वे दारिद्र्य होते. त्यांना पठारावर थोडीफार जिरायत जमीन होती. त्यांचे घर माळवादाचे होते. त्याला लागूनच एक सपर बांधलेले होते. त्यांच्या घरातील आजोबा गुराकडे जायचे. तर आजी घर सांभाळत असत. घरात त्यांचे वडील आण्णा बी.ए. उत्तीर्ण होते. त्यांच्या करारी स्वभावामुळे जिल्हा मराठा संस्थेतील अधिकक्षाची नोकरी अण्णांनी सोडली होती. नोकरी सोडल्यानंतर त्यांच्या वडिलांनी गावातच टेलरिंगचे काम सुरू केले. विजय कुलांगे यांची आई दुस-याच्या शेतात कामाला जात असे. त्यावेळी त्याच्या घराला गावात पत नव्हती. गावातील कोणताही दुकानदार त्यांना उधार सामान देत नसे. स्वस्त धान्य दुकानदार बाबुवाणी पैसे नाहीत म्हणून कित्येकवेळा त्यांचे कुपन फेकून देत असत. मग त्यांची आई गावातील लेलेकाकाची आई विंधाबाई या सावकारीणकडून उसने पैसे आणत. कुपनवरील साखर आल्यानंतर त्यातील काही साखर सावकारीणीला देत असत. असेच उसने पैसे फेडण्यासाठी त्यांचे चुलते नाना यांनी लेलेकाकांकडे साल धरले. काही दिवसानंतर त्यांचे वडील अण्णांनी त्यांचे चुलते नाना यांना टेलर काम शिकवले. मग दोघांनी मिळून टेलर काम केले. विजय कुलांगे यांच्या आई-वडिलांनी खूप काबाडकष्ट केले. विजय तान्हा असताना या दोघांनी मिळून धनगरबाच्या तब्ब्यावर रोजगार हमीच्या कामाच्या बराशी उपसल्या. त्यावेळी ते झाडाला झोळी बांधून छोट्या विजयला त्यात टाकत असत. बालपणी विजय खळीला आले की, त्यांचे आण्णा बैराग्याच्या दुकानातून त्यांना बांबू (लाडू) आणून द्यायचे. आण्णा आणि आईचे पहिले मुल असल्याने विजयचे बालपणी खूप लाड असायचे. नाना व आईचा त्यांच्यावर खूप जीव होता. विजय कुलांगे हे बालपणी खोडकर वृत्तीचे होते. अशा प्रकारे विजय कुलांगे यांचा जन्म व बालपण ग्रामीण भागात व दारिद्र्यात गेलेले आहे. या दारिद्र्यातही त्यांच्या कुटुंबानी एकमेकांना प्रेम दिलेले आहे.

शिक्षण :

'आजचा दिवस माझा' या आत्मकथनाचे आत्मकथनकार विजय कुलांगे यांचे प्राथमिक शिक्षण जीवन शिक्षण मंदिर, राळेगण, माध्यमिक शिक्षण श्रीराम विद्यालय, राळेगण येथे झाले. पुढे त्यांनी रेसिडेन्शियल हायस्कूल, अहमदनगर येथे उच्च माध्यमिक शिक्षण घेतले. त्यानंतर त्यांनी अहमदनगर एज्युकेशन सोसायटीचे अध्यापक विद्यालय, अहमदनगर येथे डी.एड.चे शिक्षण पूर्ण केले. या शिक्षणानंतरही ते थांबले नाहीत. पुणे विद्यापीठ पुणे येथुन बहिःस्थ परीक्षा देऊन बी.ए. व एम.ए.ची पदवी त्यांनी मिळवली. हे सर्व शिक्षण त्यांनी घरची आर्थिक परिस्थिती बिकट असताना अतिशय खडतर परिश्रमातून मार्गक्रमण करत घेतले आहे. खडतर परिश्रमपूर्वक अभ्यास करून त्यांनी एम.पी.एस.सी. व यू.पी.एस.सी. या परीक्षाही दिल्या. या परीक्षेमधूनच त्यांनी विक्रीकर निरीक्षक, तहसीलदार, विक्रीकर सहाय्यक आयुक्त तसेच जिल्हाधिकारी हे पद पटकावले.

अशा प्रकारे प्रशासकीय अधिकारी विजय कुलांगे यांनी अनेक अपमान पचवून, खस्ता सहन करून शिक्षण पूर्ण केले. त्यांनी याचे हृदयस्पर्शी चित्रण 'आजचा दिवस माझा' या आत्मकथनातून मांडलेले आहे.

यशापयश :

आत्मकथनकार विजय कुलांगे हे दत्तवाडी प्राथमिक शाळेत शिक्षक असताना एम.पी.एस.सी. या परीक्षेचा अभ्यास सुरु केला. त्याच दरम्यान दत्तवाडी प्राथमिक शाळेला साडेतीन लाखाची इमारत मंजूर झाली. ग्रामशिक्षण समिती व शाळेचे मुख्याध्यापक यांनी हे शाळेचे दर्जेदार काम करावयाचे अशी अट होती. त्यामुळे त्यांना व मुख्याध्यापक पठारे यांना उत्साह आला. शाळेची सुंदर इमारत उभी करण्याचे त्यांनी मनोमन ठरवले. पण पंचायत समितीचा इंजिनीअर व गटशिक्षणाधिकारी यांनी ठेकेदाराला काम देण्यास सांगितले. त्यामुळे ते व पठारे गुरुजी नाराज झाले. त्यावेळी विजय कुलांगे सरांनी 'शाळेचे काम ठेकेदार पध्दतीने करण्याची तरतुद नाही. उद्या ठेकेदार पळून गेला तर कारायेचे काय?' असे म्हटले. त्यावेळेस गटशिक्षणाधिकारी त्यांच्यावर भडकल्या. त्यावेळेचा झालेला प्रकार चित्रित करताना म्हणतात, गटशिक्षणाधिकारी मॅडमने एकवार माझ्याकडे पाहिले आणि विचारले, तू कोण?' मी म्हणालो, 'मॅडम, मी विजय कुलांगे, काही दिवसांपूर्वीच मी हजर झालोय.' त्या मॅडमने माझ्याकडे कुत्सित नजरेने पाहिले आणि मला म्हणाली, तू कोण आहेस... काय लायकी आहे तुझी? एक गुरुजी ना जास्त शानपना कारायेचा नाही. गुपचूप वर्गात जा आणि पोराना शिकव. निघ आता.' माझा अपमान झाला होता. पण मी काही करू शकलो नाही. खाली मान घालून मी वर्गात निघून गेलो. चुकीच्या गोष्टीला पाठीबा देण्यासाठी गटशिक्षणाधिकारी मॅडमने त्यांचा अपमान केला. पण तो अपमान त्यांच्या जिव्हारी लागला. त्या दिवसापासून ते स्पर्धा परीक्षेच्या अभ्यासाला जोमाने लागले.

विजय कुलांगे हे दत्तवाडी प्राथमिक शाळेचे शिक्षक म्हणून रुजू झाल्यानंतर एके दिवशी मोहोळकर सर शाळेत आले. ते 'इंडियन बहुजन टीचर्स असोसिएशन' या शिक्षक संघटनेत काम करत. या संघटनेचे संस्थापक विजय कुलांगे यांच्या गावातील खराडे सर होते. या मोहोळकर सरांनी एम.पी.एस.सी.चा अभ्यास सुरु केला होता. त्यांनी श्रीगोंद्याच्या शिक्षक बँकेत एक कार्यक्रम ठेवला होता. काही एम.पी.एस.सी.त यशस्वी झालेल्या मुलांचा सत्कार ठेवला होता. या कार्यक्रमात विजय कुलांगे यांनी एम.पी.एस.सी. परीक्षावर बोलावे. असा त्यांनी आग्रह केला. त्यांनी त्याला तत्काळ होकार दिला. त्या कार्यक्रमाच्या वेळी एम.पी.एस.सी. सिलेक्ट झालेले उमेदवार त्यांनी प्रथम पाहिले. श्रीगोंद्याचे नायब तहसीलदार म्हणून निवड झालेले विजय बोरुडे आणि महेंद्र पवार यांच्याशी बातचीत झाल्यानंतर त्यांच्या आशा आणि आत्मविश्वास दोन्ही वाढल्या. त्यानंतर विजय बोरुडे यांनी त्यांना घरी नेऊन मार्गदर्शन केले.

दर रविवारी ते विजय बोरुडे यांच्या घरी जात, ते न कंटाळता विजय कुलांगे यांना मार्गदर्शन करीत. पहिल्या प्रयत्नात एम.पी.एस.सी. ची पूर्वपरीक्षा दिल्यानंतर त्यांना चेह-याचा पक्षघात झाला. तरीही त्यांनी आपला अभ्यास सोडला नाही. पूर्वपरीक्षा व मेन्स परीक्षाही ते पास झाले. पण मुलाखतीमध्ये ६ मार्कांनी क्लास टू ची पोस्ट हुकली. मुलाखतीसाठी निवड होऊनही अपयश येणे ही गोष्ट त्यांना खुप त्रासदायक वाटली. त्या दिवशी ते एकटेच खोलीत बसून रडले. त्यानंतर मात्र त्यांनी विक्रीकर निरीक्षक... तहसिलदार... विक्रीकर अधिकारी व त्यानंतर एम. पी. एस. सी. दुस-या क्रमांकाने उत्तीर्ण झाले. यशाचा आलेख वाढतच गेल्यावर २०१३ मध्ये ते यु.पी.एस.सी. परीक्षा देशात १७६ क्रमांकाने उत्तीर्ण झाले. भारतीय प्रशासन सेवेतील सर्वोच्च 'कलेक्टर' हे पद मिळवले.

नोकरी व भूषविलेले पद :

विजय कुलांगे यांनी डी. एड्. शिक्षण पूर्ण केल्यानंतर त्यांना गलनिंब प्राथमिक शाळा नेवासा जि. अहमदनगर व दत्तवाडी प्राथमिक शाळा श्रीगोंदा जि. अहमदनगर येथे प्राथमिक शिक्षकाची नोकरी केली. या काळात त्यांनी आपल्या कल्पकतेने शाळेत वृक्षारोपण, शाळेची इमारत यामध्ये सुधारणा केली. शाळेत सांस्कृतिक कार्यक्रम, शैक्षणिक सहल तसेच विविध शैक्षणिक उपक्रम राबवून मुलांमध्ये शिक्षणाची आवड निर्माण केली. त्यांनी कधीही शिक्षकी पेशाशी प्रतारणा केली नाही. शाळेच्या कोणत्याही गोष्टीत ते रमून जात असत. म्हणून पुढे ते विक्रीकर निरीक्षक पदांवर जाताना त्यांनी शाळा डोळे भरून पाहताना दिसतात. दहा वर्षे जि.प. शिक्षक पदावरील नोकरी सोडताना त्यांचे मन अस्वस्थ झालेले दिसते. एसटीआयची पूर्व व मुख्य परीक्षा पास झाल्यानंतर अराजपत्रित वर्ग दोनची पोस्ट मिळाली. त्यांची पत्नी प्राथमिक शिक्षिका म्हणून अहमदनगर जिल्ह्यात असल्यामुळे तेथेच त्यांना विक्रीकर विभागात विक्रीकर निरीक्षक म्हणून नोकरी मिळाली. येथेही त्यांनी उत्तम काम केले. ही नोकरी करतानाही त्यांनी आपला एम.पी.एस.सी.चा अभ्यास सुरु ठेवला.

९ जून २००९ रोजी त्यांचा एम.पी.एस.सी.चा निकाल लागला. त्यात ते उत्तीर्ण झाले. त्यावेळी त्यांच्या मित्रांनी, नातेवाईकांनी व ग्रामस्थांनी त्यांचे अभिनंदन व शुभेच्छांचा वर्षाव केला. तहसिलदार पदाचा निकाल लागल्यानंतर साधारण एका महिन्याने चौथ्या मेन्सचा निकाल लागला. त्यामध्ये ते मुलाखतीसाठी पात्र झाले. त्यावेळी मुलाखतीतही ते उत्तीर्ण झाले. २९ जानेवारी २०१० रोजी ते एम.पी.एस.सी. महाराष्ट्रात दुसरे आले. त्यावेळी त्यांना विक्रीकर सहआयुक्त या पदावर नियुक्ती झाली परंतु त्यांनी तहसिलदार हेच पद स्वीकारले. त्यानंतर नायब तहसिलदार म्हणून नवापूर, नंदुरबार येथे नियुक्ती मिळाली. इथे त्यांनी इनामेइतबारे सेवा केली. आदिवासी लोकांच्या समस्या जाणून त्या सोडवण्याचा प्रयत्न केला. नवापूरची सहा महिन्याची नायब तहसिलदारची ड्युटी संपल्यानंतर त्यांची जामखेड येथे तहसिलदार म्हणून नियुक्ती झाली. या नियुक्तीविषयी बोलताना विजय कुलांगे म्हणतात की, 'जामखेडला मला आता तहसिलदार म्हणून रजू व्हायचे होते. मनात खुप गोंधळ माजला होता. ही एक नवीन आणि संपूर्ण जबाबदारी मला पेलायची होती. तहसिलदार म्हणजे तालुक्याचा जणू कलेक्टर.....' त्यांनी जामखेड येथे 'आदर्श तहसिलदार' म्हणून काम केले. त्यांचे प्रोबेशन संपल्यानंतर पाच महिन्यातच त्यांचा व त्यांचे तलाठी, ऑफिस स्टाफ या सर्वांचाच आदर्श म्हणून अहमदनगरच्या कलेक्टर साहेबांनी सत्कार केला. त्यावेळी त्यांना मनस्वी आनंद झाला. त्यावेळीच त्यांनी यू.पी.एस.सी. परीक्षा देऊन कलेक्टर म्हणजेच जिल्हाधिकारी व्हायचे ठरवले. यू.पी.एस.सी.ची परीक्षाही ते उत्तीर्ण झाले. देशात १७६ क्रमांकाने ते आय.ए.एस. झाले. व ओरिसाचे कलेक्टर म्हणून त्यांना प्रशासनातील उच्च दर्जाची नोकरी मिळाली.

अशा प्रकारे विजय कुलांगे यांनी शिक्षक ते तहसिलदार, जिल्हाधिकारी म्हणून प्रशासनात केलेली नोकरी करताना त्यांनी नेवासा, नवापूर, जामखेड व ओरिसा येथील कार्य कौतुकास्पद आहे. एक उत्कृष्ट अधिकारी म्हणून त्यांच्याकडे

पाहता येते. त्यांनी केलेल्या विविध पदावरील कार्याचे दर्शन या आत्मकथनामधून आलेले आहे. म्हणून हे आत्मकथन भावी यू.पी.एस.सी. व एम.पी.एस.सी. करणा-या युवकांना मार्गदर्शन करणारे आहे.

भाषाशैली

कोणत्याही लेखकाचे लेखनसामर्थ्य हे त्याच्या भाषेवरून जाणवते. विजय कुलांगे यांच्या 'आजचा दिवस माझा' चा विचार करता यामधून आलेली भाषा आशयानुसार अभिव्यक्त होणारी आहे. या आत्मकथनातील तीव्रता व विविध घटनांमधील तीव्र दुःख व शेवटी यशस्वीपण यामुळे वाचकाला अस्वस्थ करून टाकण्याची फार मोठी ताकद या लेखनात आहे. अहमदनगरची नगरी भाषा या भाषेतून प्रत्ययास येणारी भारतीय संस्कृती या आत्मकथनातून ठायी ठायी आलेली दिसते. दुस-याच्या शेतात रोजंदारीने कामाला जाणारी आई आणि जीवनभर दिवसदिवस शिलाई मशिनवर टेलर या नात्याने दांगड्या मारणारा पिता. घरचे अठराविश्वे दारिद्र्य त्यात आडवळणी खेड्यातला जन्म. सोबतीला ना कोणी गुरु वा ना कोणी प्रेषित अशा परिस्थितीमध्ये आय.ए.एस. होणे हे या गरीब कुटुंबासाठी खरेच एक युगायुगाचे स्वप्न होते! म्हणूनच परीक्षेचा निकाल लागल्यानंतर लेखकाचे, राहून राहून डोळे भरून येत होते. मनातला श्रावण डोळ्यातून ओसंडत होता. विजय कुलांगे यांनी आपल्या सहज, सोप्या आणि चित्रमय भाषाशैलीत हे आत्मकथन केलेले आहे. त्यांचे जीवन कथनसुध्दा कमालीचे प्रभावी झालेले आहे. याबद्दल विश्वास पाटील म्हणतात की, कुलांगेचे जीवन कथन सुध्दा कमालीचे प्रभावी आहे. आज विविध पातळीवर जे जटील, सरकारी भाषेचे दर्शन घडते त्या पार्श्वभूमीवर प्रस्तूत लेखकाची भाषा ही साने गुरुजी पंथातील चित्तवेधक तसेच मोठी रसाळही आहे. असे अनेक वर्षे लेखनकाम करणा-यांनाही साधत नाही. सुदैवाने निसर्गतः लेखकाला ही देणगी मिळाल्याचे दिसते. काळाच्या कातळातून टपकणा-या पाण्यासारख्या माझ्या अोजळीत मावतील तेवढ्या आठवणी सांगतो.' किंवा 'कांधाच्या पदरासारखे आठवणीचे पापुद्रे उलगडत जाणे.' किंवा लेखक स्वयंपाकाचा प्रयत्न करत असताना तव्यामध्ये पहिली चपाती 'शहीद होणे', अर्जुनाला ज्याप्रमाणे युध्दभूमी खुणावत होती, त्याप्रमाणे दहावीच्या वर्षाने लेखकाला खुणावणे. एकूणच कुलांगेच्या शब्दांची मांडणी नेटकी आणि ताकदीची आहे. त्यांच्या मातोश्रींना निम्म्यात हळदीच्या अंगाने उठायचा प्रसंग असो किंवा कोणी पापभिरु भद्रले गुरुजींनी गावाच्या विहिरीमध्ये केलेली आत्महत्या असो. एकूणच प्रसंग निर्मितीची लेखकाची धाटणी उत्तम दर्जाची आहे. त्यांनी आपल्या आयुष्यातील जिद्दीच्या दशकाच्या कहाणीचे लेखन गाई म्हशी कोणाच्या लक्षुमणाच्या करून मायमराठीला एक देणगी दिलेली आहे. प्रस्तूत आत्मकथनात डाक्टर, दिन दिन दिवाळी..... गाई म्हशी ओवाळी... माळवद, कासारीण सारखे ग्रामीण शब्द. स्टॅमिना, मेडिकल, कॉलेज, स्कॉलरशिप, सरप्राईज, टेस्ट, डॉक्टर, इंजिनिअर, फार्मसी, क्लास टीचर, प्लॉट, पोस्ट, मेन्स, होम सायन्स, ऑफिस, जॉइनिंग, ऑर्डर, डायरेक्ट इत्यादी इंग्रजी शब्द. तसेच 'करायला गेलो मारुती आणि झाला गणपती', 'उघड्याच्या घरी नागडं गेलं', 'आळीमिळी, गुपचिळी' यासारख्या असंख्य म्हणींचा भरणा या आत्मकथनात त्यांनी केलेला आहे. त्याचबरोबर 'कर्मण्येवाधिकारस्ते मा फलेषु कदाचनः' असे संस्कृत सुभाषिते व अकलेचे तारे तोडणे, संसाराला भिडणे, हातभार लावणे, जिद्दीने पेटणे, तुटून पडणे, नजर भविष्याकडे लागणे, पांग फेडणे, काळीज चिरून जाणे, उद्दिग्न होणे. हे वाक्प्रचार या आत्मकथनात आलेले दिसतात. आत्मकथनाची शोभा वाढवून वाचकाला खिळवून ठेवणारे झालेले आहे. म्हणून 'आजचा दिवस माझा' हे आत्मकथन साहित्य शारदेच्या अंगणातले सुगंधित टपोरे फूलही ठरलेले आहे.

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ता. आष्टी जि. बीड

प्रास्ताविक :

महाराष्ट्रीयन नीला सत्यनारायण या आय.ए.एस. जेष्ठ महिला अधिका-याचे 'एक पूर्ण-अपूर्ण' हे आत्मकथन आहे. सध्या आधुनिक युगात बदलत्या वातावरणात महत्वाचा उपदेश देणारे हे आत्मकथन. १९७१-७२ च्या काळात आय.ए.एस. सारख्या परीक्षांकडे महाराष्ट्रातील मुले फारसी फिरकत नव्हती. त्याकाळी नीला सत्यनारायण यांनी केंद्रीय लोकसेवा परीक्षा देऊन आय.ए.एस. झाल्या. त्यांचे वडील नागपूर रेल्वेमध्ये डी.वाय.एस.पी. होते. त्यांनी नीला सत्यनारायण यांना सतत प्रोत्साहन दिले. त्यामुळे त्या यू.पी.एस.सी. परीक्षेत उत्तीर्ण झाल्या. त्यांचे १११ पानांचे छोटेखानी 'एक पूर्ण-अपूर्ण' आत्मकथन म्हणजे एक आय.ए.एस. अधिकारी व त्यांच्या मतिमंद मुलाची हृदयस्पर्शी कहाणी होय. नीला सत्यनारायण यांचे बालपण मध्यम वर्गीय कुटुंबात गेले. कुटुंबात आई-वडील, मोठी बहीण आशा, छोटा भाऊ आनंद वनीला सत्यनारायण हे होते. लहानगी नीला काळीसावळी बाकी सर्वजण गो-या रंगाचे होते. त्यामुळे नीला सत्यनारायण यांच्या मनात लहानपणापासून काळ्या रंगाचा एक मोठा न्यूनगंड होता. त्यांच्या घरी येणारे जाणारे, नातेवाईक सर्वजण त्यांना आवर्जून त्यांच्या काळ्या रंगाची आठवण करून देत असत. घरातले वातावरण मात्र तसे नव्हते. या काळ्या रंगाबाबत मन खट्टू झाले की अनेकदा नीला उदास होत असे. त्यावेळी वडील त्यांना सल्ला देत असत. ते म्हणत असत की, 'आशा म्हणजे तुझी मोठी बहीण, रूपसुंदर आहे, हो ना? हे रूप तिला ईश्वराने दिले, तिचा रंग तिला ईश्वराने दिला. त्यात तिचे कर्तृत्व कोणते? ती रूपसुंदर आहे, तु गुणसुंदर हो, ते आपल्याच हातात असते. शरीराचे सौंदर्य, रंग, रूप कालांतराने लोप पावते पण गुणांचे सौंदर्य काळानुसार वृद्धिंगत होत जाते. मग सांग मला, तुला रूपसुंदर व्हायचे की गुणसुंदर?' वडीलांचे हे शब्द त्यांना एखाद्या नंदादीपाप्रमाणे वाटले. त्या शब्दांनी त्यांचा आत्मविश्वास वृद्धिंगत केला.

जन्म आणि बालपण :

महाराष्ट्रीयन मध्यवर्गीय समाजात नीला सत्यनारायण यांचा जन्म झाला. त्यांचे सरकारी शाळेतच आठवीपर्यंत शिक्षण झाले. पाचवीत असताना एक दिवस त्यांचे वर्गशिक्षक आजारी असल्याने त्या वर्गाच्या मॉनिटर झाल्या होत्या. शिस्तबद्ध वर्ग बघून पॅडसे सर खूश झाले होते. त्यांनी नीला सत्यनारायण यांना शाबासकी दिली. त्याकाळी आठवीपासून इंग्रजी या राज्यांच्या धोरणामुळे इंग्रजी बोलण्याचे धाडसच त्यांच्यात नव्हते. परंतु वर्गात पहिला नंबर त्यांनी कधीही सोडला नाही. दिल्लीच्या मिशनरी हायस्कूलमध्ये त्यांनी दहावी-अकरावी केली. त्या शाळेला बोर्डात कधीच फर्स्टक्लास मिळालेला नव्हता. त्या हायर सेकंडरीला गणिताच्या पेपरमध्ये पूर्ण मार्क मिळवून, संस्कृत विषयात बोर्डांमध्ये सर्वप्रथम येऊन अन् डिस्टिंक्शन मिळवून उत्तीर्ण झाल्या. त्यांचे वडील रेल्वेमध्ये डी.वाय.एस.पी. म्हणून कार्यरत असल्यामुळे त्यांना शिक्षणासाठी सारखे स्थलांतरित व्हावे लागले. त्यानंतर त्यांनी बी.ए. व एम.ए. (इंग्रजी) पुणे विद्यापीठातून केले. अशा खडतर मार्गातून त्यांनी आपले शिक्षण पूर्ण केले.

एका प्रशासकीय सेवेतील आईची कहाणी :

आय.ए.एस. नीला सत्यनारायण यांच्या कुटुंबात चैतन्य नावाचा एक मतिमंद मुलगा जन्माला आला. मुलगा झाला म्हणून आनंद साजरा करण्यापूर्वीच तो मुलगा सर्वसामान्य मुलासारखा नाही असं कळल्यानं त्यांच्या कुटुंबावर आघात झाला. हा प्रसंग सांगताना नीला सत्यनारायण म्हणतात की, 'बाळाला माझ्या हातात देताना ती डॉक्टरांनी रुक्षपणे मला म्हणाली, 'मी तुमच्या यजमानांना सगळं समजावलंय. बाळाची नीट काळजी घ्या. तो डाऊन्स सिंड्रोम आहे. थोडासुध्दा निष्काळजीपणा तुम्हाला भोवेल.' एवढे बोलून नेहमीप्रमाणे ती माझा प्रतिसाद न घेताच निघून गेली. तिची विविध घोषवाक्ये त्यानंतर कित्येक दिवस माझ्या कानात घुमत राहिली, एखाद्या दुष्ट भविष्यवाणीसारखी.' अर्थातच चैतन्यचा चेहरा विशिष्ट प्रकारचा होता. त्यांच्या तळव्यांना व तळपायाला सर्वसामान्यासारखे सखोल भाग नव्हता. त्यामुळे चैतन्यची काळजी त्यांना वाटू लागली. चैतन्यचा बुध्दयांकही कमी होता. त्यामुळे त्यांच्यावर मोठी जबाबदारी पडली. चैतन्यच्या जन्मानंतर डॉक्टरांनी त्याच्याकडे केवळ वैद्यकीय शास्त्राच्या नजरेतून पाहिलं. नीला व सत्यनारायण हे चैतन्यचे आईबाप म्हणून सौजन्याची वागणूकही त्यांच्या बालरोगतज्ज्ञ डॉक्टरांनी दिली नाही. बालरोगतज्ज्ञ डॉक्टरांनी प्रयोगा दाखल जशी उंदीर किंवा माकडे वापरतात तसे चैतन्याला वापरण्याबद्दल विचारले. तेव्हा नीला सत्यनारायण यांचे मन विदीर्ण झाले.

मतीमंद चैतन्याच्या जन्मानंतर नीला सत्यनारायण यांच्या कुटुंबाची जीवनशैलीच बदलून गेली. नीला सत्यनारायण यांनी चैतन्यला सातत्याने सांभाळले, त्यांच्या प्रत्येक गरजेनुरूप त्याच्याकडे विशेष लक्ष दिले. दोघांनीही प्रेमाने त्या मुलाला स्वीकारले. त्याला जगण्यासाठी जे हवे आहे ते दिले. चैतन्यवर उदंड प्रेम केले. विपरीत परिस्थितीत जन्म घेतलेला चैतन्य शारीरिक व मानसिक प्रशिक्षणामुळे जवळपास सामान्यांसारखा झाला. ते समाजातही वावरू लागला. चैतन्यमध्ये काही शारीरिक आणि बौद्धिक मर्यादा असल्या तरीही तो सामान्य माणसांच्या नॉर्मल जगात लायक झाला. हे केवळ त्याची आई नीला व वडील सत्यनारायण यांच्यामुळे शक्य झाले.

चैतन्यला प्रत्यक्षात 'स्पेशल स्कूल' मध्ये घालतेवेळी नीला सत्यनारायण ह्या प्रचंड अस्वस्थ झाल्या. त्यांच्या शारीरिक, मानसिक व सामाजिक विकासासाठी 'स्पेशल शाळे' ची आवश्यकता होती. म्हणून सहृदय बालरोगतज्ज्ञ डॉ. संझगिरी व मतिमंदांच्या क्षेत्रात आयुष्य वेचणा-या वंदनीय व्यक्ती श्रीमती श्रॉफ या तज्ज्ञ व्यक्तींचा सल्ला घेतला. त्याकाळी नीला सत्यनारायण महाराष्ट्र शासनाच्या समाज कल्याण विभागाच्या सचिव होत्या. चैतन्यचा 'नौनिहाल' या स्पेशल स्कूलमध्ये प्रवेश घेतला. येथे नीला आणि सुधा मॅडमनी चैतन्यला स्वावलंबी जगणे शिकवणे, चैतन्यला वाटणारा न्यूनगंड आणि त्यांच्या मनात असलेली भीती त्यांनी घातली. त्याला कणखर बनवून त्याच्यातील विश्वास जागवला. 'नौनिहाल' नंतर मिसेस श्रॉफ यांच्या 'जय वकील शाळा' या स्पेशल स्कूलमध्ये चैतन्यला टाकले. त्यावेळी नीला सत्यनारायण मनसोक्त रडल्या. 'जय वकील शाळेत चैतन्यला व्यावहारिक अभ्यासक्रमाबरोबर घरातील शिक्षण, बागकाम, व्यावसायिक शिक्षण, खेळ आणि विविध कला असे अनेक विषय शिकविले. येथे चैतन्य लिहिणे वाचणेही शिकला. याठिकाणी त्याची शारीरिक आत्मनिर्भरता आणि हातापायांच्या बोटांची, स्नायूंची बारीकसारी हालचाल याकडे विशेष लक्ष दिले. चैतन्यच्या भविष्यातील जीवनाबद्दल नीला सत्यनारायण चिंताग्रस्त होत असत. ती सगळी वेदना हृदयात साठवत असत. सहवेदना गीताद्वारे त्या व्यक्त करत असत. आजतागायत त्यांनी पाचशेच्या वर गीते आणि भजने लिहिली. त्यांच्या वेदनेला सूर-ताल मिळाला.

नीला सत्यनारायण यांच्या जीवनातील दाहक अनुभव :

नीला सत्यनारायण यांना आपल्या जीवनात अनेक दाहक अनुभव आलेले आहेत. ते त्यांनी 'एक पूर्ण- अपूर्ण' या आपल्या आत्मकथनात व्यक्त केलेले आहेत. नीला सत्यनारायण ह्या शासनाच्या सेवेतील एक जबाबदार आय.ए.एस. अधिकारी होत्या. त्यांना पहिल्या बाळंतपणात सिझेरियन करावे लागले. त्यावेळी त्यांना अनुराधा ही मुलगी झाली. त्यांना ऑपरेशननंतर खुप त्रास झाला. त्यात झालेली गुंतागुंत सोडवून बरी होण्यासाठी खुपच वेळ त्यांना लागला. त्यानंतर प्रकृती त्यांना साथ देत नसल्यामुळे त्यांचे घर, नोकरी, मुलगी - अनुराधाचा सांभाळ या सगळ्या जबाबदा-यांमुळे त्यांच्यावरचा ताण जाणवत असे. घरात कोणीही वडीलधारे माणूसही नव्हते. त्यामुळे त्यांना अनुराधाची सतत काळजी वाटायची. अनुराधाच्या बालपणी कठीण नोकरी आणि त्याहून कठीण बॉस असा प्रकार होता. त्यावेळी त्यांच्या सासूबाईंनी अनुराधाला सांभाळण्याची तयारी दाखवली. त्यांनी अनुराधाला बंगलोरला नेऊन सांभाळण्याची जबाबदारी घेतली. त्यावेळी नीला सत्यनारायण यांनी नोकरी सोडण्याचे ठरवले. सर्वांनी मिळून त्यांना नोकरी करण्यास सांगितले. त्या सर्वांच्या इच्छेनुसार अगतिकपणे त्या नोकरी करित राहिल्या. एक उत्कृष्ट प्रशासन अधिकारी म्हणून नावलौकिक मिळवण्यासाठी त्यांनी खुप मेहनत घेतली. पण लवकरच त्यांना कळून चुकले की, या नोकरीशी सुसंगत असा त्यांचा स्वभाव नाही. या नोकरीतील पूर्ण यंत्रणाच गुंतागुंतीची आहे. या नोकरीत यशस्वी होण्यासाठी लागणारे कसब त्यांच्याकडे नव्हते. नोकरीत यश मिळवण्यासाठी लागणारे 'गुण' ही त्यांच्या अंगी नव्हते. त्यांचा ध्येयवाद कालबाह्य होता. त्यामुळे त्या निराश झाल्या. राजवाड्यात नजरकैदेत ठेवल्यासारख्या नोकरीत काम करत राहिल्या. लोकांना वाटायचे की काय ऐटबाज नोकरी आहे हेवा करण्यासारखी, परंतु त्यांच्या वेदना, त्यांनीच जाणल्या. शेवटी त्या जीवनाला, स्वतः लाही व नोकरीलाही कंटाळून गेल्या. त्यांच्या प्रकृतीच्या तक्रारींमुळे त्या शहरातील अनेक डॉक्टरांना भेटल्या. कुणी कसला तज्ज्ञ, कुणी मानिक-तांत्रिक-ज्योतिषी आध्यात्मिक, कोणी मानसशास्त्रज्ञ, कुणालाच वगळले नाही. प्रत्येकाच्या औषधांचा उपायांचा मारा त्यांनी स्वतःवर केला. तरीही त्यांच्या रोगाचे निदान कोणालाच करता आले नाही. त्यांना त्यांचे शल्य, दुखणे माहीत होते, पण त्या व्यक्त करू शकत नव्हत्या. त्यांच्या वेदना त्या मूकपणे सोशित राहिल्या. त्यावेळी त्यांना मरणाच्या तीव्र इच्छेने ग्रासले. त्यांनी अनुराधाला पाहिले की त्यांना जगण्याची ओढ यायची. मानसिक उलथापालथीच्या काळात त्यांच्यावर अनेक शस्त्रक्रिया झाल्या त्यामुळे त्यांच्या तारुण्याला ग्रहण लागले. अनेक उपाय करता करता दुसरे मूल होण्याचा डॉक्टरांनी सल्ला त्यांना दिला. पून्हा एकदा मुलाची संधी घेतल्यास त्यांची तब्येत पूर्वीसारखी होईल. असे त्यांचे म्हणणे होते. यासाठी त्यांच्या मित्रमैत्रिणींनी त्यांना भावनिक आधार दिला. प्रोत्साहन दिले. त्यावेळी त्यांना अनुराधाच्या बालपणीची आठवण आली की त्या घाबरायच्या. अनुराधाचे त्यांना नीट संगोपन करता आले नाही तर या बाळाचा सांभाळ कसा करणार? हा प्रश्न त्यांच्यापुढे उभा राहायचा. हा अनुभव सांगताना नीला सत्यनारायण म्हणतात की, माझ्या बॉसला माझ्याबद्दल किंचित सहानुभूती नव्हती. त्याला वाटायचे, की रक्ताचा शेवटचा थेंब संपेपर्यंत मी ऑफिसचे काम करावे. तो कामाच्या बाबतीत झपाटलेला होता. हा सगळा ताण मला असह्य झाला. माझ्या कामाच्या ताणाचा परिणाम अनुराधावर व्हायचा. अशाच नवीन बाळाला मी कसा न्याय देऊ शकले असते? अशा विचारांनी त्या आणखीनच अस्वस्थ व्हायच्या.

अशा प्रकारे नीला सत्यनारायण यांना प्रशासकीय अधिकारी असतानाही समाजातील लोकांचे कडवट अनुभव आले. या अनुभवातून चैतन्य, अनुराधा व पती सत्यनारायण या आपल्या कुटुंबातील घटकांची जबाबदारी मोठ्या धैर्याने पार पाडली. याचे यथार्थ चित्रण या त्यांच्या 'एक पूर्ण-अपूर्ण' या आत्मकथनात आलेले आहे. याचबरोबर मुलगी अनुराधा व मतिमंद मुलगा चैतन्य यांचे संगोपन व शिक्षण करता करता नीला सत्यनारायण यांचे जीवन खूप कष्टमय झाले. आय.ए.एस.ची नोकरी सांभाळून त्यांनी मोठ्या जिद्दीने आयुष्यातील चढउतार पार केले. त्यांची

यशोगाथाच म्हणजेच 'एक पूर्ण-अपूर्ण' हे त्यांचे आत्मकथन होय. हे आत्मकथन बदलत्या वातावरणातील मात्या-पित्यांना दिलेला आदर्श संदेश आहे.

'एक पूर्ण-अपूर्ण' - आत्मकथनाची भाषाशैली :

वर्तमानाशी संवाद साधू पाहणा-या 'एक पूर्ण-अपूर्ण' या आत्मकथनातील भाषा आणि निवेदन सद्यवर्तमानाला व्यक्त करण्यासाठी अवतरलेले दिसते. आपले अनुभव प्रकट करण्यासाठी अनुभवाशी, घटनांशी, प्रसंगांशी अनुरूप भाषा आणि निवेदन येताना दिसते. या आत्मकथनाता नागरी व इंग्रजी शब्दांचा उपयोग केलेला आहे. नीला सत्यनारायण यांनी कुटुंबाविषयी माहिती देताना प्रसंगच समोर उभे केले आहेत. असे असले तरी त्यांनी निवेदनशैलीचे सहज, स्वाभाविक अविष्कारण या आत्मकथनातून केले आहे. नागरी बोलीभाषेतील प्रसूतिगृह, स्त्रीसुलभ, चौकोनी कुटुंब, रसिक, रेलचेल, प्रसूती, शृंखला, निनादत, पुस्ती, अगतिकपणा, चिडीचूप, अक्षम्य चमत्कार, आत्मशक्ती, स्वाधीन, नियंत्रण यासारख्या अनेक शब्दवैभवांनी हे आत्मकथन अर्थपूर्ण ठरले आहे. हॉस्पिटल, सिझेरियन, डॉक्टर, स्पेशल स्कूल, कॅलेंडर, नॉर्मल, टॉरस, रेडिऑलॉजिस्ट, ऑपरेशन, आय.ए.एस., एक्स रे, लिफ्ट, रिपोर्ट, नर्स, व्हीआयपी, डाऊन्स सिंड्रोम यासारख्या इंग्रजी शब्दांच्या वापरामुळे प्रकटीकरणात कोठेही औचित्यभंग होत नाही. त्यामुळे आत्मकथनाला अर्थपूर्णत्व लाभले आहे. कामात झोकून देणे, तिरस्कार करणे, राग राग करणे, सुखाने झोपणे, अक्षम्य अपराध घडणे, निकराचे प्रयत्न करणे, निपचिप पडणे, कानाशी कुजबुजणे, बेचैन होणे, ग्रहण लागणे अशा वाक्प्रचारांद्वारे आपले म्हणणे नीला सत्यनारायण यांनी आपली व्यथा दाहकप्रमाणे मांडली आहे. नीला सत्यनारायण यांच्या भाषाशैलीमुळे 'एक पूर्ण-अपूर्ण' हे आत्मकथन वाचकांच्या हृदयाचा ठाव घेते. म्हणूनच ए.पी.जे. अब्दुल कलाम म्हणतात की, मतिमंद मुलाच्या आईने लिहिलेली ही हृदयस्पर्शी कहाणी आहे. काही प्रसंग वाचताना माझं हृदय विशेष हेलावून आलं.

समारोप :

नीला सत्यनारायण ह्या एक ज्येष्ठ प्रशासकीय अधिकारी आहेत. त्यांनी आपल्या 'एक पूर्ण - अपूर्ण' या आत्मकथनामधून बालपण, शिक्षण, नोकरीसाठी केलेली धडपड, मिळालेले पुरस्कार, नोकरीत केलेले कार्य याची जास्त माहिती दिलेली नाही. उलट नोकरीविषयी थोडक्यात माहिती, तसेच त्यांचे कुटुंब, त्यांचे पती सत्य व मुलगी अनुराधा तसेच चैतन्यविषयीच जास्त माहिती या आत्मकथनात मांडलेली आहे. नोकरी सांभाळता सांभाळता मतिमंद मुलाच्या संगोपनाबाबतचा आलेला दाहक अनुभव त्यांनी आत्मकथनात मांडलेला आहे. 'एक पूर्ण- अपूर्ण' हे आत्मकथन एका आय.ए.एस. आईची हृदय विदीर्ण करणारी कहाणी आहे. एका कुटुंबाच्या अग्निदिव्याच्या परीक्षेचे यात वर्णन आहे. हे आत्मकथन चैतन्यच्या जीवनप्रवासापुरतेच मर्यादित नाही तर एका मतिमंद मुलाच्या आईने जगातल्या प्रत्येक बदलत्या वातावरणातील आईला सांगितलेली ही कहाणी आहे. विठ्ठल कामत यांच्या शब्दात सांगायचे तर 'एक अपूर्णाक कसा जिद्दीनं पूर्णाक होऊन दाखवतो ह्याची अनुभूती ह्या पुस्तकामुळे अनेक मात्यापित्यांना येऊ शकेल' आणि आपल्या अपत्यातील कुठल्याही शारीरिक वा मानसिक कमतरतेवर मात करता येते ही जिद्द मिळेल.

सध्याच्या बदलत्या वातावरणात माता-पित्यांना आपल्या मानसिक विकलांग मुलांना स्वतःची नोकरी करता करता कसे सांभाळायचे याचे मार्गदर्शनच या आत्मकथनात आहे. म्हणूनच 'एक पूर्ण - अपूर्ण' हे आत्मकथन विकलांग मुलांच्या आई-वडिलांसाठी बदलत्या वातावरणानुसार मार्गदर्शक ठरेल यात शंका नाही.

संदर्भ ग्रंथ :

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4. यादव आनंद : 'आत्मचरित्र मीमांसा', मेहता पब्लिशिंग हाऊस, सदाशिव पेठ पुणे, आवृत्ती पहिली - फेब्रुवारी १९९८.
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6. जाधव मनोहर : 'दलित स्त्रियांची आत्मकथने', सुविद्या प्रकाशन, पुणे, प्रथमावृत्ती जानेवारी २००६.
7. फडके भालचंद्र : 'दलितांची आत्मकथने : काही प्रश्न' (लेख), अस्मितादर्श / दिवाळी अंक - १९८३.

बदलते वातावरण व लोकसंस्कृतीच्या उपासकांची मौखिक गीते

सविन तुकाराम मोकाशे

संशोधक विद्यार्थी

पारगाव जोगेश्वरी, ता. आष्टी जि. बीड

प्रस्तावना :

मराठी लोकसंस्कृती अनेकविध विशेषांनी नटलेली आहे. या संस्कृतीच्या उपासकात वासुदेव, गोंधळी, वाघ्या-मुरळी, पोतराज, आराधी, भराडी, धनगर, भोपे, पांगुळ भुते तसेच डाक वाजवणारे कुंभार यांचा प्रामुख्याने समावेश होतो. या उपासकांना मराठी लोकजीवनात भगतांचे स्थान प्राप्त झालेले आहे. देवदेवतांच्या उपासनाविधीत या भगतांचे अनन्यसाधारण असे महत्त्व आहे. मराठी लोकसंस्कृतीचे हे उपासक देवदेवतांच्या उपासनाविधी प्रसंगी आणि उदरनिर्वाहासाठी भिक्षा मागताना गीते म्हणतात. ही गीते त्यांच्या घराण्यात परंपरेने चालत आलेले असतात. त्यांच्या या गीतांचे काहीसे स्वरूप लौकिक गीतेसारखे असले तरी त्यांचा समावेश लोकगीतातच करणे अधिक योग्य आहे. या उपासकाशिवाय मराठी लोकजीवनात उदरनिर्वाहास भटकंती करणारे बहुरूपी, पांगुळ, कुडमुड्या जोशी, बैलवान इत्यादी फिरस्तेही मौखिक परंपरेने चालत आलेली गीते म्हणतात. यांच्यामुळेच मराठी संस्कृती खऱ्या अर्थाने चांगल्या मार्गाने टिकून आहे. अशा मराठी लोकसंस्कृतीचे उपासक व त्यांची मौखिक गीते थोडक्यात पुढीलप्रमाणे पाहणे गरजेचे आहे.

वासुदेव व त्यांची मौखिक गीते :

वासुदेव हा श्रीकृष्णाचा भक्त असून उदरनिर्वाहासाठी भिक्षा मागून आसताना तो श्रीकृष्णाविषयक व अन्य गाणी गात फिरतो. उदरनिर्वाहासाठी वासुदेवाची भिक्षा मागण्याची परंपरा आहे. वासुदेवाच्या कथात्मगीतात पुराणातील आदर्श व्यक्ती - जीवनाची त्यातील घटना-प्रसंगासह कथा वर्णन केलेली असते. 'हरिश्चंद्र-तारामती', 'श्रीयाळ - चांगुणा', 'सत्यवान सावित्री', 'श्रीकृष्ण- द्रौपदी' अशा स्वरूपाचे कथानक वासुदेव आपल्या गीतातून सांगतो. रचनेच्या व आकाराच्या दृष्टीने ही कथागीते मोठी असतात. वासुदेवाच्या स्फुटगीतातून कृष्णाच्या बाललीला, खोड्या, यशोदेचा वात्सल्य भाव, गोकुळातील गौळणी यांचे वर्णन रसाळवाणीने केलेले असते. त्याच्या आध्यात्मिक स्वरूपाच्या गीतातून आत्मा, परमात्मा, देह, देहाला त्रस्त करणारे विचार, आत्म्याचे, अमरत्व देहाचे नाशिवंत, मानवी जीवनाचे सार्थकत्व, विविध दृष्टांताच्या आधारे व्यक्त केले जाते तर त्याच्या उपदेशावर रचनातून

'खोटं बोलणं ग्वाही, उलटा जमाना

शहाणाचतुर पंडित, त्याला कोणी विचारांना'

आणि

'ज्याचा जवळ नसल पैसा, म्हणती पिसा जन्माचा'

अशा बदलत्या समाज जीवनांचे चित्रण पहावयास मिळते तर,

'प्राण आहे तोवर करा देहाचे साधन

प्रपंचात परमार्थ करा, नाथाचं स्मरण'

असा उपदेशही केलेला असतो.

गोंधळी व त्यांची मौखिक गीते :

मराठी लोकसंस्कृतीत आणि लोकजीवनात वासुदेवाप्रमाणे गोंधळ्यालाही आगळे-वेगळे स्थान आहे. महाराष्ट्रात काही घराण्यांमधून 'गोंधळ' घालण्याची प्रथा आजही रूढ आहे. 'गोंधळी' हा देवीचा भगत असल्यामुळे देवीच्या उपासनेत त्याला अनन्यसाधारण महत्त्व आहे. 'गोंधळ' हा विधीनाट्य प्रकार देवीच्या उपासनेचाच एक भाग आहे. गोंधळाच्या विधीच्या प्रसंगी व इतर वेळीही गोंधळी नृत्य, संगीत, अभिनयाच्या साथीसह गीते गाणे या गीतांचे स्वरूप पूजाविधी, देवीची गाणी, पुराणांतील कथांचे सादरीकरण व आरती या प्रमाणे असते. गोंधळाच्या आरंभी गोंधळी देवदेवतांना गोंधळास येण्यास आवाहन गीतातून करतो. ते गीत वैशिष्ट्यपूर्ण आहे.

'तुळजापूरची आई गोंधळास यावे,

कोल्हापूरची लक्ष्मीबाई गोंधळास यावे,

बासरच्या सरस्वती गोंधळा यावे,

माहुरचे रेणूका माते गोंधळा यावे,

गोंधळ मांडिला, गोंधळा यावे'

या गीतातून तो महाराष्ट्रातील अनेक देवदेवतांना गोंधळास येण्याचे आवाहन करतो. रचना, आशय आणि अभिव्यक्ती या दृष्टीने गोंधळ्याची गाणी वैशिष्ट्यपूर्ण आहेत. जनसामान्यांना पुराणातील कथा, देवतारूप व्यक्ती यांचा गीतांच्या माध्यमातून, गोंधळातून परिचय करून देण्याची गोंधळ्याची किमया वेगळीच आहे.

वाघ्या-मुरळी व त्यांची मौखिक गीते :

मराठी लोकसंस्कृतीत आणि लोकजीवनात खंडोबा या लोकदेवतेच्या उपासनेत वाघ्या-मुरळी आणि त्यांचे 'जागरण' यांना महत्त्वाचे स्थान आहे. वाघ्या-मुरळी म्हणजे खंडोबाचे भगत होय. खंडोबाच्या नवसाने झालेल्या मुलास खंडोबाची उपासना करावी म्हणून 'वाघ्या' बनवितात. तर मुलीस 'मुरळी' संबोधिले जाते. सध्या 'मुरळी' बनण्याला कायद्याने बंदी असल्यामुळे वाघ्या-मुरळी अशी जोडी पाहावयास मिळत नाही. आपल्या पारंपरिक वेशात नृत्य आणि संगीताच्या साथीने वाघ्या-मुरळी गीते गातात. या गाण्यांचे स्वरूप कथात्मगीते किंवा कथागीते, खंडोबा, म्हाळसा आणि बाणाई यांच्या विषयीची गीते सामाजिक आशय असलेली गीते असतात. गोंधळासारखेच जागरणाचे स्वरूप असते. महाराष्ट्रात घराण्याचा एक कुलाचा म्हणून खंडोबा हे कुलदैवत असलेले घराणे 'जागरण' करवितात. जागरणातून खंडोबाची उपासना विधी होत असते.

जागरणात पूजाविधी आणि खंडोबा महात्म्यपर गीते असतात तर उत्तर रंगात पौराणिक कथाभागावर आधारित कथागीत, संगीत, नृत्य व शेवटी आरती होते. प्रसंगीच्या कथागीतातून पौराणिक कथांचा भरणा असतो. मराठी लोकधर्मी नाट्य म्हणून 'गोंधळ' प्रमाणेच 'जागरण' महत्त्वाचे आहे.

पोतराज व त्याची मौखिक गीते :

मरिआईचा भगत म्हणून लोकजीवनात पोतराज ओळखला जातो. आईच्या उपासनाविधीत पोतराजाची भूमिका प्रमुख असते. गाव बांधणे, मरिआईचा गाढा ओढणे यासारख्या विधी पोतराजाच्या उपस्थितीत केल्या जातात. तसेच 'जागरणात' ही पोतराजाचे अनन्यसाधारण महत्त्व असते. गावाचे रक्षण करणारी ग्रामदेवता म्हणून मरिआईला मराठी मुलूखात श्रद्धेचे स्थान असून तिचा भगत म्हणून पोतराजालाही मराठी लोकजीवनाचे आदराचे स्थान आहे. आषाढ महिन्यात आणि इतर वेळी पोतराज देवीच्या नावाने भिक्षा मागताना पारंपरिक वेशभूषा करून गीते गातात. यावेळी तो हलगीच्या संगीत साथीवर नृत्यही करतो. वासुदेव, गोंधळी, वाघ्या-मुरळी यांच्या नृत्यापेक्षा पोतराजांचे नृत्य आगळे-वेगळे असते. त्यांच्या नृत्यास रौद्रता दिसून येते. अंगात देवी संचारल्याचा भास त्यांच्या नृत्यातून दर्शविला जातो. त्याची पारंपरिक वेशभूषाही काहीशी रौद्र पध्दतीची असते. पोतराजाच्या गीतांचे स्वरूप कथात्मगीते किंवा कथागीते, ओवी सदृश्यगीते व धूपात्रीच्या वयाप्रमाणे असते. मरिआईच्या उपासनेचा विधी म्हणून पोतराजाचे 'जागरण' केले जाते. जागरणात पूर्वरंग व उत्तररंग असे दोन भाग असतात.

जागरणातून सादर केल्या जाणाऱ्या कथागीतांचे स्वरूप खालीलप्रमाणे –

पोतराजाच्या कथातून आईचे महात्म्य, भक्तावरील तिची कृपा, तिचे रूप, गुणवर्णन व चांदयाचे महात्म्य वर्णन केलेले असते.

'आली आली मरिआय, कोण्या राजाला पावली

धजा मोत्याची लावली, धुरपला माया'

पोतराजाच्या दीक्षाविधी प्रसंगी या व या गायिल्या जातात. या वयातून मरिआईचे महात्म्य गायिलेले असते. बदलत्या वातावरणानुसार पोतराजाच्या या लोकगीतांत ही बदल झालेले आहे.

भराडी व त्यांची मौखिक गीते :

भैरवनाथाचे उपासक म्हणून भराडी लोकजीवनात ओळखले जातात. एक कुलाचार म्हणून 'भराड ' घालण्याची प्रथा काही घराण्यात आहे. भराड्याची संख्या फारच कमी असून त्याचा आढळ प्रामुख्याने पश्चिम महाराष्ट्रात व मराठवाड्यातील काही भागातच दिसतो. भराड्याची परंपराही जुनीच आहे. ज्योतिबा हा लोकदेव भैरव स्वरूप असल्यामुळे भराड्यांचा तो उपास्थ दैवत आहे. भैरवाच्या उपासना प्रसंगी आणि इतरवेळी भिक्षा मागताना भराडी गीते गातात. आशय आणि रचनेच्या दृष्टीने त्यात विविधता पाहावयास मिळतात. भराड्यांच्या गीतांना मंत्र सामर्थ्याचे स्वरूप आलेले पाहावयास मिळते. भराडी, भैरवनाथ आणि विषहरण या विषयी अनेक आख्यायिकाही ऐकावतो भराड्यांच्या गीतांचे स्वरूप कथात्मगीते किंवा कथागीते, विधीगीते, मंत्रात्मक स्वरूपाची गीते व संकीर्ण गीते असे असते. उपासना दैवतांचा कुलाचार म्हणून 'भराड ' घातलाना, भूत-पिशाच्या, सर्पदंश, उत्तरतांना भराडी कथागीते गातो. या कथागीतातून 'रामायणाची कथा', 'भैरवनाथाची कथा', 'ज्योतिबाची कथा' सांगितल्या जातात. भराडातील पूर्वरंगात प्रामुख्याने पुढीलप्रमाणे 'गण' गायिला जातो.

'गणराया लौकर यावे

गणराया नाचत नाचत यावे

सुख सर्वासी घावे'

पार्वतीने शंकराला असा प्रश्न विचारला तेव्हा शंकर तिला म्हणाले, 'चल आपण जरा फेरफटका मारून येऊ, तुल्या तुझ्या प्रश्नाचे उत्तर मिळेल असं म्हणून शंकर पार्वतीचा फेरा निघाला. एका कुणब्याच्या घराकडे बोट दाखवून शंकर पार्वतीला म्हणाले,

'ऐक पार्वती, शंकर बोले

पहा कुणबी कसा चाले

उत्तम शेत त्याचे पिकले

गरीब बिचारे उपासी मेले

त्याची वासना नाही बरी

चल जाऊ कुणब्याच्या घरी.'

भराड्यात मुद्राविधीच्या प्रसंगी गायिलेल्या गीतांना मंत्रात्मक स्वरूप प्राप्त झालेले आहे.

'कंचन काया, कफणी लाया,

निर्गुण, सगुण चिरा दिया.

उन्मनिं मुद्रा कान भराया

शैली शृंगी सत्य जोग का माया

ओम नमते गुरु को आदेश आदेश'

विधीशी संबंधित असलेल्या या गीताला मंत्रात्मक स्वरूप प्राप्त झाल्यामुळे विशिष्ट विधीच्याच प्रसंगी अशा स्वरूपाचे गीत म्हटले जाते.

बदलत्या वातावरणात मराठी लोकसंस्कृतीचा एक उपासक म्हणून भराड्याला आदराचे स्थान आहे.

भोप्या व त्याची मौखिक गीते :

अंगात घोळदार झगा घातलेला, विजार नेसलेला, डोक्यावर शंकूच्या आकाराची टोपी व त्या टोपीवर कवड्यांची काढलेली नक्षी, गळ्यात कवड्याच्या माळीचे पट्टे, कमरेला कवड्यांनी गुंफलेला कमरपट्टा, छातीवर लोंबता देवीचा टाक, गळ्यात लोंबणारी हळद-कुंकवाची कवड्यांनी बनविलेली पिशवी, एका हातात चिंध्याचा मोठा पोत आणि दुसऱ्या हातात तुणतुणे असा पारंपरिक पोषाख परिधान करून भोप्या देवीची गाणी गात असतो. भोप्या हा देवीचा भगत असल्यामुळे देवीच्या नावाने भिक्षा मागताना भोपे म्हणत असलेल्या गीतांचे स्वरूप कथात्म गीते व देवीची महात्मपर गीते असे असते.

'वारा गं मंदी वार, वार मंगळवार केला,

आंबेला गं हिरवा चुडा चढविला ॥

हिरवा चुडा चढविला, कपाळी मळवट भरिला,

कपाळी मळवट भरला, गं हिरवा खण तुला.

भोप्याच्या या गाण्यांना संगीत आणि नृत्य यांची साथ असल्यामुळे या गाण्याचा 'प्रयोग' पाहण्यासारखा, ऐकण्यासारखा असतो. करपल्लवीच्या इशाराने संकेताने नाव ओळखण्याची भोप्याची किमया लक्षणीय आहे. सध्या बदलत्या काळात भोप्यांच्या गीतामधून देवीच्या गीताबरोबर सद्याच्या वातावरणाचा प्रभाव पडलेला दिसतो.

धनगर व त्यांचे मौखिक गीते :

पूर्वी भटकी असलेली धनगर ही जमात आता जवळ जवळ स्थानिक झालेली आहे. मेंढ्या पाळणे आणि घोंगडी विणणे हा पारंपारिक व्यवसाय आजही धनगर करताना दिसतात. धनगराचे उपासना दैवत म्हणजे विरोबा, विरोबाच्या उपासनेतील 'सुंबरान' आणि 'हुईक' वैशिष्ट्यपूर्ण असते. विरोबाचे माहात्म्य आणि त्याच्याविषयीच्या कथा - गीतांच्या व संगीताच्या साथीसह सांगितल्या जातात. विरोबाच्या उपासनेत 'हुईका' ला अनन्यसाधारण असे महत्त्व आहे. धनगरांची कथात्मगीते, विरोबाचे माहात्म्य सांगणारी गीते, स्फुटगीते अशा स्वरूपात विभागणी होते.

गोंधळ, जागरणाप्रमाणेच हुईक सुरु होताना विरोबासह इतर देवदेवतांना हुईकास येण्याचे व हुईक निर्विघ्न पार पाडण्याचे आवाहन केले जाते. 'सुबरानात' 'गणा'त निरनिराळ्या देवदेवतांचे पुढीलप्रमाणे उल्लेख केले जातात.

'सुंबरान मांडिलं, सुंबरानं मांडिलं,

आदि नमन गणाला, मंग सरस्वती मातेला,

कैलाशीच्या महादेवाला, पतिव्रता पार्वतीला,

कैलाशीच्या संभू देवाला, हो देवाला,

तेहतीस कोटी देवाला, हो देवाला,

इनती करतो, यावं तुमी सुंबरानालां,

सुंबरानाला, हो सुंबरानाला.'

'सुंबराना' प्रमाणेच 'हुईका' तही निरनिराळ्या देवदेवतांचे आरंभी स्तवन केले जाते. हुईकात विठोबाचा भगत. हुईकासाठी जमलेल्या सर्व लोकांना पुढील वर्षाचे भविष्य कथन करतो. हा हुईकाचा महत्त्वाचा विशेष होय. नृत्य, गीत, संगीत आणि उत्सव यांचा नयन मनोहारी मिलाप, हुईकात पहावयास मिळतो. म्हणून बदलत्या वातावरणात सुध्दा 'हुईक' ला महत्त्व आहे.

सुंबरान आणि हुईकातील गाणी पारंपरिक असून धनगर जमातीत या गीतांना श्रध्देच्या दृष्टीने अत्यंत मोल असते. धनगर जमातीच्या सांस्कृतिक व धार्मिक परंपरेचे दर्शन आपल्याला सुंबरान आणि हुईकातून घडते.

पांगुळ व त्याची मौखिक गीते :

मराठी लोकसंस्कृतीच्या अनेक उपासकांपैकी पांगुळ हा उपासक आहे. संध्या पांगुळ सहसा पाहावयास मिळत नाही. पण एकेकाळी म्हणजे पंचवीस-तीस वर्षांपूर्वी मराठी मुलुखातील पहाट कधी कुडमुड्या जोशीच्या डमरुच्या आवाहनाने

तर कधी पांगुळाच्या गाण्याने क्षितिजावर येताना दिसत असे. प्रातः काळीच पांगुळ गावातील मुख्य रस्त्यावर असलेल्या झाडावर उंच ठिकाणी उभा राहून गावातील आया-बायांना, गड्या-बापड्यांना पुढील साद घालवयाचा

“आया बायानो पांगुळ आला वो
राम-लक्ष्मणा पांगुळह आला वो
पाटील-कुलकर्ण्या पांगुळ आला वो
सीता - सावित्रीनो पांगुळ आला वो
दान घावे, दान घ्यावे पांगुळाला वो”

पांगुळ ही संज्ञा प्राचीन असून प्रामुख्याने तिचा आढळ महाराष्ट्रात अधिक प्रमाणात होतो. य कथा करून उदरनिर्वाह करणे व लोकांना धार्मिक कथा सांगणे असे स्वरूप पांगुळाचे आहे. त्याच्या गीतातून पुराणातील अनेक संदर्भ आलेले पाहावयास मिळत. आशयाच्या दृष्टीने त्याच्या गीतात विविधता तरती मात्र अभिव्यक्तीच्या पध्दतीत तोच तो पणा असतो. सध्याच्या वातावरणात ‘पांगुळ’ उपासक दुर्मिळ झालेले आहेत.

बहुरूपी व त्याची मौखिक गीते :

बहुरूपी म्हणजे नाना रूप धारण करणारा नट. एक कुशल नट म्हणूनच बहुरूपी मराठी लोकजीवनात ओळखले जाते. ती एखाद्या व्यक्तीचे हुबेहुब रूप घेऊन त्या रूपाला साजेशी अशीच बतावणीही तोच करतो. बहुरूप्यांची परंपरा कित्येक शतकांची आहे. एकनाथ समकालीन जनी ननदिन या संतकवीच्या 'जानकी सैवर' या काव्यात बहुरूप्याचा उल्लेख पुढीलप्रमाणे आलेला आहे.

"येकू बहुरूपी केली शक्ती

नाना स्वांगी नाचविती

मंगळा अमंगळा आकृती

श्री रघुपती धरवितो.

वरील उल्लेखावरून बहुरूपी निरनिराळ्या प्रकारची सोंगे घेऊन त्याप्रमाणे वर्तन करतो. ते सोंग चढवितो हे लक्षात येऊ शकते. बहुरूपी जेव्हा घरापुढील अंगणात उभा राहून गाणे गाऊ लागतो. तेव्हा अबालवृद्ध जमा होऊन त्याच्या जमती जमती आनंदाने पाहतात. त्याचे 'लग्नाचे गीत' तर अबालवृद्धांच्या ओठांवर खेळते. बहुरूपी घरापुढील अंगणात उभा राहून लग्नाचे पुढीलप्रमाणे निमंत्रण देतो.

"लग्नाला चला, तुमी लग्नाला चला

लग्नाला चला तुमी लग्नाला चला

साळुबाई, काळुबाई, मालनबाई,

दगडाबाई, धोंडाबाई करा आता घाई

लग्नाला चला तुमी लग्नाला चला."

शब्दचमत्कृती, विसंगती आणि अतिशयोक्तीच्या आश्रयाने बहुरूपी आपल्या गीतातून विनोद नही निर्मिती करतो. बहुरूप्याच्या नकला आणि गीते म्हणजे जनसामान्यांना विनोदाची मेजवानीच असते. त्याचा प्रत्येक शब्द, त्याची प्रत्येक हालचाल, अभिनय, विनोद निर्मितीस पुरक असतो. आजही बहुरूप्याच्या गीतातून समाज जीवनाचे दर्शन घडते. बहुरूपी जे गीत गातो ती त्याच्या घराण्यात परंपरेने चालत आलेली असतात. असे असले तरी प्रत्येक पिढीत बदलत्या समाजजीवनामुळे परिस्थितीमुळे त्यात नवीन भर पडत जाते. त्यामुळे या गीतांना नित्यनुतन स्वरूप येत असते. मराठी लोकसंस्कृतीच्या काही उपासक व त्यांच्या लोकगीतांचे स्वरूप विशेष आपण येथपर्यंत न्याहाळले या शिवाय डक्कलवाराची 'पुराण गाथा', कुरमुड्या जोशींचे 'भविष्यकथान', 'नंदीबैल' वाल्याची 'शंकर पार्वतीची गाणी', मसण जोग्याचे 'शंभू महादेव' असे उपासक व त्यांची मौखिक लोकगीते वैशिष्ट्यपूर्ण आहे. एकूणच मराठी लोकसंस्कृतीतील काही उपासक धर्म, अध्यात्म, नीतिनियम आपल्या गीतातून बदलत्या काळातही सांगतात. लोकसंस्काराबरोबर रंजनातून उद्धोधन असे स्वरूप मराठी मुलुखातील या फिरत्या संस्थांचे आहे असेच म्हणता येते.

समारोप :

मराठी लोकसंस्कृतीची जोपासना करणाऱ्या वासुदेव, गोंधळी, वाघ्या-मुरळी, पोतराज, भराडी, भोपे, धनगर, भगत, पांगुळ, बहुरूपी इत्यादींच्या लोकवाङ्मयाचे स्वरूप आपण न्याहाळण्याचा दिसते की, मराठी लोकजीवनावर लोकसंस्कृतीच्या उपासकांचा प्रभाव बदलत्या वातावरणानुसार आजही काही प्रमाणात टिकून आहे. या उपासकांच्या मागे कित्येक शतकांची परंपरा आहे. लोकसंस्कृतीचे हे उपासक नैतिक लोकसंस्कृतीचे आरोग्य अबाधित ठेवण्याचे कार्य कित्येक शतकांपासून करीत आहेत. लोकांच्या दारापुढे स्वतः जाऊन देवाच्या नावाने भिक्षा मागून आपला उदर निर्वाहाबरोबरच धर्म, संप्रदाय आणि पुराण यांची माहिती त्यांनी लोकांना देण्याचे महत्वाचे काम केले हे विसरून चालत नाही. लोकरंजनातून उद्धोधन, लोकसंस्कार असे त्यांच्या कार्याचे स्वरूप होते आणि हे कार्य करीत असताना त्यांनी मराठी वाङ्मयाचे दालनही समृद्ध आणि संपन्न केले. आजच्या बदलत्या वातावरणानुसार मराठी लोकसंस्कृतीच्या आणि लोकजीवनाच्या जडण-घडणेत या उपासकांचा मोलाचा सहभाग आहे हे आपल्याला विसरता येत नाही.

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साहित्य, समाज आणि संस्कृति : सहसंबंध

श्री.युवराज पांडुरंग भोईर

संशोधक विद्यार्थी

डॉ बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ

छत्रपती संभाजीनगर

डॉ. श्याम तुकाराम सांगळे

ग्रंथपाल व संशोधन मार्गदर्शक

डॉ बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ

छत्रपती संभाजीनगर

जीवन हा साहित्याचा विषय आणि भाषा हे साहित्याचे माध्यम आहे. जीवन व भाषा या दोन्ही गोष्टी समाजाधिष्ठित आहेत. प्रत्येक समाजाजवळ एक संस्कृतीचा ठेवा असतो जो भाषेच्या माध्यमातून साहित्याद्वारे प्रकट होतो. शिवाय 'साहित्य' हे वाचक, श्रोते वा प्रेक्षक यांच्याकरीता निर्माण होते. 'साहित्यिक' हादेखील समाजाचाच एक घटक असतो. साहित्यनिर्मितीने त्याला समाधान, संपत्ती व किती प्राप्त होते, या सर्वच गोष्टीत साहित्याचा समाजाशी असलेला संबंधच दिसून येतो.

प्रास्ताविक :

'साहित्य हे मानवी जीवनाचे प्रतिबिंब आहे'. साहित्य हा समाजाचा आरसा आहे. संस्कृती ही विविध लोकसमुदायाची सुजीवन पध्दती आहे . अशी विविध मते आपण ऐकतो. साहित्य, समाज आणि संस्कृती हे एकमेकांना परस्पर पूरक घटक आहेत. या साहित्य, समाज व संस्कृतीचा एकमेकांमध्ये सहसंबंध आढळतो. समाज व संस्कृतीचा तर या साहित्यावर प्रचंड प्रभाव आहे. या प्रभावाचा व्यापक विचार करावा लागतो.

साहित्य, समाज आणि संस्कृती :-

कला, समाज आणि संस्कृती यांच्या अभ्यासाचे 'साहित्य' हे महत्वाचे माध्यम आहे तर साहित्य, समाज, आणि संस्कृती यांचे अत्यंत घनिष्ठ संबंध असून ते परस्परांना पूरक असतात. साहित्यनिर्मिती हा मानवाच्या सामाजिक जीवनातील सांस्कृतिक उपक्रम आहे, तसाच तो संस्कृतीचा एक घटकही आहे. विवाह संस्थेपासून राज्यसंस्थेपर्यंत सर्व सामाजिक संस्था, या संस्थांच्या लिखित अलिखित नियमातून निर्माण झालेल्या चालीरीती, रूढी परंपरा आणि रिवाज तसेच कला आणि साहित्य हे संस्कृतीचे चार घटक आहेत. या चार घटकांनी मिळून 'संस्कृती' ही लघुसंज्ञा परिचीत झालेली आहे. पुष्कळा 'संस्कृती' आणि 'समाज' असे म्हणतो तेव्हा आपल्याला 'लोकांचे वर्तन' अभिप्रेत असते. समाज हा ओळखता येण्यासारखा 'लोकसमुदाय' असतो. तो आदिम समाज, भटका विमुक्त समाज, खेड्यातील कृषिजीवनाशी निगडित ग्रामीण समाज अथवा आधुनिक समाज असेल पण 'समाज' म्हणजे एकाअर्थी 'परिमित लोकांची संस्था'च असते. आणि संस्कृती म्हणजे विविक्षित 'लोकसमुदायाच्या अथवा समाजाच्या जीवनाची विक्षित पध्दती असते. या जीवनपध्दतीत कला आणि साहित्य यांना अविभाज्य आणि अपरिहार्य असे स्थान आहे. (सदा क-हाडे). साहित्यकृतीची निर्मिती ही लेखकाची व्यक्तीनिष्ठ निर्मिती असली तरी त्याला त्याच्या समाज जीवनातून आणि सांस्कृतिक वातावरणातून साहित्याच्या निर्मितीच्या प्रेरणा व स्वोत मिळत असतात.

साहित्य :

संस्कृत साहित्य मीमांसकांनी काव्याच्या / साहित्याच्या केलेल्या व्याखेवरून असे म्हणता येते की, 'साहित्य', हा शब्द संस्कृत वाङ्मयात 'ललित वाङ्मय' या अर्थाने उपयोगात आणलेला आहे. वाङ्मय, सारस्वत ही साहित्याची

पर्यायी संज्ञा आहेत. साहित्य म्हणजे असे लेखन की ज्यात शब्दांचा एक रमणीय अर्थ असतो. भाव, कल्पना, विचार, शैली इत्यादीपासून हे रमणीयत्व, लालित्य आलेले असते. त्यामुळे हे लेखन लक्षणीय बनते. वाचकांना त्याच्या आस्वादातून एक प्रकारचा आनंदप्रत्यय येत असतो. काव्य, कथा, कांदबरी, नाटक यांचा समावेश साहित्यातच असतो. साहित्य हो एका व्यक्तीमत्वाची नवनिर्मिती असते. लेखक कबी, आपली अनुभूती, आपले अनुभविश्व साहित्यातून व्यक्त करत असतो, 'साहित्य' ही एक शक्ती आहे, मनासंबंधीच्या अनुभवातून एक मन तिची निर्मिती करते आणि अनेक मने तिचा आस्वाद घेतात. साहित्य शब्दांमधून साकार होते. शब्द अनुभव प्रकट करतात. अनुभव अनेक मूल्यदर्शी भावघटकांनी संघटित होतो, यावरून लक्षात येते की, साहित्यकृतीमधील अनुभूती लेखकाने समाज परिसरातून घेतलेली असते. त्यामुळे लेखकाचो 'अनुभवसृष्टी' म्हणून जी संकल्पना मान्य केली जाते तिच्यावर समाज आणि संस्कृती यांचा प्रभाव दिसून येतो.

समाज :-

एका समाज उद्दिष्टांसाठी एका विशिष्ट भूभागावर राहणार्या व्यक्तींचा समुदाय म्हणजे 'समाज' होय. निव्वळ लोक एकत्रित आले म्हणजे समाज बनत नाही. समाज बनण्यासाठी त्या लोकांमध्ये संबंधाची व्यवस्था असली पाहिजे. समाज एका विशिष्ट भूभागावर वसलेला असतो. समाज स्थायी असतो. त्यातनिरंतरता असते. समाजातील सदस्यांमध्ये आपलेपणाची भावना असते. समाजाची वैशिष्ट्यपूर्ण जीवनपध्दती असते. पुराणात समाजाचा उल्लेख 'समाज म्हणजे उत्सव' असा आढळतो. प्रत्येक समाजाची धारणा, त्यामागील रचनातत्वे वेगवेगळी असतात. धर्मसंकल्पना, रूढी, तत्त्वप्रणाली, आचार, विचार, दृष्टिकोन, संकेत, शिष्टाचार नीतोकल्पना इ. विशेष स्वतंत्र वा वेगळे असतात. त्या सर्वांवरच त्या-त्या समाजाची संस्कृती निश्चित होत असते. यावरून साहित्य हे जसे मानव्यसापेक्ष आहे तसाच मानव हा समाजसापेक्ष आहे आणि समाज हा संस्कृतीसापेक्ष आहे हे जर आपण मान्य करणार असू तर साहित्य आणि समाज यांच्यातील मूलभूत संबंध कोणालाच नाकारता येणार नाही.

संस्कृती :-

केवळ मानव हाच 'संस्कृती' असणारा भूतलावरील एकमेव प्राणी आहे. संस्कृती ही मानवाने स्वतः निर्माण केलेली आहे. 'संस्कृती' हा शब्द 'कल्चर' या शब्दाच्या प्रतिशब्द म्हणून रूढ झाला आहे. 'संस्कार' आणि 'संस्कृती' हे दोन्ही सम कृ या एकाच धातुपासून चनले आहे. त्यांचा अर्थही व्याकरणीकदृष्ट्या एकच आहे. पण संस्कार हा शब्द धार्मिक क्षेत्रापुरताच मर्यादीत राहिला. धर्मासह समग्र अंतर्बाह्य जीवनाच्या उन्नत अवस्थेसाठी 'संस्कृती' हा शब्द वापरला जातो. "मनुष्य समाजाची डोळ्यांना दिसणारी भौतिक वस्तुरूप निर्मिती व डोळ्यांना न दिसणारी पण विचारांना आकलन होणारी मनोमय सृष्टी म्हणजे संस्कृती होय" डॉ. इरावती कर्वे यांच्या संस्कृतीच्या व्याख्येवरून 'संस्कृती' ची संकल्पना पूर्ण स्पष्ट होते.

साहित्य, समाज आणि संस्कृतीचा सहसंबंध :-

जीवन हा साहित्याचा विषय आणि भाषा हे साहित्याचे माध्यम आहे. जीवन व भाषा या दोन्ही गोष्टी समाजधिष्ठित आहेत, तर प्रत्येक समाजाजवळ एक संस्कृतीचा ठेवा असतो. शिवाय 'साहित्य' हे बाचक, श्रोते वा प्रेक्षक यांच्याकरीता निर्माण होते आणि 'साहित्यिक' हा समाजाचा एक घटक असून साहित्यनिर्मातीने त्याला समाधान, संपत्ती व किती प्राप्त होते, या सर्वच गोष्टीत साहित्याचा समाजाशी असलेला संबंधच दिसून येतो. साहित्याचे समाजावर व समाजाचे साहित्यावर बरे-वाईट परिणाम होत असतात. त्याचे एक कारण असे देता येते की, लेखक, वाचक, आणि भाषा हे साहित्यकृतीच्या संदर्भात लक्षात घ्यायला हवेत. हे तिन्ही घटक 'सामाजिक' म्हणून एकच

कारण असे देता येते की, लेखक, वाचक, आणि भाषा हे साहित्यकृतीच्या संदर्भात लक्षात घ्यायला हवेत असे तिन्ही घटक 'सामाजिक' म्हणून अशा एक वस्तुचेच भाग असतात. त्यामुळेच साहित्याला एक सामाजिक परिणाम प्राप्त होत असते. त्यामुळेच तेथे कलात्मकतेबरोबरच सामाजिकतेचा विचारही महत्वाचा ठरतो. "लेखक हो निर्मितीक्षम कलावंत असला तरी, तो नेहमीच एका विशिष्ट समाजाचा घटक असतो. व्यक्ती आणि समाज यांच्या संबंधाबाबतचे सर्व प्रश्न त्याच्याही बाबतीत उपस्थित होत असतात. त्याच्या कृती- उक्तौला नेहमीच एक सामाजिक परिणाम असते. व्यक्तीचे एकलेपण आणि सामाजिकता यातही एक गुढ संबंध असतो. त्यातील प्रश्नांची सोडवणूक साध्या, सरळ नियमांनी करता येत नाही हे खरे असले तरी त्या दोहोत असलेला संबंध अमान्य करता येत नाही". 'साहित्य' आणि 'संस्कृती' यांचा निकटचा संबंध आहे. साहित्य हा संस्कृतीचाच एक भाग आहे. संस्कृती म्हणजे विशिष्ट काळातील समाजातील जगण्याची विशिष्ट रीती, पध्दती, धाटणी होय. संस्कृतीत सामावलेल्या कोणत्याही गोष्टीचे ज्ञान उपजत नसते. संस्कृतीचा वारसा पूर्वाजांकडून मिळतो. परंतु प्रत्येक पिढी तेवढ्यावरच समाधान मानित नाही. परिस्थितीशी समायोजन करताना व चिकित्सक बुद्धीने निर्माण केलेल्या प्रश्नांची उत्तरे शोधताना प्रत्येक पिढीला नवीन अनुभव येतो. नवनवीन संस्कृतीची निर्मिती होते. मूळ संस्कृतीत भर पडते. या प्रक्रियेमुळेच मानवी संस्कृतीचा सतत विस्तार होत आला आहे. समाज विकसनशील आणि विस्तारशील आहे. संस्कृती हे या समाजाचे एक वैशिष्ट्य आहे. संस्कृतीसुद्धा विकसनशील आणि विस्तारशील असते. मानवी समाजाच्या सांस्कृतीक जीवनातील स्थिती गतीचा आलेख, निर्देश साहित्य कलांमधून प्रत्ययाला येऊ शकतो. मानवी समाजात संस्कृतीचे महत्त्व आहे. संस्कृती जोपासावी लागते. जोपासतानाच तिचे संवर्धन होते. साहित्य हे संस्कृतीची जोपासना करण्यांच, संस्कृतीचं रक्षण करण्यांच आणि संवर्धन करण्यांच कार्य करीत असते. समाज वास्तवाला साहित्यात अनन्यसाधारण महत्त्व असते. लेखक त्याने अनुभवलेले सामाजिक वास्तव आपल्या साहित्यकृतीतून मांडतो. त्यातून त्याच्या साहित्याला संदर्भ प्राप्त होत असतात. या संदर्भाच्या अभ्यासात साहित्य मार्गदर्शक ठरते. वरील संदर्भ लक्षात घेता लेखकाच्या सामाजिक जाणिवेचा, सामाजिक वास्तवाचा, समाज जीवनाचा, समाज परिवर्तनाचा, सामाजिक मूल्यांचा समाजातील वृत्ती-प्रवृत्तीचा, समाज आणि साहित्य यांच्या नात्यांचा आणि त्यातून समाज मूल्यांचा आविष्कार करावा अशी अपेक्षा लेखकाकडून केली जाते. सामाजिक बांधिलकीत लेखक हा व्यक्ती म्हणून समाजाचा घटक असतो. हा विचार लक्षात घेतलेला आहे.

लेखकाच्या साहित्य निर्मितीत त्याचे सारे व्यक्तीमत्व सामावलेले असल्याने साहित्याचा विचार करताना, त्याच्या व्यक्तीमत्वाचा विचार तितकाच महत्वाचा असतो. "सामाजिक आणि सांस्कृतीक पर्यावरण" हा सामाजिक घटक, वाङ्मयनिर्मिती आणि अभिरूची, सामाजिक आणि सांस्कृतिक पर्यावरणातच घडत असते. लेखक आणि वाचक हे समाजाचेच घटक असतात. ते ज्या समाजाच्या पर्यावरणात वावरतात त्या पर्यावरणाचा त्यांच्यावर चांगला वाईट परिणाम होणे स्वाभाविक असते. शिवाय प्रत्येक समाजाची आपली म्हणून एक संस्कृती असते. या संस्कृतीची जडण घडण परंपरेने झालेली असते. समाजाच्या आचार-विचार, रूढी प्रथा यातून संस्कृतीला पैलू प्राप्त होत असतात. लेखक आणि वाचक याच सामाजिक, सांस्कृतिक पर्यावरणात वाढलेला असतो. त्यामुळे या समाजाच्या जीवनपध्दतीचे चित्रण त्याच्या साहित्यकृतीतून येणे जसे स्वाभाविक असते, तसेच ते वाचकालाही आपले वाटणे स्वाभाविक ठरते. काळ बदलला की सामाजिक आणि संस्कृतीत स्थिती बदलते. आणि बदलत्या स्थितीचा परिणाम साहित्यावरही झालेला दिसून येतो. स्वातंत्र्योत्तर काळानंतर दलित साहित्य, स्त्री साहित्य, इत्यादी साहित्य प्रकारात झालेला बदल हे काळाच्या सामाजिक आणि सांस्कृतिक बदलाचे उदाहरण आहे. यावरून सामाजिक, सांस्कृतिक स्थिती बदलली म्हणजे साहित्यातूनही बदल घडून येतात, असे सिध्द होते.

निष्कर्ष:-

समाज, संस्कृती आणि वाङ्मय यांच्यातील संबंध अतूट असल्याने त्यांचा परस्परांवर प्रभाव पडत असतो. समाजात परिवर्तन घडू लागले की, वाङ्मयातही त्याचे पडसाद स्वाभाविकपणे उमटतात आणि त्यातही परिवर्तन घडून येते. याच दृष्टीने आपल्याला असे म्हणता येते की, सामाजिक, सांस्कृतिक चळवळी आणि वाङ्मय यांचा परस्परांवर प्रभाव पडत असतो. मराठी साहित्य बाराव्या शतकापासून निर्माण झालेले असले आणि आपल्या साहित्याच्या या परंपरेचा आजच्या साहित्याशी व साहित्यविषयक वातावरणाशी संबंध असला तरी मराठी साहित्याच्या संदर्भात प्राचीन, अर्वाचीन हा भेद फार महत्वाचा आहे. या अर्वाचीन कालखंडात मराठी समाजाचा पाश्चात्य संस्कृतीशी जो संबंध आला त्या संबंधाचेच आपल्या आजच्या साहित्य संस्कृतीशी अधिक प्रभावी नाते असलेले आढळते.

वरील सर्व विवेचनावरून असा निष्कर्ष निघतो की, 'साहित्य' हे समाज आणि संस्कृतीच्या प्रभावातून निर्माण होणारी एक कला आहे. साहित्याचा अनुबंध राष्ट्र, जात, धर्म, वंश, प्रदेश इत्यादी दृष्टीने तपासला असता त्यातून समाजाचे व संस्कृतीचे प्रतिबिंब अनुभवता येते. साहित्याची भाषा ही दलित, ग्रामीण, अभिजात, आदिवासी इ. दृष्टीने आधुनिक काळात बोलीरूप झालेली दिसते. त्यामुळे या सर्व साहित्यातून त्या-त्या बोलीच्या परंपरा, लोकतत्त्व आणि त्या-त्या समाज संस्कृतीचा आलेख स्पष्ट होतो.

संदर्भ सूची :-

- १) कन्होडे सदा 'साहित्य आणि समाज'
- २) कुळकर्णो अरविंद वामन साहित्य विचार
- ३) जोशी माधवशास्त्री भारतीय संस्कृती कोष खंड-९
- ४) कर्वे इरावती - मराठी लोकाची संस्कृती
- ५) राजाध्यक्ष विजया मराठी वाङ्मय कोष खंड-४
- ६) सहस्रबुध्दे अविनाश - साहित्य आणि समाज

संत साहित्यातून झालेले पर्यावरण प्रबोधन

प्रोफेसर एम.बी. धोंडगे

मराठी विभाग प्रमुख

श्री पंडितगुरु पार्डीकर महाविद्यालय, सिरसाळा, जि.बीड.

संत सकल समाजाचे मार्गदर्शक होते, इतकेच नव्हे तर समाज सुधारकही होते. म्हणूनच त्यांनी व्यक्ती कुटुंबापासून अगदी राष्ट्र उद्धार पर्यंत महान कार्य केले आहे. त्यात पर्यावरण संवर्धन, पर्यावरण प्रबोधन यास प्रामुख्याने स्थान होते. त्यांच्या अभंगात, साहित्यात पर्यावरण प्रबोधन हा विचार निश्चितच महत्त्वपूर्ण होता. म्हणूनच या सर्व संतांनी ईश्वर भक्ती बरोबरच समाजाला महत्त्वाचे संदेश दिले. त्यांनी समाजाला जागृत करणारे साहित्य लेखन करून समाजास एक नवी दिशा दिली. त्यातील पर्यावरण संवर्धन आणि पर्यावरण प्रबोधनाचे मोलाचे कार्य या संतानी आपल्या साहित्याच्या माध्यमातून केलेले आहे. त्याचा मागोवा या लेखाद्वारे घेण्यात आला आहे.

सर्वच संतानी आपल्या साहित्यात पर्यावरणास महत्त्वपूर्ण स्थान दिले आहे. यात १२ व्या शतकात लिहिण्यात आलेल्या 'लिळाचरित्र' ग्रंथांत झाड, पशू, पक्षी यांच्यात समन्वय कसा राखावा ? त्यांचे जतन करावे, याचे यथोचित वर्णन आहे. संत एकनाथ महाराज, संत तुकाराम महाराज यांच्या प्रत्येक अभंगात निसर्गाविषयी माहिती आहे. ज्ञानेश्वरीच्या पानापानांत पर्यावरण आहे. समर्थ रामदासस्वामी यांनी 'बाग' या विषयावर दासबोधत वर्णन केले असून त्यात २८ समास पर्यावरणाला वाहिले आहेत. यात ३०० वृक्षांची माहिती आहे. त्यामुळे संतांच्या प्रत्येक साहित्यात पर्यावरणाविषयी सखोल प्रबोधन झालेले आहे.

निसर्गाचे संवर्धन करणे, पर्यावरणाचा समतोल राखणे हे सर्वस्वी मानवी संस्कृतीचे जतन करण्याच्या दृष्टीने आवश्यक आहे. याबात अगदी १६ व्या शतकातच संत तुकारामांनी पर्यावरण संवर्धनाचे मानवी जीवनात असलेले महत्त्व स्पष्ट केले आहे. वारकरी संप्रदायाचा कळस ठरलेले संत शिरोमणी तुकाराम महाराज. त्यांचा ग्रंथ 'अभंगगाथा'. या अभंगांमध्ये त्यांनी पुढील अभंगाद्वारे वृक्षसंवर्धनाचा सल्लाही दिला आहे.

वृक्षवल्ली आम्हा सोयरी वनचरे ।

पक्षीही सुस्वरे आळविती ॥

नाही गुण दोश अंगा येत ॥

आकाश मंडप पृथ्वी आसन ।

रमे तेथे मन क्रीडा करीं ॥

कथा कमडंलू देह उपचारा ।

जाणवितो वारा अवसारू ॥

तुका म्हणे होय, मनासी संवाद ।

आपुलाचि वाद आपणासी ॥

अशाप्रकारे संत तुकाराम महाराज यांनी निसर्गास मानवी जीवनात महत्त्वाचे स्थान असल्याचे स्पष्ट केले आहे. त्यांच्या मते मानव निसर्गाच्या सान्निध्यात आपल्या जीवनातील सुख-दुख मानसिक ताण-तणाव निसर्गातील पवित्र-हस्य वातावरणाने मनुष्य दूर करू शकतो. निसर्ग हा एक प्रकारचा अनादिकाळापासून मानवाचा सखाच असल्याचे त्यांनी म्हटले आहे. आपले नातेवाईक माणसे असतातच, तसेच वृक्ष वल्ली, प्राणी पक्षी हेही आपले सगेसोयरे आहेत, हे आपण जाणले पाहिजे. वृक्षवल्ली, बनात चरणारे-तसेच सुस्वर कंठाने आळवणारे पक्षी हे सर्व आमचे सोयरे आहेत. त्यांच्या बरोबर एकांतात राहणे मला आवडते. तेथे कोणताही गुणदोष अंगाला लागत नाही. आकाशाचा मंडप आणि पृथ्वीचे आसन असते, अशा ठिकाणी जेथे मन रमते तेथे क्रीडा करतो. देह उपचारासाठी गोधडी व कमंडलू माझ्या जवळ आहेत. प्रसंगी बारा जाणवतो. हरिकथेचे भोजन आहे. त्याचा विस्तार करून निरनिराळ्या प्रकारची रूची त्या भोजनात सेवन करतो. तुकाराम महाराज म्हणतात तेथे मनाशी संवाद होतो. त्यात आपला आपणाशी वादविवाद होतो. वृक्षवल्लींच्या सान्निध्यात मन रमून गेले की आपणच आपल्या मनाशी संवाद करू लागतो. हा महत्त्वाचा संदेश त्यांनी अभंगातून दिला आहे.

संत ज्ञानदेवांनी निसर्गातील अनेक घटकांचे दाखले देत निसर्ग-मानव यामधील संबंध स्पष्ट करताना निसर्गसमतेचे न्याय तत्व स्पष्ट केले आहे. निसर्गातील वृक्ष, मेघ, जल, हवा, प्रकाश या घटकांचे मानवाप्रती निसर्गसमतेचे न्याय तत्व कसे आहे हे पुढील ओव्यांमधून दाखविले आहे.

उत्तमार्ते धरिजे ।

अधम तरि अट्हेरिजे ।

हे काहीच नेणिजे।

वसुधा जेवीं ॥ ज्ञा. १२-१४५

संत ज्ञानदेवांच्या मते नैसर्गिक साधनसंपत्तीचा उपभोग मानवाने जरूर घेतला पाहिजे. कृतज्ञतेच्या भावनेतूनच परोपकारार्थ ही नैसर्गिक साधनसंपत्ती मानवाला निसर्गातःच देणगीच्या रूपाने मिळालेली आहे. त्यांचा उपयोग आपल्या समृद्धीसाठी मानवाने करून घेताना सत्कर्माची वाटचाल सदैव केली पाहिजे. निसर्गाचे संतुलन बिघडू न देता नगरे रचावी, घरे बांधावी, जलाशय निर्माण करावे, वृक्ष लावावेत, महावने (वनीकरण) करावीत, उद्याने निर्माण करावीत असा पर्यावरणनीतीचा बोध ते पुढील ओव्यांमधून करून देतात.

नगरे रचावीं ।

जळाशये निर्मावीं ॥

महावनें लावावीं ।

नानाविधे ॥ ज्ञा. १४-२३३

वसंत तेथ वनें।

वन तेथ सुमनें।

सुमनीं पालिंगनें।

संत सावतामाळी यांनी देखील आपल्या साहित्यातून पर्यावरण संवर्धनाचा मोलाचा सल्ला दिलेला आहे. ते आपल्या अभंगातून म्हणतात

‘कांदा मुळा भाजी, अवघी विठाई माझी’

ह्याचा अर्थ आपण पर्यावरणाला, निसर्गाला जतन केले पाहिजे. त्यात देव पाहून श्रद्धेने त्याची सेवा करावी. ह्यात जीवनाचे सार्थक आहे.

वारकरी संप्रदायात महान स्त्री संत होऊन गेल्या. त्यांनीही विपुल लेखन केले आहे. संत जनाबाई, सोयराबाई, कान्होपात्रा आणि विशेष उल्लेखनीय संत मुक्ताबाई. मुक्ताबाई वयाने लहान पण योग्यतेने श्रेष्ठ आणि ज्येष्ठ होत्या. त्यांचे ताटीचे अभंग मानवी जीवनाचे महान तत्त्वज्ञान सांगणारे आहेत. इतर अभंगातही त्या निसर्गाचे दृष्टांत देतात. त्यांच्या अभंगात गूढरम्य असून निसर्गाचे दर्शन घडते. मुक्ताबाई या निसर्गातच विजेच्या रूपात लुप्त झाल्या.

संतांच्या साहित्यातून पर्यावरणाचे महत्त्व सांगताना दुष्काळाची तीव्रताही निदर्शनास आणून दिली आहे. संत रामदास यांच्या काळातील दुष्काळाची तीव्रता अधिक होती. संत रामदासांनी या दुष्काळाकडे खूप गांभीर्याने पाहिले आहे. त्यांच्या काव्यातील दुष्काळ आजही वाचकांना अस्वस्थ करतो. असा हा दुष्काळ जसा रामदासांच्या काळात होता तसा दुष्काळ संत नामदेव, संत चोखामेळा यांच्या काळातही होता. प्रत्येक संताने आपल्या काळातल्या दुष्काळावर विवेचन केले आहे. संतांचा आणि कृषिसंस्कृतीचा संबंध घनिष्ठ अशाप्रकारचा होता. संत ज्ञानेश्वर, संत तुकाराम, संत रामदास, संत नामदेव, संत चोखामेळा, संत सावतामाळी, संत गोरा कुंभार अशा संतांच्या काव्यातील कृषिजाणीवा व्यक्त झाल्या आहेत. कृषि संस्कृतीमध्ये दुष्काळ हा एक महत्त्वाचा घटक आहे. दुष्काळाला फार मोठी परंपरा आहे. लहान दुष्काळ, मोठा दुष्काळ, कवठी दुष्काळ, बारभाई दुष्काळ, दुर्गादेवीचा दुष्काळ अशी दुष्काळाची परंपरा कृषिसंस्कृतीला आहे. संतांनी या दुष्काळाकडे कसे पाहिलं आहे. संत तुकारामांनी कृषिसंस्कृतीला सजग भान दिले आहे. दुष्काळात पिके कशी जपावीत, पाण्याचे नियोजन कसे करावे, पाण्याचा पाट स्वच्छ कसा ठेवावा, चिमण्या पाखरांपासून पिकाचे रक्षण कसे करावे, पेरणीसाठी बियांची निवड कशी करावी, शेतीची मशागत कशी करावी, पेरणीसाठी कोणता हंगाम निवडावा अशा अनेक सूचना संत तुकारामांनी केल्या आहेत. शिवाय शेतकऱ्यांनी जागृत असले पाहिजे असेही संत तुकारामांनी सांगितले आहे.

मानवाचे आध्यात्मिक जीवन समृद्ध होण्यासाठी संतांनी भक्तितत्व, अध्यात्मचिंतन आणि तात्त्विक मूल्यांची शिकवण दिली, तसेच ज्या देहाच्या आधारे परमात्म स्वरूपाकडे जायचे आहे, तो देह निरोगी, सुदृढ, प्रसन्न, आनंदी राहावा यासाठी पर्यावरणाचे मोठेपण सांगितले आहे. ज्याच्या सान्निध्यात मानवी देह वावरणार आहे ते निसर्गसान्निध्य विपुल, व्यापक आणि शुद्ध असायला हवे अशी संतांची धारणा आहे. एकीकडे भारतात अनंत काळापासून नांदत आलेली कृषिसंस्कृती आणि दुसरीकडे तत्त्ववेत्त्यांनी सांगितलेले पंचमहाभूतांचे महत्त्व या दोहोतून पर्यावरणाच्या संदर्भातील चिंतन प्राचीन ग्रंथांत आणि संत साहित्यात प्रभावीपणे मांडले आहे. जीवन जगताना, निसर्गात वावरताना अवती-भोवती दिसणारे, जाणवणारे पर्यावरणाचे घटक सर्वसामान्यांच्या परिचयाचे आहेत. वृक्ष, वल्ली, डोंगर, नदी, फुले, फळे, पशू, पक्षी, वारा, सूर्य, कीटक, गायी, गुरे, वने, अरण्ये, पाऊस इ. घटकांना कधी उपमा, कधी रूपक, कधी सिद्धांत, तर कधी दृष्टांत अशा स्वरूपात ठायी ठायी मांडून आपल्या वाङ्मयातून मराठी संतांनी पर्यावरणाची नवी दृष्टीच दिली आहे.

समारोप

महाराष्ट्र ही संतांची भूमी म्हणून ओळखली जाते. या भूमीवर साधू-संतानी जन्म घेवून वारकरी संप्रदायाच्या माध्यमातून समाजासमोर एक नवीन आदर्श ठेवला आहे. संतांच्या कडून समाज जागृतीचे, समाजास एक निश्चित दिशा देण्याचे कार्य झाले आहे. यात प्रामुख्याने म्हणजे ज्ञानेश्वर माउली, एकनाथ महाराज, तुलसीदास, नामदेव महाराज, तुकाराम महाराज, रामदास, चोखामेळा, नरहरी सोनार, गोरकुंभार, गाडगेमहाराज, अशा कित्येक संतांनी समाज जागृतीचे महनीय कार्य केले आहे. भारतीय प्राचीन संकृतीपरंपरेचे आपल्या वाडमयीन उपदेश प्रणालीतून प्रबोधन केले आहे. संत म्हणजे सगुणांचा महासागर, संतत्व म्हणजे निर्मोही तत्व, सन्त म्हणजे मानवी रूपातील भगवंत की जो सकल समाजाचा पुत्रपद कल्याणाचाच विचार करतो. हे सर्व संतांच्या वाग्मयातून जाणवते, भक्ती, श्रद्धा, ज्ञान, विज्ञान या सार्याच गोष्टी जीवसृष्टिच्या कल्याणासाठीच आहेत, विध्वंसासाठी नाहीत हा संदेश सर्वच संतांनी दिलेला आहे. त्यात पर्यावरण संवर्धनास त्यांनी महत्त्वपूर्ण मानले. आपल्या साहित्यातून या संतांनी पर्यावरण प्रबोधन करून समाजास पर्यावरणाचे संवर्धन करण्याचा मोलाचा सल्ला दिलेला असल्याचे दिसून येते.

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प्रा. डॉ. आनंद वाघ

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ छ. संभाजीनगर

प्रस्तावना:-

भारताचे उपपंतप्रधान, संरक्षणमंत्री, गृहमंत्री, अर्थमंत्री, परराष्ट्रमंत्री, अर्थ आयोगाचे अध्यक्ष, विरोधी पक्षनेता, महाराष्ट्राचे पहिले मुख्यमंत्री, कर्तव्यदक्ष प्रशासक, चतुर राजकारणी, संस्कृतीचे उपासक, साहित्याचे सहृदय रसिक, कृषी पंढरीचे वारकरी आणि आर्थिक विचारवंत अशा विविध बहू अंगाने संपन्न व संयमी व्यक्तिमत्त्व महाराष्ट्राचे थोर सुपुत्र यशवंतराव चव्हाण अशा यशवंतरावांचा जन्म सांगली जिल्ह्यातील देवराष्ट्रे या गावी 12 मार्च 1914 रोजी झाला. 1914 म्हणजे पहिल्या महायुद्धाचा काळ. 1918 ला हे महायुद्ध संपले आणि प्लेगची साथ सुरू झाली. या प्लेगच्या साथीमध्ये यशवंतराव चव्हाण यांच्या वडिलांचे निधन झाले. त्यानंतर कुटुंबाची सर्व जबाबदारी विठाबाई वर पडली. त्या चार मुलांना घेऊन कराडला आल्या. रोजगार करत करत त्या मुलांचा सांभाळ करू लागल्या परंतु ही मिळकत खूप कमी होती. त्यांनी न्यायाधीशांना भेटून जानोबा ला कराडच्या कोर्टात बेलीफ म्हणून नोकरी मिळवून दिली परंतु आर्थिक अडचणीमुळे ज्या गावात यशवंतरावांचा जन्म झाला त्या देवराष्ट्रे या गावी पुन्हा यावे लागले. त्यांचे चौथीपर्यंतचे शिक्षण देवराष्ट्रे येथे झाले. पुढील शिक्षणासाठी कराडच्या टिळक हायस्कूलमध्ये दाखल करण्यात आले. 1934 ला मॅट्रिकची परीक्षा पास झाले, 1938 मध्ये त्यांनी कोल्हापूरच्या राजाराम महाविद्यालयातून बीएची पदवी संपादन केली. 1941 ला पुण्याच्या लॉ कॉलेजमधून त्यांनी एलएलबी ची पदवी संपादन केली. 2 जून 1943 रोजी यशवंतराव चव्हाण व वेणूताई यांचा विवाह झाला. यशवंतरावांनी आपल्या वकिली व्यवसायाचा कराड येथे सुरुवात केली. पुढे वकिली करत करत गांधीजींच्या विचाराने प्रभावित होऊन राजकारणात सक्रिय सहभागी झाले आणि सातारा जिल्हा काँग्रेसचे अध्यक्ष झाले. त्यानंतर 1952 कराड मतदार संघातून विधानसभेवर निवडून आले. 1956 ला मुंबई राज्याच्या द्वैभाषिक राज्याचे मुख्यमंत्री झाले. 1960 मध्ये महाराष्ट्र राज्याची निर्मिती झाली व पहिले मुख्यमंत्री म्हणून चांगली कामगिरी केली. 1963 लोकसभेवर निवडून आले. 1982 मध्ये दहाव्या वित्त आयोगाचे अध्यक्ष म्हणून निवड झाली. पुढे असे अनेक पदे भूषवली व संकटसमयी भारत देशाच्या संरक्षणासाठी धावून गेले असे महाराष्ट्राचे शिल्पकार यशवंतराव चव्हाण यांचे 25 नोव्हेंबर 1984 रोजी दिल्ली येथे निधन झाले.

दीनदुबळ्यांच्या प्रश्नाविषयी कळवळा असणारे आणि आधुनिक महाराष्ट्राची पायाभरणी करणारे दृष्टे नेते म्हणजे यशवंतराव चव्हाण होय. यशवंतराव चव्हाण हे चळवळीच्या मुशीतून तयार झालेले एक परिपक्व व्यक्तिमत्त्व होते. धर्मनिरपेक्ष यशवंतराव चव्हाण यांच्या व्यक्तिमत्त्वाची जडणघडण म. गांधी, डॉ. बाबासाहेब आंबेडकर, महर्षी विठ्ठल रामजी शिंदे यांच्या आचारविचारांच्या प्रभावातून झाली होती. ह रा महाजनी, भुस्कुटे, एस एम जोशी, आचार्य भागवत अशा दिग्गजांचा सहवास त्यांना तुरुंगात असताना लाभला होता. गांधीवाद, समाजवाद, मार्क्सवाद याबरोबरच त्यांनी लेनीन चे चरित्र, रशियन राज्यक्रांतीचा इतिहास वाचला होता. सत्यशोधक समाजाचा ही त्यांच्यावर प्रभाव होता. मानवेंद्रनाथ रॉय यांच्या लिखाणाचा यशवंतरावांच्या मनावर मोठा विलक्षण परिणाम झाला होता. रॉयवादामुळे प्रभावित झालेल्या यशवंतराव चव्हाण यांनी स्वातंत्र्याचे सामाजिक आणि आर्थिक अंतरंग सोडवण्याचा प्रयत्न केला.

यशवंतराव चव्हाण यांचे आर्थिक विचार

यशवंतराव चव्हाण यांचे आर्थिक विचार प्रामुख्याने शेती, उद्योग,सहकार, समाजवाद ,आर्थिक विषमता, कामगार,औद्योगीकरण, बँकिंग इत्यादी क्षेत्राशी निगडित आहे

१) शेती संबंधी विचार:

स्वतः शेतकरी कुटुंबात जन्मलेले असल्यामुळे त्यांना अनेक वेळा आर्थिक अडचणींना सामोरे जावे लागले. ग्रामीण भागातील अर्थकारण त्यांनी जवळून पाहिलेले असल्यामुळे मुख्यमंत्री असतानाच या कालावधीत त्यांनी अनेक धाडसी निर्णय घेतले.त्यामुळे यशवंतराव चव्हाण यांचे आर्थिक क्षेत्रातील योगदान महत्त्वपूर्ण ठरते.कृषिविषयक विचार मांडताना ते म्हणतात की,' हेच प्रश्न मला आणि माझ्या मित्रांना सारखे भेडसावीत आम्ही त्याची चर्चा करीत असू जमीनदार आणि साधा गरीब शेतकरी यांचं काय करायचं?हा प्रश्न होता मात्र त्याआधी स्वातंत्र्य हे आमचं पहिलं ध्येय असले पाहिजे याची आम्हाला खात्री पटली होती. तसेच शेती शेतीच्या मालकी हक्काचा प्रश्न, भूमिहीनांचा प्रश्न व कृषी विकासासाठी उपाय यावर भर दिला. त्यांच्या मते जमीन कसणारा जमिनीचा मालक असला पाहिजे. भारतात शेतीक्षेत्रात भूमिहीन यांची संख्या अधिक आहे म्हणून ज्यांच्याकडे अधिक जमीन आहे त्यांनी एक ते दोन टक्के जमीन भूमिहीनांना द्यावी. त्याच बरोबर पडीक जमीन लागवडीखाली आणली जावी. शेतीच्या आधुनिकीकरणाच्या मार्गातील अडथळे दूर केले जावेत. नद्यांच्या पाण्याचा शेतीसाठी वापर केला जावा. नद्यांवर धरणे बांधली जावेत .जेणे करून शेती उत्पादनात मोठ्या प्रमाणात वाढ होईल.यशवंतरावांनी सामाजिक समता व सामाजिक न्यायाच्या य शेतीचा विचार केला. भारतात शेती क्षेत्रात भूमिहीन यांची संख्या अधिक आहे म्हणून वाजवीपेक्षा अधिक जमिनी असणाऱ्या लोकांच्या जमिनीचा एक ते दोन टक्के जमीन त्यांना द्यावी तसेच जमीन अविकसित असल्याने ती अनुत्पादक व पडीक राहिली आहे. अशा जमिनी लागवडीखाली आणणे आवश्यक आहे. शेती व्यापारी तत्वांनी केली पाहिजे.

शेतीच्या आधुनिकीकरणाच्या मार्गातील अडथळे दूर केले पाहिजेत. नद्यांच्या पाण्याचा शेतीसाठी वापर केला पाहिजे यावर धरणे बांधली पाहिजे. धरण पाण्याने विस्थापित होणाऱ्या लोकांचे पुनर्वसन केले पाहिजे. शेतकऱ्यांनी कृषी शास्त्राचा अभ्यास केला पाहिजे असे मत त्यांनी मांडले. आपल्या देशातील शेती करण्याबाबत शेतकरी खुप मागे आहेत. त्यामुळे शेतीचा म्हणावा तेवढा विकास झाला नाही. याचे कारण शेतीला अपुरा कर्ज पुरवठा, पाणी पुरवठा यांच्या सोयीचा अभाव. आधुनिक खते व बियाणांचा अभाव या सर्व गोष्टींचा अभाव यामुळे शेतीचा विकास होऊ शकला नाही. त्यांच्यामते शेतीच्या क्षेत्रात प्रगती साध्य करायची तर या प्रश्नाच्या मानवी आणि आर्थिक अशा दोन्ही बाजू कल्पकतेने सोडवाव्या लागतील. हे ओळखून यशवंतरावांनी पावली टाकली. आज शेतीचा संबंध नव्या शोधांची शेती करण्याच्या नव्या नव्या पद्धतीशी लावायचा असेल तर हे नवे शास्त्र शेतकरीवर्गाला आपण शिकवले पाहिजे. या कामांमध्ये आम्हाला शिक्षणाचा उपयोग करून घेता येईल. या दृष्टीने तांत्रिक शिक्षणाचे महत्त्व त्यांनी पटवून दिले .देशातील लोक अडाणी व अशिक्षित असल्यामुळे शेती व शेती शिक्षण यांचा एकत्रित विचार करू शकत नाही. म्हणून शेती संबंधित असणारा शेतकरी जोपर्यंत शहाणा होत नाही तोपर्यंत शेतीचा विकास होणार नाही .शेतकऱ्यांना शेती संबंधी आधुनिक ज्ञान देऊन त्यांचे अज्ञान दूर केल्यास शेती उत्पादनात वाढ होईल.ग्रामीण समाजाचा आर्थिक चेहरामोहरा बदलण्याच्या ध्येयाची बांधिलकी त्यांनी स्वातंत्र्यपूर्व काळापासून कार्यकर्ता या नात्याने ग्रामीण क्षेत्रात कार्य करीत असलेल्या काळापासून मनाने स्वीकारली होती. शेतकरी हाच महाराष्ट्राचा प्राण असून शेतकरी हेच महाराष्ट्राचे राज्यकर्ते असे असे जाहीरपणे सांगणारे यशवंतराव हे पहिले मुख्यमंत्री होते. शेतजमिनीचा कमाल धारणेवर मर्यादा घालण्याचा कायदा करून यशवंतरावांनी महाराष्ट्र हा खऱ्या अर्थाने पुरोगामी असल्याचे देशात सर्वप्रथम प्रत्ययास आणून दिले.1961 जानेवारीमध्ये महाराष्ट्रातल्या शेत जमिनीबाबतचे विधेयक समोर आले. या विधेयकामुळे दूरगामी अशा जमीन सुधारणेचा पाया घातला गेला. केंद्र सरकारने सिलिंगचा कायदा करण्याचा विचार त्यानंतर दहा बारा वर्षांनी केला.यातच यशवंतरावांच्या ग्रामीण आणि शेती विकास विषयक दृष्टिकोन याचा प्रत्यय येतो. भारतात शेतीला पाणीपुरवठा करणाऱ्या लहान मोठ्या धरणाची संख्या फार कमी आहे.नद्यांच्या पाण्याचा वापर शेतीसाठी केला जात नाही .नद्यांचे पाणी

वापराविना वाया जाते.त्यासाठी लहान -मोठ्या नद्यावर लहान-मोठी धरणे बांधली पाहिजेत.धरणामुळे जे लोक विस्थापित होतील त्यांच्या पुनर्वसनाची सोय केली पाहिजे. लहान मोठ्या धरणामुळे शेती उत्पादनात वाढ होण्यास मदत होईल. यशवंतराव चव्हाण यांच्या मते समतोल विकास करताना अविकसित विभागांचा आधी विचार केला जावा.

ग्रामीण भागात उद्योग सुरू करून शेती व उद्योग यांची सांगड घातली जावी त्यामुळे श्रमिकांचा शहराकडे जाणारा लोंढा कमी करता येईल. त्यासाठी त्यांनी विकासाच्या मास्टर प्लॅनची कल्पना मांडली. त्यांच्या मते देशाच्या विकासासाठी भारतासारख्या कृषिप्रधान देशात विकासासाठी सहकारी तत्वे फार उपयुक्त ठरतात .शेतकरी साखर कारखान्याची स्थापना करून समतोल विकास करण्याचा प्रयत्न यशवंतरावांनी केला. शेतीच्या आर्थिक विकासासाठी ग्रामीण भागात शेतीवर आधारित उद्योगांची स्थापना करून शेती व उद्योग यांची सांगड घातल्यास आर्थिक विकासाला चालना मिळेल. औद्योगिकरणामुळे शेतकऱ्यांच्या शेतमालाला योग्य बाजारपेठ मिळेल. उद्योगांना लागणारा कच्चा माल ग्रामीण भागातच उपलब्ध होईल. वाहतुकीचा खर्च वाचेल, ग्रामीण भागात रोजगार वाढेल असे यशवंतराव चव्हाण यांना वाटत होते. त्यासाठी देशाचा औद्योगिक विकास करण्यासाठी उद्योगात आधुनिक तंत्राचा वापर केला जावा. नवीन तंत्रज्ञानामुळे कौशल्यात वाढ होते परिणामी उत्पादनात वाढ होऊन देशाच्या आर्थिक विकासाला चालना मिळते असे मत मांडले .औद्योगिक विकासासाठी आर्थिक नियोजन महत्त्वाचे असते लोखंड पोलाद वीज वाहतूक यासारख्या क्षेत्रात विकास नियोजनामुळे करता येतो व यातूनच विकासाला चालना मिळते. त्यासाठी मूलभूत व अवजड उद्योग यांच्या उभारणीवर भर देणे आवश्यक आहे असे म्हटले.

शेतकऱ्यांना शेतीसाठी योग्य दराने पत पुरवठा व्हावा यासाठी सहकारी बँका व पतसंस्था स्थापन कराव्यमंत. ग्राहकांना योग्य किंमतीत वस्तू उपलब्ध होण्यासाठी ग्राहक सहकारी संस्था स्थापन कराव्यात. जेणेकरून सहकारी चळवळीचा विकास होऊ शकेल. त्याचबरोबर शेतीवर आधारित उद्योगांची स्थापना सहकार क्षेत्रात करून करून शेतीचा विकास करावा. असा दृष्टिकोन यशवंतराव चव्हाणांचा होता. शेतकऱ्यांनी पिकविलेल्या शेतमालाला योग्य भाव मिळण्यासाठी सहकारी खरेदी-विक्री संस्था स्थापन कराव्यात व या संस्थांमार्फत पिकवलेला शेतमाल विकला जावा .जेणेकरून शेतकऱ्यांनी पिकविलेल्या मालाला योग्य किंमत मिळेल व देशाच्या आर्थिक विकासाला चालना मिळेल असे मत मांडले .भारतीय अर्थव्यवस्थेच्या विकासासाठी सहकारी तत्वाचे पालन महत्त्वाचे असते कारण सहकारी तत्वात आर्थिक विकास करण्याची शक्ती आहे. यशवंतराव चव्हाण यांच्या मते सहकारी शेतीमुळे शेतीमधील उत्पादन मोठ्या प्रमाणात वाढते त्यासाठी सहकारी शेती संस्था स्थापन करावी. अशा सहकारी संस्था मुळे शेतकऱ्यांना शेती संबंधित ज्ञानाची देवाण-घेवाण करता येते परिणामी शेती उत्पादनात वाढ होते असे मत यशवंतराव चव्हाण यांनी मांडले.

त्याचबरोबर शेतीला शेतीपूरक व्यवसाय असावा. ग्रामीण भागाचा सामाजिक आर्थिक विकास करण्यासाठी शेतीवर आधारित उद्योग स्थापन करण्यात यावेत .अशा उद्योगांमधून उपभोग्य वस्तू व सेवा यांची निर्मिती केली जावी असे ते म्हणतात. ग्रामीण भागात उद्योग सुरू करून शेती आणि उद्योग यांची सांगड घातली जावी. औद्योगिक विकासासाठी नियोजन महत्त्वपूर्ण आहे. देशाचा संतुलित आर्थिक विकास व्हावा यासाठी संयुक्त औद्योगिक क्षेत्राची कल्पना मांडली. तात्कालीन कालखंडात मुंबई राज्यात औद्योगिक वसाहती स्थापन करण्यासंदर्भात योजनेत त्यांनी पुढाकार घेतला. राज्याचे औद्योगिकरण करण्यासाठी एक सर्वकष योजना मांडली. या योजनेच्या माध्यमातून उत्पादनाची समन्वित प्रगती घडून आणि त्यापासून उपलब्ध होणाऱ्या फायद्याची मालक, कामगार व ग्राहक यांच्यात समान वाटणी करणे हे या योजनेचे उद्दिष्ट असल्याचे यशवंतरावांनी या सूत्रात नमूद केले . त्यांच्या मते या देशांची अर्थव्यवस्था अगतिक किंवा मागासलेली आहे .तेथे जलद विकास करून आणावे नसल्यास निदान सुरुवातीला तरी निरनिराळ्या उद्योगधंद्यांची समतोल अशी वाढ करण्याकडे लक्ष देणे आवश्यक आहे . महाराष्ट्र व्यापारी व औद्योगिक परिषदेत सहभागी झाल्यानंतर त्यांनी आपले विचार व्यक्त केले की,उद्योगधंद्यात सरळ

प्रवेश करण्याच्या उपक्रमात आणि विशेषता शेतमालावर प्रक्रियाकरण्याच्या उद्योगात सहकारी संघटनेला फार महत्त्व आहे .उद्योगधंद्याची सहकारी तत्त्वावर कशी परिणामकारक संघटना होऊ शकते हे या राज्याने दाखवून दिले आहे.

महाराष्ट्रात जमीन धारणेचा प्रभाव कमी असून लहान शेतकर्यांच्या संख्या जास्त आहे. बागायती शेतीच्या तुलनेत कोरडवाहू शेतीचे क्षेत्र फार मोठे अशा स्थितीत शेतकर्यांची आर्थिक स्थिती सुधारण्यासाठी कृषी औद्योगिक समाज रचनेची कल्पना त्यांनी मांडली. शेतीला जोड व्यवसाय हा पूरक उद्योग जोडणे आवश्यक असल्याचे त्यांनी म्हटले. त्यांनी मंत्रिमंडळ सहकार्यांना पटवून दिले कापूस पिकवणाऱ्या शेतकर्यांना सूतगिरणी, भुईमुगाच्या उत्पादकांना सहकारी तेल गिरण्या, उसाच्या क्षेत्रात साखर कारखाने यामधून उद्योग व्यवसाय आणि सहकार क्षेत्राचा समन्वय साधला.राज्याच्या अर्थव्यवस्थेच्या विकासाच्या दृष्टिकोनातून कृषी,मत्स्य व्यवसाय, उद्योग ,वन आणि सहकाराशी निगडित कार्यक्रम राबविणे व त्यावर भर दिला पाहिजे. हैराण झालेल्या खेड्यातील सामान्य माणसाला आर्थिक समस्या सोडविण्यासाठी त्यांनी सहकारी साखर कारखाने, सहकारी बँका ,सहकारी सोसायट्या, खरेदी विक्री केंद्राची स्थापना केली .तसेच सहकारी सिंचन योजना साठी प्रयत्न केले. सहकारी चळवळीमुळे सहकारी चळवळीचे जाळे महाराष्ट्रभर निर्माण करत कृषीला औद्योगिकतेची जोड दिली.

यशवंतरावांच्या सहकारी तत्त्वांच्या पुढाकारामुळे ऑगस्ट 1997 मध्ये महाराष्ट्राने 18 सहकारी साखर कारखाना याची नोंद करून अग्रेसरत्व प्रस्थापित केले. याशिवाय नव्या साखर कारखान्यांची आर्थिक भांडवलाची अडचण दूर करून सरकारने त्यांच्या भागभांडवल 28 लाख रुपये गुंतविण्याचा निर्णय घेऊन प्रत्यक्षात ते भांडवल गुंतवून कामाला चालना दिली सहकारी शेतीचा हे त्यांनी पुरस्कार केला.

समाज ही अर्थशास्त्रीय संकल्पना आहे जेव्हा देशातील संपत्ती आणि संशोधनावर प्रामुख्याने समाजाची मालकी असते तेव्हा त्यास समाजवाद असे म्हणतात. समाजवादात समाजवादाच्या सैद्धांतिक अधिष्ठान यात समाजाची मालकी ,आर्थिक नियोजन ,राज्याचे महत्त्व ,आर्थिक विषमता कमी करणे ,समाजरचना सामाजिक कल्याण, मूलभूत बाबींची आर्थिक नियंत्रण सामाजिक निगडीत वस्तूंचे उत्पादन इत्यादी बाबींना महत्त्व दिले जाते .महाराष्ट्रात सर्वप्रथम समाजवाद आणण्याची घोषणा यशवंतरावांनी 1962 साली केली .यशवंतराव शास्त्रशुद्ध समाजवादाचे पुरस्कर्ते होते. समाजवाद या बाबतचे आपले विचार मांडताना यशवंतराव मत व्यक्त करतात की,व्यक्तींच्या आर्थिक परिस्थितीमध्ये आज मोठी दरी आहे. ती जास्तीत जास्त कमी करण्याचा प्रयत्न झाला पाहिजे. दुसरी गोष्ट म्हणजे समाजातील सर्व वर्गांना एक प्रकारची सारखी आणि समान संधी मिळेल. अशा प्रकारची संधी निर्माण झाली . कुठलाही एक व्यक्ती किंवा व्यक्तींचा समूह अथवा गट अगर वर्ग दुसऱ्याची पिळवणूक करीत नाही असा समाजाचे चित्र मी पाहतो.

कामगार उत्पादनातील महत्त्वाचा घटक आहे त्याला उद्योगाच्या व्यवस्थापनात सहभागी करून घेतल्यास औद्योगिक कलह निर्माण होणार नाही. त्यांची उत्पादन क्षमता वाढून मालक व कामगार यांच्यात सलोख्याचे संबंध निर्माण होतील.याशिवाय उत्पादनात वाढ होण्यासाठी कामगारांना प्रशिक्षण अशा योजना राबविण्यात याव्यात असे त्यांनी सुचवले. भारतातील परिस्थिती लक्षात घेऊन इतर राष्ट्रांनी कशा प्रकारे प्रगती केली आहे हे लक्षात घेऊन समाजवादाचा स्वीकार करण्यात यावा. सार्वजनिक क्षेत्र विकसित करून लोकांच्या कल्याणावर अधिक भर देण्यात यावा.जेणेकरून समाजातील विषमता कमी होईल कारण समाजातील सर्व लोकांना समान संधी उपलब्ध करून देणे हा समाजवादाचा मुख्य उद्देश असतो. थोडक्यात लोकांचे शोषण न करता मूलभूत समस्या सोडवणे म्हणजे समाजवाद होय. विषमता कमी करणे, पिळवणूक बंद करणे म्हणजेच समाजवाद होय.असाच समाजवाद यशवंतराव चव्हाण यांनी महाराष्ट्रात स्वीकारला.

यशवंतराव चव्हाण गृहमंत्री असताना काँग्रेसने समाजवादाच्या प्रस्थापनेसाठी दिल्ली काँग्रेसच्या अधिवेशनात दहा कलमी कार्यक्रम मांडला .त्यात देशातील बँका व सामाजिक नियंत्रण, संस्थानिकांचे तनखे बंद करणे, देशातील त्वरित

भूसुधारणा, शहरी मालमत्ता, कमाल जमीन धारणा, प्राथमिक शिक्षणाची पूर्तता, विकेंद्रीकरण मत्केदारी विरुद्ध उपायोजना, आयात-निर्यात व्यापार, विमा, राष्ट्रीयीकरण, अर्थ सत्तेचे विकेंद्रीकरण इत्यादी दहा कलमी कार्यक्रम तयार करण्यामध्ये गृहमंत्री यशवंतराव चव्हाण यांचे योगदान महत्त्वाचे होते. देशाचे अर्थमंत्री असताना 1971 ते 1976 या काळात त्यांनी भारत देशाला पाच अर्थसंकल्प दिले. त्यांच्या अंगी देशाच्या आर्थिक विकासाचा विषयी तळमळ होती. त्यांनी मांडलेल्या अर्थसंकल्पातून त्यांची अर्थतज्ञ म्हणून प्रतिमा सर्वांच्या मनावर कोरली गेली. त्यांनी पंचवार्षिक योजना प्रभावीपणे राबविण्याचा प्रयत्न केला. यशवंतराव यांच्या कारकिर्दीत 1971 ते 1978 हे आर्थिक दृष्ट्या महागाईचे वर्षे होते. भारतीय जनता महागाईच्या वनव्यामध्ये भरडली जात होती. देशात दुष्काळ सदृश्य परिस्थिती निर्माण झाली. देशात अन्नधान्य समस्या निर्माण झाली आणि धान्य आयातीच्या समस्यांमुळे देशातील आंतरराष्ट्रीय व्यापार प्रतिकूल झालेला होता. देशात बेरोजगारीच्या प्रमाणात वाढ झाली होती. अशाही परिस्थितीत यशवंतरावांनी मार्ग काढण्याचा त्यांनी कसोशीने प्रयत्न केला.

यशवंतराव चव्हाण अर्थमंत्री म्हणून घेतलेले निर्णय महत्त्वपूर्ण आहेत त्यांनी देशातील महागाई नियंत्रणात आणण्यासाठी प्रयत्न केले आर्थिक क्षेत्रातील मत्केदारी चा अभ्यास आणि उपाययोजना या संदर्भात आयोगाची नियुक्ती केली. आर्थिक क्षेत्राच्या संदर्भात अनेक महत्त्वाचे कायदे मंजूर केले. देशातील काळा पैसा साठविण्याच्या प्रवृत्तीला आळा घालण्याचा प्रयत्न केला. देशातील करदात्यांचे प्रमाण वाढून कर चुकवून नियंत्रण प्रस्थापित केले. गरिबी हटाव योजनेशी पूरक निर्णय आणि आर्थिक तरतूद उपलब्ध करून देण्याचा प्रयत्न केला. यशवंतरावांच्या आग्रहामुळे प्रमुख बँकांचे राष्ट्रीयीकरण आणि संस्थानिकांचे तनखे रद्द झाल्याने आर्थिक धोरणाचे दिशादर्शन झाले. यशवंतरावांनी 24 मार्च 1971 रोजी लोकसभेत सादर केलेला अर्थसंकल्प हा नव्या दिशेचा निदर्शक होता. शहरी भागातील मालमतेच्या धारणेवर कमाल मर्यादा घालण्याचे धोरण त्यांनी राबविले शेतमालाच्या व्यापारातील मध्यस्थांना आणि त्यांच्या नफे बाजीला मुळीच वाव राहणार नाही अशा रीतीने शेतमालाची खरेदी सुरू व्हाव्यात अशा पद्धतीने त्याने धोरणे आखण्यावर भर दिला. साठेबाजी करून कृत्रिम टंचाई निर्माण करण्याचा व लोकांकडून भरमसाठ भाव वसूल करण्याचा कट ही त्यांनी उधळून लावला.

यशवंतराव चव्हाण ही महाराष्ट्राच्याच नव्हे तर संपूर्ण भारताच्या राजकारणातील, समाजकारणातील, अर्थकारणातील प्रगल्भ जाणिवेचे नेतृत्व होते. हे वरील त्यांच्या विचारातून आणि कार्यातून सिद्ध होते. यशवंतराव चव्हाण हे स्वातंत्र्य चळवळीत सक्रिय सहभाग घेऊन त्यांनी राज्याचा सर्वांगीण विकासाचा पाया रचला. शिक्षण, शेती, पंचायत राज, औद्योगिक, सामाजिक, साहित्य व प्रशासन अशा सर्वच क्षेत्रातील विकास कामाचा अंकुर त्यांच्या कारकिर्दीत निर्माण झाला आणि त्यांचे रूपांतर मोठ्या वृक्षात होऊन आज आपण उभा महाराष्ट्र सावलीच्या रूपाने अनुभवत आहे. ते सर्जनशील विचाराने झपाटलेले कर्तव्यदक्ष अभ्यासू नेते होते. महाराष्ट्राच्या जडणघडणीत त्यांचे अनन्यसाधारण असे महत्त्व आहे. त्यांनी समाजाला आपल्या कर्तृत्वातून एक आदर्श निर्माण करून दिला. त्यांचे महाराष्ट्र राज्याच्या जडणघडणीतील योगदान अनन्यसाधारण व मोठे आहे. म्हणून यशवंतराव चव्हाणांना महाराष्ट्राचे शिल्पकार असे म्हटले जाते.

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प्रा. जाधव सिध्देश्वर पांडुरंग

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ता. आष्टी, जि. अहमदनगर

प्रास्ताविक :-

महाराष्ट्र ही संतांची आणि विरांची भूमी आहे. महाराष्ट्राच्या मातीतून आठरापगड जातीतील संत उदयास आले. या संतांनी समाजाची मनोभावे सेवा केली, सेवेचा मोबदला कधीच घेतला नाही. निरपेक्ष भावनेतून समाजसेवा केलेली आहे. संतांनी अभंगवाणी लिहिली. हे अभंग महाराष्ट्राचे आणि मराठी भाषेचे परभूषण आहेत. समाजाला भक्तीप्रवण करण्याच्या दृष्टिने संतांनी अभंग लिहिले. हे अभंग आजही लोकगंगेत अजरामर आहेत. तत्कालीन समाज जीवनात कर्मकांडाचे प्रस्थ माजले होते. समाज भरकटत चाला होता. या समाजाला डोळस ईश्वर प्राप्तीचा सोपा मार्ग नामस्मरणातून भक्ती असा संतांनी शिकवला. सर्व जातीधर्मातील व्यक्ती भक्ती करू शकतात हा विश्वास दिला. या यातिहीन समाजाला त्यामुळे फार मोठा दिलासा मिळाला. त्यांच्या कोंडलेल्या प्रतिभेला चालना मिळाली आणि पाहता पाहता सर्व जाती धर्मातील संत भागवत संप्रदायाच्या पताकाखाली एकत्र आले. सर्वच जाती-धर्मांना एकत्र आणण्याची महानक्रांती या काळात झाली. संतांचे एक नवे विश्व निर्माण झाले.

सामाजिक पर्यावरण हा संत तुकारामांचा चिंतनाचा विषय बनला. माणूस हा केंद्रस्थानी ठेवून माणूस आणि समाज याबद्दल त्यांना जाणवलेले वास्तव परखडपणे आपल्या अभंगात मांडले. मानवीजीवन हे सुष्ट आणि दुष्ट प्रवृत्तीने कसे भरले आहे. त्याचे निरीक्षण त्यांनी सूक्ष्म रितीने केले. त्याचा अनुभवही घेतला. षड्विकारांनी ग्रस्त झालेल्या माणसांची चित्रणे त्यांनी अभंगात मांडली आहेत. सामान्य माणसांच्या जीवनाचा परिघ विस्तृत आहे; याची जाणीव त्यांना झाली. या विस्तृत परिघात जीवन जगणाऱ्या माणसांचे जीवन साधे आणि सरळ असते. त्यांना जगण्यासाठी जन्मापासून संघर्ष करावा लागतो. अन्न, वस्त्र, निवारा या मुलभूत गरजाही त्यांच्या भागल्या जात नाहीत. त्यामुळे त्यांच्यासमोर आयुष्यभर भाकरीचा प्रश्न उभा राहिलेला असतो. सर्वसामान्य माणूस हा त्यांना जवळचा वाटला. त्याचे जगणेच मुळातून त्यांनी समजावून घेतले. समाजातल्या विविध स्तरांतील माणसांशी तुकारामांचा घनिष्ठ संबंध होता. समाजातील मानवी जीवनाचे अनुभव त्यांनी समरस होऊन घेतले. व्यापक समाज जीवन आपल्या काव्य निर्मितीचा विषय बनविले. या सर्व अनुभवाची त्यांनी सत असत्याच्या पातळीवर चिकित्सा केली. त्यातून त्यांनी उचित वास्तवानुभवांची निवड केली.

“सत्य अत्याशी मन केलें ग्वाही। मानियेंले नाही बहुमता।।” (शा.गा.१३३३)

संत तुकारामांनी आपल्या अवतीभोवतीचे सामाजिक पर्यावरण अभंगात मांडले. व्यक्ती-व्यक्तींच्या भावना मांडता-मांडता मानवी जीवनातील विविध प्रकारची माणसे त्यांनी कवितेत मांडली. मानवी जीवनाच्या व्यक्ती व्यक्तींच्या परस्पर संबंधातून त्यांनी समाजजीवन कवितेत मांडले. समाजातील विविध स्तरातील मानवीजीवन मांडले. समाजामध्ये हजारो वर्षांपासून संकेत, परंपरा, नीती, नियम, आचारपध्दती ही संक्रमित होत आलेली आहे. ती संत तुकारामांच्या अभंग कवितेत व्यक्त होते. समाजामध्ये वावरणाऱ्या विविध वृत्ती प्रवृत्तींच्या माणसांचे चित्रण त्यांनी केले आहे. चांगले कसे बोलावे, चांगले कसे वागावे या प्रवृत्ती मांडल्या आहेत. सज्जन माणसांची लक्षणे त्यांनी मांडली आहेत. सज्जन माणूस हा समाजाला चांगल्या प्रवृत्तीचे संस्कार देतो. त्याच्या पाऊलवाटेने मार्गक्रमण करण्यास समाजाला मार्ग दिसतो. चांगल्या माणसाला जीवनात खडतरपणे प्रवास करावा लागतो हेही त्यांनी आवर्जून सांगितले आहे. समाजात वावरणारी सर्वच माणसे चांगली नसतात. त्यांच्या वृत्ती-प्रवृत्ती ह्या व्यक्तिगणिक बदलत जातात. दुष्ट, दुर्जन माणसापासून सावध राहिले पाहिजे. स्वार्थी, आपमतलबी माणसे ही स्वतःच्या पायापुरतेच पहात असतात. माणसाच्या ठिकाणी असलेले षड्विकार हे त्यांनी कवितेत मांडले. सामाजिक आणि सांस्कृतिक पर्यावरण त्यांनी काव्यातून मांडले. समाज आणि संस्कृतीच्या बदलाची जाणीवही ते मांडतात. सांस्कृतिक जाणिव्यांच्या अंगाने समाजाचे शुध्दीकरणाचे विचार त्यांनी कवितेत मांडले. माणसाला स्वत्वाची जाणीव जागृत

करून समाजमनाला आत्मभान दिले. शेतकरी जीवन हा तर संत तुकारामांच्या जण्याचा भाग होता. संत तुकाराम स्वतः शेतकरी होते. त्यामुळे शेतीमातीचा अनुभव त्यांनी अत्यंत बारकाईने आपल्या कवितेत मांडला आहे. सामुहिक जाणिवेचा अनुभव तुकारामांच्या कवितेतून व्यक्त होतो. समाजाच्या घडणीतून त्यांचे व्यक्तिमत्त्व आकार घेते. समाजाची अनेक रूपे ते न्याहाळतात. त्याच्यामधून समाजमनाची रूपे कवितेतून मांडतात. सामाजिक संदर्भाने आणि सूक्ष्म तपशीलाने कलापूर्ण कविता लिहितात.

कलाकृतीच्यामागे मानवी जीवन चिंतनाच्या रूपाने लेखक हा उभे करत असतो. संत तुकारामांच्या मनःपिंडावर जे समाजाचे संस्कार झाले होते, ते त्यांनी आपल्या अभंगात मांडले. संत तुकारामांनी दैनंदिन जीवनातील नानाविध अनुभवांना कवितेत शब्दबद्ध केले. संत तुकारामांच्या व्यक्तिमत्त्वाचा कुटुंबाशी जसा संबंध होता तसाच समाजातील भिन्न भिन्न स्तरांतील लोकांशी होता. एकंदरीत गावगाड्याशी आणि ग्राम संस्कृतीशी, तेथील परिसराशी, पंचक्रोशीसी, निसर्गाशी संत तुकारामांच्या व्यक्तिमत्त्वाचे नाते जडले होते. संत तुकाराम हे अतिशय संवेदनशील, हळव्या मनाचे होते. त्यांनी सूक्ष्म दृष्टीने मानवी जीवनाकडे पाहिले. त्यांना ते जितक्या अंगाने जाणवले तितक्याच अंगानी ते त्यांनी अभंगात मांडले. त्यांच्या चिंतनाची चाललेली सलग प्रक्रिया त्यांच्या अभंगातून व्यक्त होते. संत तुकारामांचे व्यक्तिमत्त्व ग्राम जीवनाशी एकरूप झाले होते. संत तुकाराम जागरूकपणे मानवी सृष्टीतील अनुभव स्वतःच्या अंतःकरणात साठवून घेऊन त्याला चैतन्यपूर्ण अशा स्वरूपात स्वयंपूर्ण आकार प्राप्त करून घेत होते. तुकाराम हा श्रेष्ठ दर्जाचा प्रतिभावंत कलावंत स्वतःचे व्यक्तिमत्त्व या साऱ्या घटकामध्ये वितळून टाकत होता. स्वतःच्या जीवनाबरोबर समाज जीवनातील अनुभव वास्तव रूपात मांडत होता. त्यांचे शब्द समाज वास्तवाचा भेद करित होते. समाजातील उघडे-वाघडे वास्तव ते मांडत होते. व्यक्ति आणि समाज हा तुकारामांच्या चिंतनाचा विषय होता. मानवी जीवनाच्या मुलभूत भावना त्यांनी अभंगात मांडल्या. समाज जीवनातील मर्मस्थाने संत तुकारामांनी आपल्या कवितेची चित्रण विषय बनविली. त्यामुळे त्यांची कविता समाजातच घडते. त्याचबरोबर दैनंदिन जीवनात ती समाजाला आवश्यक वाटते. प्रसंगानुरूप तिचा वापर समाज जीवनात केला जातो. मानवी जीवनाच्या हरघडीच्या प्रसंगांचे चित्रण संत तुकारामांनी कवितेत केले आहे.

मराठी माणूस आणि त्याच्या भावना, त्याचे मन, मराठी माणसाचा स्वभाव आणि त्याची संस्कृती संत तुकारामांच्या कवितेतून व्यक्त होते. माणसाच्या मुलभूत भावनांचे चित्रण संत तुकाराम करतात. आनंद, दुःख, दुर्जन, सज्जन, चांगले, वाईट, बाल, तरूण, जरा-जर्जर, चांगली स्त्री, आई, माऊलीच्या रूपातील स्त्री तसेच वाईट स्त्री, व्याभिचारी, संसारी पतीवर प्रेम करणारी स्त्री, चांगला संसारी माणूस, वाईट माणूस, पत्नीच्या आहारी गेलेला माणूस, सासू-सुनेतील विसंवाद, जीवनातील निरर्थकता, मानवी जीवन हे एक माणसाला मिळालेले वरदान, आशावाद, जीवनातील पावित्र्य, शांतता, सुख, समाधान, कष्ट आणि वेदनेने भरलेले जीवन अशा नानाविध प्रवृत्ती, स्थायीवृत्ती, चिरंतन मूल्ये आपल्या काव्यातून मांडली आहेत. मानवी जीवनाला प्राप्त झालेले विविध आयाम त्यांच्या कवितेतून व्यक्त होतात. मानवी जीवनातील मुलभूत भावना ह्या त्यांनी व्यापक पटावर मांडल्या आहेत. त्या अतिशय संवेदनशील आणि संयतशील मनाने संत तुकारामांनी कवितेत मांडल्या आहेत. त्यामुळे त्यांची कविता मराठी माणसांना जवळची वाटते. त्यामध्ये प्रत्येक माणसाला आपल्या भावना दिसतात. आनंदाच्या वेळीही त्यांच्या कवितेतून आनंदाची निर्मिती करणाऱ्या भावना व्यक्त होतात. दुःखाच्या वेळीही त्यांची कविता सोबत करते. जीवनातील हरघडीच्या प्रसंगांनाही ती सोबत करते. माणसाच्या मृत्यूनंतरही संत तुकारामांचे अभंग म्हटले जातात. भक्तीचे सूर आळवणारी कविता माणसाला भक्तीरसात न्हाऊन टाकते. त्यामुळेच भजन आणि मंदिर संस्कृतीच्या अग्रभागी त्यांची अभंग कविता आहे. सांस्कृतिक जीवनाच्या ती केंद्रस्थानी आहे.

समाजातील आणि व्यक्ती जीवनाला अधिक प्रगल्भ, परिणत अवस्थेकडे नेणारी दृष्टी त्यांच्या कवितेतून व्यक्त होते. व्यक्ती जीवनातील संघर्षाची अनुभव रूपे त्यांच्या कवितेतून व्यक्त होतात. तसेच समाजातील विविध वृत्ती-प्रवृत्तीच्या माणसांचे नानाविध नमुने कवितेतून मांडतात. समाजातल्या असंख्य माणसांचे चेहेरे त्यांच्या कवितेतून दिसतात न दिसतात ते पुढे सरकत जातात. चलत् चित्रपटासारखी माणसे त्यांच्या कवितेतून व्यक्त होत राहतात. ती दुःखाने, वेदनेने भरलेली आहेत. समाजातील अंतर्भेदी वास्तव त्यांच्या भेदक नजरेने त्यांनी कवितेत मांडले आहे. संत तुकारामांनी आपली कविता सौंदर्यपूर्ण आकारात मांडली आहे. कलाकुसर आणि मांडणीच्या देखाव्यात मात्र त्यांची कविता अडकत नाही. जे मांडायचे ते सरळ, स्पष्ट आणि परखड शब्दात अशी त्यांची रोखठोक शैली आहे. तरीही संत तुकारामांची कविता जस-जशी आपण वाचत जातो, तस-तशी तिच्यातील प्रगल्भता लक्षात येते. अर्थाचे अनेक पदर उलगडत जातात. त्यामुळे कवितेच्या निर्मितीबद्दलचे त्यांचे आकलन स्तिमीत करून

सोडणारे होते. त्यांची कवितेवरची निष्ठा ही तितकीच दृढ होती. त्यांची कविता समाजातील वास्तव गंभीरपणे मांडते. मात्र हे वास्तव मांडताना उपहासात्मक पध्दतीने हे वास्तव मांडण्याची एक लकबही त्यांच्या कवितेतून व्यक्त होते. हा उपहास मांडताना हास्याची मिस्किलता चेहऱ्यावर व्यक्त होते. त्यामुळे त्यांच्या ठिकाणी विरोधाभासाच्या रूपाने विनोद मांडण्याची पध्दती व्यक्त होते. त्यामुळेच संत तुकारामांचे काव्य हे श्रेष्ठ दर्जाचे ठरते.

* जातिभेदाला केलेला विरोध :

संत तुकारामांच्या आधीपासून हिंदूधर्मात जातपात, कर्मकांड आणि बाह्य उपचारांचे फार प्रस्थ मांडले होते. एक जात उच्च, एक जात नीच असा फरक समाजात केला जात होता. या जातिभेदाला संत तुकारामांनी कडाकडून विरोध केला.

“ज्याचा संग चित्ती । तो त्या याती।।”^१ (शा.गा.१५२०)

जातिबाह्य, हीन जातीचा, अस्पृश्य, चांडाळ, पापकर्मी यांच्या उध्दाराची सोय संत तुकारामांनी केली. जन्मजात, जातिभेद समाजात आणि परमेश्वराच्या दरबारी नसावा अशी त्यांची ठाम विचारसरणी होती. समूळ जातिभेद समाजातून नष्ट व्हावा म्हणून संत तुकाराम महाराज अग्रेसर होते.

सर्वसामान्य माणसाला समाजाच्या चौकटीत राहूनच जीवन जगावे लागत होते. संत तुकारामकालीन समाजात अस्पृश्यता मानली जात होती. त्याविषयी संत तुकाराम म्हणतात,

“आजि शिवला मांग । माझें विटाळले अंग ।।”^२ (शा.गा.२९१७)

तत्कालिन समाजात अस्पृश्यता पाळली जात होती हे वरुन अभंगावरुन लक्षात येते.

‘महारास शिवल्यावर जो ब्राम्हण संतापतो, तो खरा ब्राम्हणच नव्हे’ असे तुकाराम निर्भीडपणे म्हणतात. अशा संतापी ब्राम्हणास, दुसऱ्यास अस्पृश्य मानणाऱ्या ब्राम्हणास देहत्यागाचे प्रायश्चितही कमीच होईल. हा मनुष्य चांडाळास जवळ करीत नाही. कारण त्याच्या अंतरंगातच विटाळ असतो. म्हणून त्यास तो चांडाळ वाटतो. हा महार, हा चांडाळ असाच भेदाभेद त्याच्या मनात असल्यामुळे तो त्याच्या जातीचा होतो. जसे चिंतन तसे त्याला फळ मिळते. ज्याचा संग ज्याच्या मनात तशी जात त्याची होते. म्हणून क्रोधरुप ब्राम्हणाने त्याने मनात स्थान दिल्यास तोही महारच होईल अशी टीका संत तुकारामाने केली आहे.

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जागतिक हवामान बदल व आदिवासी विकासाच्या शासकीय योजना

योगेश कोंडू पाटील

संशोधक विद्यार्थी
मॉडर्न एज्युकेशन सोसायटीज, संस्थेचे
एस. एम. जोशी महाविद्यालय पुणे.

प्रा. डॉ. ज्योती जालिंदर किर्वे

मार्गदर्शक
रयत शिक्षण संस्थेचे,
नेस वाडिया कॉलेज ऑफ कॉमर्स, पुणे.

प्रस्तावना:-

सध्या जग अनेक समस्यांनी ग्रस्त आहे. सर्वात मोठी समस्या म्हणजे जगात मोठ्या प्रमाणात होत असलेले हवामानातील बदल होय तंत्रज्ञानाच्या विकासांमुळे व मानवी जगण्याच्या बदललेल्या शैलीमुळे तापमान वाढीची मोठी समस्या तयार झाली आहे.

लोकसंख्या वाढ, जंगलतोड व प्रदूषणाची समस्या यामुळे जागतिक हवामानात मोठे बदल घडून येत आहेत. भविष्यात या बदलाचा परिणाम पर्यावरणावर व संपूर्ण सजीव सृष्टीवर होणार आहे. 19 व्या शतकाच्या तुलनेत आता जगभरातील तापमान 1.2% नी वाढले आहे. तर कार्बन डायऑक्साईडचे प्रमाण 50% ने वाढलेले आहे. वेळीच सुरक्षित पावले उचलली नाही तर पृथ्वीचे तापमान दोन ते चार अंशांनी वाढण्याची भीती आहे. याचा परिणाम उष्णतेची लाट बर्फ वितळणे पाण्याच्या पातळीत वाढ व परिणामी जीवसृष्टीची हानी होऊ शकते. दरम्यान आदिवासी समाज जो जंगलचा रहिवासी व राखणदार म्हटला जातो. व आजच्या आधुनिक युगात देखील ज्याने आपल्या जगण्याच्या पद्धतीत फारसा बदल केलेला नाही. तो येणार्या कालखंडात सृष्टीच्या रक्षणासाठी त्यांच्या पुरातन संस्कृतीच्या आधारे सर्वाना मार्गदर्शक ठरू शकतो. अशा सृष्टी रक्षकाची अवहेलना शतकानूशतके आपल्या समाजात होत राहिली आहे कारण विकासाच्या मुख्य प्रवाहात त्याला सामील करून घेण्याच्या अट्टाहासापायी आपण त्यालाही सृष्टीचा मारकच बनवत आहोत.

- **महत्त्वाचे शब्द :-** हवामान बदल, आदिवासी समाज, सुधारणा, शासकीय योजना
- **उद्देश:-**

- 1) अनुसूचित समाजाचा हवामानाच्या बदला संदर्भात परिणाम अभ्यासणे.
- 2) आदिवासी योजनांचा हवामान बदलाच्या अनुषंगाने अभ्यास करणे.

- **गृहीतके:-**

- 1) एक अनुसूचित समाजाच्या रितीपरंपरा हवामान पूरक आहेत.
- 2) शासकीय योजना हवामान पूरक व योग्य प्रकारे राबवल्या जात आहेत.

- **संशोधन पद्धती:-** संशोधकाने विश्लेषणात्मक संशोधन पद्धतीचा वापर केला आहे.

➤ **हवामान बदल :**

अश्मयुगीन कालखंडापासून मानवाची उत्क्रांती होत आली आहे.जसजसा मानव प्रगत होत गेला त्यानेनिसर्गाचा अधिकाधिक वापर आपल्या फायद्यासाठी करण्यास सुरुवात केली या कारणास्तव आज पर्यावरणाची सुरक्षितता व परिणामी हवामानातील तीव्र बदलाची नांदी आपल्याला पाहण्यास मिळते. या बदलाचा परिणाम भविष्यातील सजीवांच्या पिढ्यांवर व एकूणच पृथ्वीच्या आरोग्यावर देखील होणार आहे.

➤ **आदिवासी समाज :**

मानवाच्या उत्क्रांती काळापासून मानव विविध अंगाने प्रगती करत गेला. विविध टोळ्या समूहाने सुधारणा अंगीकारल्या परंतु काही मानवी समूह आपल्या जुन्या चालीरीती परंपरा यानुसारच चालत राहिला. अशा समूहांना विविध भूभागांमध्ये वेगवेगळ्या नावाने ओळखले जाते. (फक्त महाराष्ट्र पुरता विचार केल्यास शंभर प्रकारच्या जाती-जमातींचा उल्लेख आढळतो उदाहरणार्थ गोंड, बारडा, बावचा, भिल, दोडिया, दुबळा इत्यादी) हा सर्व समाज एकत्रितपणे आदिवासी समाज म्हटला जातो.

आदिवासी समाजाने पर्यावरण पूरक चालीरीतींचा वापर करत असल्यामुळे आजच्या हवामान बदलाच्या पार्श्वभूमीवर त्यांच्या चालीरीती या पृथ्वीला विनाशापासून व वाचवू शकतात.

➤ **सुधारणा**

मानवाने चाकाचा शोध लावला व त्याच्या प्रगतीला वेग आला. या सोबतच आयुष्यातील प्रत्येक गोष्ट सोपी करण्याचे वेदाने मानवाला झपाटून टाकले. या वेदा पायी माणूस श्रम करण्याचे टाळू लागला यंत्राचा वापर निसर्गाचा अपहार, तंत्रज्ञानामुळे निसर्ग नियमांना बदलण्याची ताकद या गोष्टींच्या अहंकाराने सृष्टीच्या विनाशाकडे सुरु असलेली वाटचाल पाहायला मिळते या कारणास्तव मानवी सुधारणा या भविष्यातील धोक्याची घंटा आहेत.

➤ **आदिवासी जीवन पद्धती व परंपरा मुळे पर्यावरण संरक्षण:-**

1) **वेशभूषा:-**

आदिवासी समाजातील पद्धतीनुसार स्त्रिया व पुरुष अत्यंत कमी कपडे परिधान करतात. यामुळे अप्रत्यक्षपणे निसर्गाचा कमीत कमी उपयोग होतो.

2) **शेती:-**

बैलांचा उपयोग नांगरणीसाठी तर शेतात शेणखत पालापाचोळ्याचा वापर यामुळे जमिनीची प्रत खालावत नाही.

3) **सण उत्सव:-**

हिरोबा देव हा निसर्गाचा प्रतीक तर डोंगर देव हा डोंगरा प्रति आदरभाव दाखवण्यासाठी आहे. चितोबा देव हा जंगली प्राण्यांबद्दल संवेदना दाखवण्यासाठी आहे. तसेच या देवदेवतांशी संबंधित निसर्ग पूरक सण उत्सव हा समाज साजरे करत असतो.

४) संकुचित गरजा व समाधानी वृत्ती:-

आदिवासी समाज अत्यंत कमी गरजांमध्ये व समाधानी वृत्तीने जगण्याची वृत्ती बाळगत असतो. परिणामी यंत्र व तंत्रज्ञानाच्या वापरापेक्षा मानवी बळ व निसर्गदत्त सोयींना अनुसरून जगण्याची पद्धत पर्यावरणाच्या अतिरेकी वापराला आळा घालते.

➤ शासकीय योजना

शासनाच्या मार्फत राबवण्यात येणाऱ्या अनेक योजना आज आदिवासी समाजाला शतकानू शतकांच्या दारिद्र्य, अज्ञान, अनारोग्य, निरक्षरता, बेरोजगारी, आणि गुलामीच्या जोखडातून बाहेर काढण्याचा प्रयत्न करताना दिसत आहेत. सदर योजना कृषी संबंधी योजना, ग्रामीण विकास, पाणलोट व पूर नियंत्रण, वीज पुरवठा आदी बाबींमध्ये सकारात्मक काम करताना दिसत आहेत.

परंतु तरीही या समाजाची म्हणावी तशी मुख्य प्रवाहात पोहोचण्या एवढी प्रगती झालेली दिसत नाही. यात विशेषतः एका बाजूला पांढरपेशा समाजाची उदासीन मानसिकता सरकारी यंत्रणांमध्ये बोकाळलेला भ्रष्टाचार व दुसऱ्या बाजूला आदिवासी समाजात असलेला न्यूनगंड व संकोचाची भावना तसेच प्रगती न स्विकारण्याची मानसिकता देखील पाहायला मिळते.

सारांश:-

आदिवासी समाजाच्या आदिम परंपरा पाळण्याच्या वृत्तीमुळे शासकीय योजनांचा म्हणावा तसा परिणाम पाहायला मिळत नाही. परंतु याच कारणास्तव आज बदललेल्या भौगोलिक हवामान बदलाच्या स्थितीत उर्वरित समाज घटकांना आदिवासी समाजाच्या रितीपरंपरानुसार पर्यावरण पूरक जीवन पद्धती स्वीकारण्याची आवश्यकता पाहायला मिळते.

निष्कर्ष व उपाय:-

- 1) बदलत्या हवामान परिस्थितीशी सामना करण्यासाठी आदिवासी समाजाच्या परंपरांना प्राधान्य द्यावे लागेल.
- 2) शासकीय योजना निसर्गपूरक व अनुसूचित जनजातीच्या मानसिकतेचा प्राधान्याने विचार करणाऱ्या असाव्यात.

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- 2) साळीवकर संजय, भारतीय आदिवासी जीवन आणि संस्कृती, श्री मंगेश प्रकाशन, नागपूर, प्रथम आवृत्ती, 2014.
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- 4) शाहू रंजन कुमार, ट्रायबल डेव्हलपमेंट इन इंडिया, मोहित पब्लिकेशन, नवी दिल्ली, 2005.

नयी शिक्षा नीति तथा आत्मनिर्भर भारत

प्रोफेसर डॉ. राख बक्कीराम विश्वनाथ

हिंदी विभाग, सौ.के.एस.के.कॉलेज, बीड

प्रस्तावना :

एक लंबे अंतराल के बाद देश में नई राष्ट्रीय शिक्षा नीति लागू हुई है जिसका उद्देश्य नवोन्मेषी, लोकतांत्रिक एवं विद्यार्थी केंद्रित शिक्षा व्यवस्था को प्रमुखता देना है। इसी दिशा में शिक्षा संस्कृति उत्थान न्यास 17 से 19 नवंबर 2022 को नई दिल्ली में तीन दिवसीय कार्यक्रम ज्ञानोत्सव 2079 आयोजन किया गया। इस न्यास में देश के विभिन्न क्षेत्रों के गण मान्य उपस्थित रहे, मंथन हुआ और फिर वहाँ से निकले ज्ञान के अमृत के माध्यम से भारतीय युवाओं की दिशा और दशा तय हुई। शिक्षा संस्कृति उत्थान न्यास एक ऐसा मंच है जिसकी आधार शिला वर्ष 2004 में उस समय रखी गई जब भारतीय शिक्षा जगत के पाठ्यक्रमों में व्याप्त विकृतियों के विरुद्ध " शिक्षा बचाओ आंदोलन " प्रारंभ किया गया।

" प्रधानमंत्री नरेंद्र मोदी ने 2015 में ' स्किल इंडिया ' मिशन की शुरुवात कर इसकी पहल की थी। जिसका उद्देश्य युवाओं का कौशल्य विकास कर उन्हें रोजगार के अवसर प्रदान करना था। इसी क्रम में उन्होंने आत्मनिर्भर भारत का ऐसा मंत्र दिया जिसने युवाओं के आत्मविश्वास को गति प्रदान की।" मूल्य आधारित शिक्षा मातृभाषा में शिक्षा, शिक्षा की स्वायत्तता और भारतीय ज्ञान प्रणाली को बढ़ावा देना ही वर्तमान समय की माँग है।

इस दिशा में नई राष्ट्रीय शिक्षा नीति भगीरथ प्रयास करती हुई नजर आती है।

इस शिक्षा नीति से भारत देश अपना पुरातन गौरव पुनः हासिल कर लेगा। हमारी पुरातन परंपरा और मूल्य कितने उच्च कोटी के थे, " कुटीर उद्योग और हस्तशिल्प कला की बदौलत एक समय हमारा डंका वैश्विक परिदृश्य पर बजता था। ऐसे में अंत तोगत्वा हमें इस राष्ट्रीय शिक्षा नीति के तहत परिष्कृत होते हुए अपने मूल्यों को पुनः आत्मसात करने की आवश्यकता है।"2 कुटीर उद्योगों की पुनर्स्थापना, हस्तशिल्प कला तथा इस युग की महत्वपूर्ण माँग आयुर्वेदिक उत्पादों को बढ़ावा देना हमारे प्रतिदिन दिनचर्या का हिस्सा बनना चाहिए। इससे 80% ग्रामीण अंचल में रहनेवाले लोक आत्मनिर्भरता की दिशा में आगे बढ़ेगा और यही रास्ता है देश की समृद्धि का।

जब हम अपने देश के पुरातन परंपरा और मूल्य को " लोकल फॉर वोकल" की भूमिका को हम गति प्रदान करेंगे तो निश्चित ही ये दिन ग्लोबल विलेज का हिस्सा बनेंगे, " प्रधानमंत्री ने जब से खादी खरीदने का आग्रह किया है, तभी से खादी एवं हैंडलूम की बिक्री देश में रिकॉर्ड स्तर तक पहुँच गई है और अब उसे ग्लोबल बनाने का कार्य हम लोगों का है।

आत्मनिर्भरता तथा वोकल फॉर लोकल दोनों मंत्र एक दुसरे से जुड़े हुए हैं, अनुपूरक हैं, जिसे राष्ट्रीय शिक्षा नीति के तहत युवाओं तक पहुँचना है। ऐसे में ज्ञानोत्सव जैसे आयोजन इस दिशा में महत्वपूर्ण भूमिका अदा कर सकते हैं, जिसके माध्यम से सिर्फ शिक्षा किस पहलू को दृष्टिगत रखते हुए दी जाए। यह निर्णय करने में सहाय्यक होगा।

आज वैश्विक परिस्थितिमें छात्रों को जो कुछ नूतन परिदृश्य में सिखाया जाते, उसे तो वे सीखे ही साथ-साथ में वैश्विक माँगे, परिवर्तन , प्रदूषण , प्राकृतिक संसंधानों के कारण हमें, ऊर्जा, भोजन, पानी, स्वच्छता, महामारी आदि की आवश्यकताओं को पुरा करने के लिए नए आयामों पर विचार-विमर्श करने की महती जरूरत है और इसी कारन जीव विज्ञान, रसायन, विज्ञान, भौतिक विज्ञान, कृषी, जलवायु विज्ञान और सामाजिक विज्ञान के क्षेत्र में नए कुशल कामगारों की आवश्यकता होगी | " महामारी और महामारी के बढ़ते हुए संक्रमण, रोग प्रबंध और टीकों के विकास में सहयोगी अनुसंधान और परिणामी सामाजिक पहलू बहु विषयक अधिगम की आवश्यकता को बढ़ाने हैं | मानविकी और कला की माँग बढ़ेगी क्योंकि भारत एक विकसित देश बनने के साथ साथ दुनिया की तीन सबसे बड़ी अर्थ व्यवस्थाओं में से एक बनने की ओर अग्रसर है , इसलिए रोजगार और वैश्विक परिस्थिति में तीव्र गति से आ रहे परिवर्तनों के कारण यह आवश्यक हो गया है |"³

आज हमारे समाज को छात्रों को आत्मनिर्भर बनने कि आवश्यकता है और यह रास्ता कहीं ना कहीं नई शिक्षा व्यवस्था से होकर आगे बढ़ सकता है | वर्तमान समय में ज्ञान के परिदृश्य से पुरा विश्व तीव्र गति से परिवर्तन के दौर से गुजर रहा है, " बिग डेटा, मशिन लर्निंग और आर्टिफिशियल इंटेलिजेंस जैसे क्षेत्रों में हो रहे अनेक वैज्ञानिक तकनीकी विकास के चलते एक और विश्वभर में अकुशल कामगारों के स्थान पर मशीन कार्य करने लगी है | दुसरी ओर डेटा साइंस, कम्प्युटर, साइंस और गणित के क्षेत्रों में ऐसे कुशल कामगारों की आवश्यकता और माँग बढ़ रही है जो विज्ञान समाज विज्ञान और मानवि की "4 आदि विषयों में भी अति सजग, दक्ष हों कर भारत के युवकों को आत्मनिर्भर बनने में यह शिक्षा नीति भारत देश को आगे ले जायेंगी |

सार रूप में :

राष्ट्रीय शिक्षा नीति 2020 , 21 वी शताब्दी की पहली शिक्षा नीति है, जिसका लक्ष्य हमारे देश के विकास के लिए महत्वपूर्ण तथा अनिवार्य आवश्यकताओं की पूर्ति करना है | यह नीति भारत की परंपरा और मूल्य, कुटीर उद्योग, हस्ताशिल्प, आयुर्वेदिक उत्पादों को बढ़ावा देगा जल-वायु परिवर्तन, बढ़ने प्रदूषण, घटते प्राकृतिक संसाधनों के कारण हमें ऊर्जा भोजन, पानी, स्वच्छता आदि की आवश्यकताओं को पुरा करने के लिए नये आयामों पर विचार विमर्श करने की महती बढ़ जायेंगी | नई राष्ट्रीय शिक्षा-नीति से आत्मनिर्भर भारत की आस को मजबुती मिलती है | इस नीति का एक अहम पहलू इसका बहु विषयक दृष्टिकोण है | जिसकी प्रासंगिकता इस बात पर केंद्रीत है, कि छात्रों का सर्वांगिण विकास हो | जबकि पहले की शिक्षा प्रणाली मुल रूप से सीखने और परिणाम देने पर केंद्रित थी | 34 वर्ष के एक लंबे अंतराल के बाद देश में नई शिक्षा नीति लागू हुई है, जिसका उद्देश्य नवोन्मेषी, लोकतांत्रिकी, एवं विद्यार्थी केंद्रित शिक्षा व्यवस्था को प्रमुखता देना है | नई शिक्षा प्रणाली, आत्मनिर्भर भारत की संकल्पना पुरी करती है , इससे भारत देश आत्मनिर्भर बनके में सार्थक सिध्द हो जायेंगा |

संदर्भ सूची :

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- 2) www.mediawala.com, 18 November 2022
- 3) www.mediawala.com, 18 November 2022
- 4) www.mediawala.com, 18 November 2022

हवामान बदलाचे कृषी क्षेत्रावर होणाऱ्या परिणामाचे अवलोकन

प्रा. डॉ. अशोक कोरडे

अर्थशास्त्र विभाग प्रमुख
एस. के. गांधी महाविद्यालय,
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प्रस्तावना:-

हवामान बदलाची चाहूल जरी अलीकडच्या काळात लागलेली दिसत असली तरी म्हणजेच “Global warming” हा शब्द अगदी ताजा वाटत असला तरी त्याचा इतिहास मात्र 100 वर्षांपेक्षा अधिक जुना आहे, स्वीडन मधील रसायनशास्त्रातील नोबेल पुरस्कार प्राप्त “अ-हेनसियस यांनी 1896 मध्ये वातावरणातील कार्बनचे प्रमाण दुप्पट व तिप्पट झाले असता त्याचे होणारे परिणाम शोधले होते. त्यांचे निष्कर्ष सध्याच्या तापमान वाढी संबंधीच्या निष्कर्षांच्या अगदी जवळ होते. 1950 च्या दरम्यान “Roger Revelle” आणि इतर वैज्ञानिकांनी वातावरणातील कार्बनच्या थरांचे मोजमाप केले. आणि तापमान वाढीच्या धोक्याची घंटा दिली.

हवामान बदल म्हणजे तापमान वाढ असा सध्यातरी अर्थ लावला जात आहे. जागतिक तापमान वाढीचा मुद्दा नव्वद च्या दशकाच्या सुरुवातीस आंतरराष्ट्रीय पर्यावरण धोरणाच्या केंद्रस्थानी आला. सध्या तापमान वाढीस प्रामुख्याने जबाबदार असलेल्या हरितगृह वायूचे उत्सर्जन कमी करण्यासंदर्भात आंतरराष्ट्रीय स्तरावर प्राधान्य क्रमाने विचार विनिमय होत आहे. भारतात आजही जवळपास 60 टक्के लोकांची उपजीविका कृषीवर अवलंबून आहे. म्हणून हवामान साक्षरता, हवामान बदलाची जाणीव ह्या गोष्टी संदर्भात महत्त्वाच्या जाणिवे सध्या झालेल्या आहेत. तसेच भारताच्या हवामानातील संभाव्य बदलाचे, अधिक लोक अवलंबून असलेल्या कृषी क्षेत्रावर होणारे परिणाम आणि त्यासाठीच्या अनुकूल व उपशमन योजना नीटपणे समजून घेणे ही आज निवडीची गरज आहे.

1) हवामान बदल:-

सूर्यप्रकाश व इतर अदृश्य सौर किरणे पृथ्वीच्या सभोवतात असलेल्या वातावरणात पृथ्वीच्या पृष्ठभागापर्यंत पोहोचतात. या सौर किरणापैकी काही मोठ्या प्रमाणात पुन्हा वातावरणात परावर्तित होतात. उरलेली सौर किरणे पृथ्वीच्या पृष्ठभागावरून शोषली जातात व त्यामुळे पृथ्वीचा पृष्ठभाग तापतो. यानंतर पृथ्वीच्या पृष्ठभागाकडून वातावरणाच्या माध्यमातून आवरत प्रमाणाच्या रूपात उष्णतेचे उत्सर्जन होते, यावरून आंतरशासकीय हवामान बदल मंडळाच्या सहा हरितगृह वायूचे उत्सर्जन लक्षात येते. त्यापैकी काहीचे वातावरणीय सरासरी आयुष्य 10 वर्ष तर काहींचे 150 वर्षांपर्यंत असते म्हणूनच वातावरणातील स्तर वाढत जातो.

2) हवामान बदला संबंधीचे अंदाज:-

तापमान वाढीस साधारण औद्योगिक क्रांतीपासून (1750) सुरुवात झालेली आहे जागतिक तापमान वाढीस विकसित देशांनी मागील दोन दशकापासून मोठी भर घातली आहे, भारतासंबंधीच्या ताज्या अहवालानुसार भारतात मान्सून पर्जन्य पश्चिम किनारपट्टी उत्तर आंध्र प्रदेश, उत्तर पश्चिम भागात वाढत तर पूर्व

मध्य प्रदेश व सभोवतालचा भाग, उत्तर पूर्व भारत, केरळ व गुजरातच्या काही भागात मागील शंभर वर्षांच्या सरासरीच्या तुलनेत 2100 मध्ये पर्जन्यात 6 ते 8 टक्के घट होईल असा अंदाज व्यक्त केला आहे तसेच पश्चिम किनारपट्टी, मध्य भारत, मध्य दीपकल्पात आणि उत्तर पूर्व भारतात तापमानात वाढ होईल असा अंदाज ही दिला आहे.

तक्का क्र. 0.1

भारतासाठी हवामान बदल दृष्टिक्षेप

वर्ष	हंगाम	तापमानातील वाढ		पर्जन्य वृष्टीतील बदल %	
-	-	न्यूनतम	अधिकतम	न्यूनतम	अधिकतम
2020 चे दशक	खरीप	1.08	1.54	-1.95	4.16
-	रब्बी	0.87	1.12	1.81	5.10
2050 चे दशक	खरीप	2.54	3.18	-9.22	3.82
	रब्बी	1.81	2.17	7.18	10.52
2080 चे दशक	खरीप	4.14	6.31	-4.50	-4.50
	रब्बी	2.91	4.62	10.10	15.18

स्रोत:- अग्रवाल पी. के क्लायमॅट चेंज अँड एग्रीकल्चर रिसर्च इन्स्टिट्यूट न्यू दिल्ली, 2002

3) हवामान बदल आणि कृषी क्षेत्र:-

दुष्काळ, अतिवृष्टी, पूर, चक्रीवादळ यासारख्या नैसर्गिक घटकांची वारंवारिता हवामान बदलामुळे वाढणार असून त्यामुळे मुख्यतः जमिनीचा कस कमी होतो व पिकाची नासाडी होते. हवामान बदलाची कृषी वरील परिणाम धन अथवा ऋण असणे हे पर्जन्यवृष्टी व पीक घेण्याचा कालखंड यांच्या वाढीवर अवलंबून असतात. तसेच हवामान बदलाचा सखल, उंचीवरील प्रदेश, कोरडवाहू प्रदेशात भिन्न भिन्न परिणाम होत असतात.

4. हवामान बदल आणि शेती क्षेत्रावरील परिणाम तपासणी पद्धती:-

रिकॉर्डच्या दृष्टिकोन मात्र हवामानाशी केलेले अनुकूलन (उदा. पीक रचना, उत्पादन तंत्र, पीक लागवड, कापणीच्या तारखा, सिंचन वेळापत्रक इत्यादी मधील बदल लक्षात येतो कारण, या दृष्टिकोनात राज्य व जिल्हास्तरीय वरील हवामान व इतर चलावरील आकडेवारी घेऊन भूमीच्या किमतीचे हवामान चल व दुसरे

चलावर प्रतीपगमन करण्यात येत असते. भूमीच्या बाजारपेठा पूर्णतः कार्यरत असतील तर भूमीचे मूल्य अथवा किमती या जवळपास कृषी पासूनच्या निव्वळ उत्पन्न (नफ्या) समान असतात. कारण काही हवामान घटक लक्षात घेऊ शकल्यावर अवलंबून असते, कारण काही हवामान घटक वगळले असता चिन्ह व आकाराच्या दृष्टीने असुसंगत वैशिष्ट्ये प्राप्त होत असतात, परंतु हवामानातील लहान लहान बदलाचे परिणाम मोजण्यासाठी ही पद्धती अधिक विश्वसनीय आहे. हेही तितकेच खरे आहे. हवेतील वाढत्या कार्बनचा पिकांच्या विकासावरील धन परिणाम ही पद्धत पकडू शकत नाही.

5. हवामान बदलाचा कृषी क्षेत्रावरील परिणाम:-

एकविसाव्या शतकात तापमान वाढ व पर्जन्य वृष्टीतील बदल या रूपाने हवामानात अधिक बदल घडून येण्याचा संभव आहे. उत्पादन फल दृष्टिक्षेपाचा अवलंब करून हवामान बदलाच्या कृषी वरील परिणाम संबंधीचे अभ्यासक मुख्यतः आफ्रिका, अमेरिका, कॅनडा, आशिया व युरोपातील काही देशासाठी झालेले आहे. या अभ्यासातून प्रामुख्याने मका, गहू, बाजरी, सोयाबीन, भात, ज्वारी व भुईमूग इत्यादी पिकांवरील हवामान बदलाचा परिणाम मोजण्यात आला आहे.

6. हवामान बदलाचे भारतीय कृषी क्षेत्रावरील परिणाम:-

भारतीय कृषी क्षेत्र हवामानाच्या लहरीपणास व त्यातही पर्जन्यातील फेरबदलात अधिक संवेदनशील पणा आहे. भारतीय उपखंडातील एकूण पर्जन्यापैकी जवळपास 80 टक्के पर्जन्य जून ते सप्टेंबर या काळात मिळत असते. भारतातील दुष्काळ हा नेहमीचाच प्रश्न असून काही प्रदेशात पुरामुळे कृषीचे मोठे नुकसान पण होत असते. हवामान बदलाचे महत्वपूर्ण असे सामाजिक व आर्थिक परिणाम भारतात दिसून येऊ शकतात. कारण तीन चतुर्थांश लोकसंख्या ही प्रत्यक्ष व अप्रत्यक्षरीत्या उदरनिर्वाह व रोजगारासाठी कृषीवर अवलंबून आहे. हवेतील हरितगृह वायूचे स्तर वाढल्यामुळे तापमान, पर्जन्य व इतर हवामान चलाची रचना बदललेली आहे, त्यामुळे त्यांच्या परिणामाची तीव्रता दीर्घकाळात वाढण्याचा संभव आहे. हवामान बदलापासून भारतातील कृषी उत्पादन आणि 75 कोटी लोकांच्या जीवनास गंभीर धोका आहे.

तक्ता क्र. 02

तापमान वाढीचे भारतीय कृषी क्षेत्रावरील परिणाम

(निम्न रेकॉर्डियन दृष्टिकोनाचे निष्कर्ष)

तापमान बदल	दर हेक्टरी निव्वळ कृषी उत्पादनातील टक्केवारी बदल	स्रोत
+ 2 अंश सेल्सिअस	-3 ते -6	संधी व इतर 1998
+ 2 अंश सेल्सिअस	-7 ते -9	कुमार व पारीख 1998
+ 3.5 अंश सेल्सिअस	-20 ते -26	कुमार व पारीख 2001
+ 3.5 अंश सेल्सिअस	-3 ते -8	संधी व इतर 1998

महाराष्ट्रातील शेती क्षेत्रावरील परिणाम:-

हवामान बदलाचा महाराष्ट्रातील कृषीवर होणारा संभाव्य परिणाम समजून घेण्यासाठी जागतिक बँकेच्या दोन अभ्यासाचा आधार घेणे क्रमप्राप्त ठरते. त्यातील एक अभ्यास दिनार व इतर यांचा 1998 मधील असून दुसरा जागतिक बँक आणि वन व पर्यावरण मंत्रालय, भारत सरकार यांचा जून 2008 मधील अभ्यास होय.

दीनार व इतर:-

दीनार व इतर याचा अभ्यास व्यापक स्वरूपाचा म्हणजे देशातील 13 राज्य व 271 जिल्ह्यातील होता. त्या अभ्यासात महाराष्ट्रातील 25 जिल्ह्यांचा समावेश आहे, निम्न रेकॉर्डियन दृष्टिकोन वापरून केलेला हा अभ्यास आहे. या अभ्यासातून हवामान बदलाचा महाराष्ट्रातील कृषी पासूनच्या निव्वळ उत्पन्नावर ऋण स्वरूपाचा परिणाम दिसून आलेला आहे. यासाठी अन्न व कृषी संघटनेची आकडेवारी वापरलेली आहे.

जागतिक बँक व भारताचे वन व पर्यावरण मंत्रालय:-

जागतिक बँक व भारताचे वन व पर्यावरण मंत्रालय याचा अभ्यास अहमदनगर व नाशिक जिल्ह्यामधील आहे. या अभ्यासात ज्वारी, बाजरी व ऊस पिकांचा विचार केला आहे. उत्पादन फल दृष्टिकोनाआधारे असे दिसून आले की, तापमान व पर्जन्यसृष्टीतील वाढीमुळे बाजरी पिकाच्या दर हेक्टरी उत्पादनात अहमदनगर जिल्ह्यातील मोठी वाढ तर नाशिक जिल्ह्यात नगण्य ते मध्यम वाढ होईल, परंतु उसाच्या दर हेक्टरी उत्पादनात महत्वपूर्ण म्हणजे जवळपास 30 टक्के घट होईल असे अनुमान काढले होते असा परिणाम तापमान वाढीचा ओझोन वर तान आणि कार्बनच्या वाढत्या प्रमाणास उत्पादनाचा कमी प्रतिसाद यामुळे होईल असे दिसते. ज्वारी व बाजरी पिकापासूनचा नफा अनुक्रमे 15 टक्के व 8 टक्क्यांनी वाढला पण उसापासूनचा 25 ते 30 टक्क्यांनी घटेल असा निष्कर्ष आहे.

समारोप:-

हवामान बदलाची समस्या ही श्रीमंत देशांनी आणि प्रत्येक देशातील श्रीमंत लोकांनी निर्माण केलेली असली, तरी या समस्येचे परिणाम टाळण्यासाठी अथवा तीव्रता कमी करण्यासाठी सर्व पातळ्यावर प्रयत्न होणे महत्वाचे आहे. हवामान बदलाची चाहूल लागल्याबरोबर त्यावर उपशमन करण्या संदर्भात आंतरराष्ट्रीय पातळीवर प्रयत्न सुरू झाले. हवामान बदल संबंधीच्या संयुक्त राष्ट्र अधिसंधी आराखड्यात औद्योगिक दृष्ट्या प्रगत व अर्थव्यवस्था मोठ्या परिवर्तनाच्या उंबरठ्यावर असलेल्या देशांचा समावेश केला आहे.

भारतासारख्या देशाने हवामान बदलाची गांभीर्याने दखल घेणे आवश्यक आहे. कारण हवामान घटकास अधिक संवेदनशील असलेल्या भारतात कृषी क्षेत्रावर मोठी लोकसंख्या अवलंबून आहे. पर्जन्यवृष्टीतील घटीमुळे दुष्काळाची तीव्रता वाढते आणि अतिवृष्टीमुळे पूर येतात व त्याचा देशाची अन्न सुरक्षितता व जीवनमान यावर प्रतिकूल परिणाम होतो. हवामान बदलाचे कृषी वरील प्रतिकूल परिणाम कमी करण्यासाठी अनुकूलनाची पण आवश्यकता आहे. शेती पातळीवर करावयाच्या अनुकूलनामध्ये पिकांचे नवीन वाण, पिक विविधकरण, काही पिकांवर भर, पिक पाळ्या बदलणे, लवकर पेरणी, शेतीवरील कामाच्या वेळा बदलणे, भूमितील ओलावा टिकवण्यासाठी योग्य मशागत पद्धती अवलंबणे, सिंचन कार्यक्षमता वाढवणे, अधिक तापमान व दुष्काळी परिस्थितीत येणाऱ्या पिकांचे वाण शोधणे, इत्यादींचा अंतर्भाव आहे.

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जागतिक हवामान बदल आणि स्त्री आरोग्य

डॉ. चंद्रशेखर काशिनाथ तळेकर

(राज्यशास्त्र विभाग)

एस के गांधी महाविद्यालय कडा

ता. आष्टी, जि. बीड.

प्रस्तावना :-

हवामानात बदल झाला की त्याचा परिणाम हा जीवसृष्टीवर होत असतो. मग ते वातावरण स्थानिक असो, राष्ट्रीय आंतरराष्ट्रीय असो. हवामान बदलातील सर्वाधिक मोठा धोका म्हणजे तापमान वाढ होय. तापमान वाढ ही सर्वच घटकांसाठी धोकादायक आहे. मानवाच्या हव्यासा पायी पर्यावरणाचे मोठ्या प्रमाणात नुकसान झाले आहे. त्याचा परिणाम हा सर्वच जीवसृष्टीवर होताना दिसतो. महिला वर्गावर याचा परिणाम हा सर्वाधिक जाणवतो. स्त्रियांच्या आरोग्यावर हवामान बदलाचा विपरीत परिणाम होतो. यामुळे स्त्रियांच्या विविध आजारांमध्ये वाढ झाली आहे. हवामान बदलामुळे स्त्री आरोग्याच्या विविध समस्या वाढत चालल्या आहेत.

महत्वाचे शब्द :- दहाकता, IWHC, WHO

उद्देश :-

- १) हवामान बदलामुळे स्त्रियांच्या वाढणाऱ्या समस्या अभ्यासणे.
- २) महिलांमधील प्रदूषणामुळे उद्भवणारे आजार अभ्यासणे.
- ३) स्त्री आरोग्यासाठी शासनाच्या सोयी सवलती अभ्यासणे.
- ४) स्त्रियांचे आरोग्य राखण्यासाठी आंतरराष्ट्रीय स्तरावरील प्रयत्न अभ्यासणे.

गृहीतके :-

- १) वाढत्या तापमानाचा स्त्रियांच्या आरोग्यावर विपरीत परिणाम दिसून येतो.
- २) महिला स्वतःच्या आरोग्याकडे दुर्लक्ष करतात.
- ३) स्त्रियांच्या आरोग्यासाठी शासनाच्या विविध सुविधांचा चांगला परिणाम दिसून येतो.
- ४) स्त्रियांच्या सुदृढतेसाठी आंतरराष्ट्रीय स्तरावर विविध प्रयत्न दिसून येतात.

संशोधन पद्धती :-

विक्षेपण पद्धतीचा वापर करण्यात आलेला आहे.

बदलते हवामानाचा स्त्रियांच्या वाढत्या समस्यांशी संबंध :-

१) सामाजिक स्थितीचा परिणाम :-

स्त्रिया व मुलींसाठी परंपरागत असे निम्नस्तरावरील नियम बनवले गेले आहेत. सांस्कृतिक नियम व समाजात त्यांना मिळणारी दुय्यम वागणूक यामुळे त्यांना आर्थिक दुर्बल समजले जाते. ऊन, वारा, पाऊस अशा कोणत्याही स्थितीत त्यांना घरगुती कामे टाळता येत नाही. ही परंपरागत जबाबदारी त्यांना पूर्णच करावी लागते. याचा परिणाम त्यांच्या आरोग्यावर होतो.

२) कामाचा अधिक ताण :-

हवामान बदल हा स्त्रियांच्या समस्येमध्ये आणखी भर घालतो. वातावरण बदलामुळे नैसर्गिक घटकांची कमतरता जाणवू लागते. उदा. अन्न, पाणी, लाकूड (सरपण). या बाबी महिलांच्या दैनंदिन वापराच्या आहे. सर्वसाधारण व गरीब कुटुंबातील स्त्रियांना याचा जास्त सामना करावा लागतो. या बाबी मिळवण्यासाठी रानावनात व जंगलासारखा लांबचा पल्ला गाठावा लागतो. याचा परिणाम बऱ्याच वेळा महिला शारीरिक आणि लैंगिक अत्याचाराला बळी पडतात.

३) महिलांना भविष्यात कमी संधी:-

हवामान बदलामुळे महिलांच्या कामाचा ताण वाढतो. त्यामुळे मुलींना घरातील कामासाठी शाळेला व शिक्षणाला मुकावे लागते. मुली घरी मदत करतील म्हणून शाळेतून काढून घेतल्या जातात. शिक्षणाच्या व ज्ञानाच्या अभावामुळे त्यांच्या भविष्यातील संधी कमी होतात.

४) मुली व स्त्रियांच्या कुपोषणात वाढ :-

वातावरण बदलामुळे पावसाचा अनियमितपणा वाढतो. त्यामुळे परिणामी पिकांचे नुकसान झाल्यास महिला वर्गाचे विशिष्ट बाबीत कुपोषण होते. पुरुषप्रधान संस्कृतीमुळे बऱ्याच वेळा स्त्रियांना कुपोषणाचा सामना करावा लागतो. विशेषतः भारतात बहुसंख्य समाज असाच आहे जिथे स्त्रियांच्या आधी पुरुष वर्ग जेवण करतो. त्यामुळे कुटुंबातील कमी महत्वाच्या सदस्यांचे ठराविक असे कुपोषण होते. कुटुंबातील निम्न दर्जा हा बऱ्याचदा स्त्रियांचाच असतो.

५) वैद्यकीय सुविधांचा अभाव :-

वातावरणात बदल झाल्यास त्याचा परिणाम आर्थिक स्थितीवर होतो. आर्थिक स्थिती खालवल्यास पुरुषांपेक्षा महिला रुग्णालयात जाण्याचे टाळतात. यामुळे त्यांचे आजारपण कमी होण्याऐवजी वाढतच जाते. संसर्जन्य आजारांचा धोका महिलांमध्ये जास्त आढळतो.

प्रदूषणाचे महिला वर्गाला असणारे धोके:-

हवामान बदल व त्यामुळे वाढणारे प्रदूषण ही एक भयावह व जागतिक समस्या बनली आहे. संपूर्ण मानवी वर्गाला याचा फटका सहन करावा लागत आहे. परंतु अधिकचा त्रास हा स्त्रियांना जास्त सोसावा लागतो. वाढत्या प्रदूषणाने स्त्रियांना अनेक संकटांचा सामना करावा लागत आहे.

१) फुफुसाच्या आजारात वाढ :-

गरीब वर्गातील स्त्रिया अजूनही स्वयंपाक पारंपारिक पद्धतीनेच करतात. चुलीवर करावा लागणार स्वयंपाक हे याचे प्रमुख कारण आहे. घरातील धूर हा बाहेर न जाता स्वयंपाक घरातच घुटमळतो. त्याचा परिणाम महिलांच्या श्वसन संस्थेवर होतो. त्यामुळे बऱ्याचदा श्वसन नलिकेच्या कर्करोगासारख्या आजारांना महिला बळी पडतात.

२) आयुर्मान कमी:-

कृत्रिमरित्या होणारे प्रदूषण आणि स्वयंपाक घरातील दूर यांचा दुहेरी त्रास महिलांना सहन करावा लागतो. मोलमजुरी करणाऱ्या महिलांना शेतीची कामे भर उन्हातच करावी लागतात. एकंदरीत सर्वच बाबतीत प्रदूषणाचा परिणाम महिला वर्गांना सहन करावा लागतो. या सर्व घटकांमुळे महिलांचे आयुर्मान कमी होत आहे.

३) गर्भपाताचा वाढता धोका:-

हवामान बदलाचा परिणाम लहान बालके व गर्भवती स्त्रियांवर सर्वाधिक होतो. हवेतील वाढत्या कार्बनडाय ऑक्साईडमुळे गर्भातील शिशु व्यंग, कुपोषित किंवा कमी वजनाचे जन्माला येते. प्रदूषणाचे प्रमाण अति झाल्यास गर्भातच बालक मृत्यू पावतो.

स्त्री आरोग्यासाठी शासनाने आखलेले ध्येय धोरणे :-

महिलांच्या आरोग्य मानस सुधारणा घडवून आणण्यासाठी आंतरराष्ट्रीय तसेच राष्ट्रीय स्तरावर विविध प्रयत्न होताना दिसून येतात. त्यांचा थोडक्यात आढावा पुढीलप्रमाणे.

१) आंतरराष्ट्रीय महिला आरोग्य युती (IWHC) :-

आंतरराष्ट्रीय महिला आरोग्य युतीची (IWHC- International Woman Health Coalition) स्थापना १९८४ मध्ये आंतरराष्ट्रीय क्षेत्रात केली गेली. याचे मुख्यालय न्यूयॉर्क येथे आहे. सदस्य देशांतील महिलांच्या आरोग्यांशी संबंधित बाबींवर ही संस्था कार्य करते. महिलांच्या आजारांशी संबंधित विविध घटकांचा शोध घेऊन त्यांच्यावर उपाय योजना आखण्याचे कार्य IWHC करते. आंतरराष्ट्रीय स्तरावर महिलांच्या आरोग्य विषयक समस्या सोडवण्यासाठी ही संस्था आघाडीवर आहे. प्रामुख्याने किशोरवयीन मुली व गर्भवती स्त्रियांच्या आरोग्याच्या जटिल समस्या या संस्थेला आढळून आल्या. महिलांचे आरोग्य संरक्षित करण्यासाठी IWHC ही संस्था महत्त्वपूर्ण भूमिका बजावते.

२) आंतरराष्ट्रीय महिला दिन:-

८ मार्च हा जागतिक महिला दिन म्हणून साजरा केला जातो. संपूर्ण जगभर ८ मार्च या दिवशी महिलांच्या कर्तृत्वाचा गुणगौरव करण्यासाठी केला जातो. हा दिवस साजरा करण्याचे विशिष्ट ध्येय आहे. महिलांच्या हक्कांबाबत जनजागृती ८ मार्च या दिवशी केली जाते. स्त्री व पुरुष यांना समान वागणूक मिळावी हा हेतू यामागे आहे. या खास उद्दिष्टासाठी आंतरराष्ट्रीय महिला दिन साजरा केला जातो. संयुक्त राष्ट्राद्वारे पूर्ण जगभर साजरा केला जाणाऱ्या या दिनाची २०२३ ची थीम DigitALL: Innovation and technology for gender equality ही आहे.

३) राष्ट्रीय महिला आयोग :-

भारतीय संसदेने १९९० साली पास केलेल्या कायदानुसार ३१ जानेवारी १९९२ ला राष्ट्रीय महिला आयोगाची स्थापना केली. हा आयोग महिलांच्या कायदेशीर हिताचे रक्षण करतो. तसेच त्यांच्या कायदेशीर संरक्षणासाठी विविध

उपायांचे परीक्षण करतो. महिलांच्या सामाजिक व आर्थिक विकासासाठी विविध ध्येय धोरणाची आखणी या आयोगामार्फत केली जाते. महिलांच्या आरोग्य समस्या, लैंगिक समस्या सोडवण्यासाठी हा आयोग महत्त्वपूर्ण भूमिका बजावतो.

सारांश :-

वाढत्या तापमानाचा परिणाम हा महिलांचे आरोग्य धोक्यात आणणारा एक सबळ घटक बनला आहे. वातावरणातील वाढती उष्णता, पर्जन्यमानाचे प्रमाण अत्यंत कमी किंवा अत्यंत जास्त होणे, प्रदूषण या सर्वांचा परिणाम स्त्रियांच्या आरोग्यावर होत असतो. त्यातच प्रमुख घटक म्हणजे लिंगभेदानुसार ठरलेली पारंपारिक कार्ये हा देखील आहे. या सर्वांमुळे स्त्रियांवर दुहेरी तणाव पडतो. स्त्रियांच्या समस्या सोडवण्यासाठी आंतरराष्ट्रीय पातळीवर IWHC, WHO यांसारख्या संघटना महत्त्वपूर्ण कार्य करतात. भारत सरकारने देखील महिलांच्या सुरक्षेसाठी, त्यांच्या सामाजिक आर्थिक विकासासाठी महत्त्वपूर्ण पावले उचललेली आहे. यासाठी राष्ट्रीय महिला आयोगाची स्थापना करून त्याद्वारे महिलांच्या सर्वांगीण विकासासाठी व सुदृढ आरोग्यासाठी हा आयोग महत्त्वाची भूमिका बजावतो.

निष्कर्ष :-

- १) जागतिक हवामान बदलामुळे स्त्रियांच्या समस्या वाढत आहे.
- २) वाढत्या प्रदूषणामुळे स्त्रियांच्या आरोग्यावर परिणाम होतो आहे.
- ३) राष्ट्रीय व आंतरराष्ट्रीय क्षेत्रात महिलांचे आरोग्य व त्यांच्या सर्वांगीण विकासासाठी संघटना स्थापन केल्या आहेत.
- ४) शासन स्त्रियांच्या सुदृढ आरोग्यासाठी अत्यंत लाभदायक अशा ध्येय धोरणांची आखणी करताना दिसते.

संदर्भ:-

- १) लोकसत्ता ८ मार्च २०२३ ११:५८ IST
- २) स्त्री आणि आरोग्य, श्रोत्री निशिकांत, स्वाती प्रकाशन पुणे, आवृत्ती दुसरी .
- ३) महिला : आरोग्य संवर्धन, खेडकर अनिता व चौधरी राकेश

सातवाहन कालीन स्त्री जीवन

किरण भगवान शिनगीरे

संशोधक विद्यार्थी

YCMOU अंतर्गत गांधी महाविद्यालय, कडा

ता. आष्टी, जि. बीड

प्रस्तावना :

इ. स. पू. २३० ते इ. स. २३० या कालखंडात दख्खनच्या पठारावर सातवाहन राजे राज्य करत. ते पशुपालक राजघराणे होते. त्याचे राज्य वर्तमान महाराष्ट्र कर्नाटक व आंध्र प्रदेश या राज्यांच्या भूप्रदेशांत पसरले होते. आंध्र प्रदेशातील धरणीकोट व अमरावती, तसेच महाराष्ट्रातील जुन्नर व पैठण (जुने नाव प्रतिष्ठान) ही सातवाहनांची प्रमुख ठाणी होती. त्यापैकी पैठण ही सातवाहनांची राजधानी होती. नाशिक येथील बौद्ध लेणीच्या कोरीव कामात सातवाहन राजांनी कोरीव कामासाठी दान दिले असा उल्लेख येतो. इ. स. पू. च्या पहिल्या शतकात भारताच्या मोठ्या भूप्रदेशावर राज्य करणारा 'सातवाहन' हा महाराष्ट्राचा पहिला राजवंश मानला जातो. सातवाहनांच्या राजवटीतच महाराष्ट्रात सुवर्णकाळ होता. प्रतिष्ठान (पैठण), जीर्णनगर (जुन्नर), तगर (तेर), नेवासे, नाशिक अशी भरभराटीला आलेली व्यापारी शहरे या राजवटीत उदयास आली. मौर्य साम्राज्याच्या र्हासानंतर उत्तर भारताप्रमाणेच महाराष्ट्रात आंध्र प्रदेश कर्नाटक या प्रदेशातील स्थानिक राज्यसत्ता स्वतंत्र झाल्या त्यांनी छोटी छोटी राज्ये स्थापन केली. त्यापैकी सातवाहन घराणे हे देखील एक महत्त्वाचे घराणे होय. प्रतिष्ठान म्हणजेच पैठण ही सातवाहनांची महाराष्ट्रातील राजधानी होती.

राजा सिमुक सातवाहन हा सातवाहन साम्राज्याचा संस्थापक होता. सातवाहन घराण्याचा उदय सिरी सातवाहन यांच्यापासून असल्याचे पैठण येथील मिळालेल्या नाण्यावरून संदर्भात मिळतात. पुणे जिल्ह्यातील जुन्नर जवळच्या नाणेघाटातील लेण्यांमध्ये असलेल्या कोरीव लेखांमध्ये या घराण्यातील महत्त्वाच्या व्यक्तींची नावे पहावयास मिळतात. काही सातवाहन राजे त्यांच्या नावात त्यांच्या आईचे नाव लावत असत. जसे की गौतमीपुत्र सातकर्णी, सातवाहन सम्राट गौतमीपुत्र सातकर्णी यांची माता गौतमी बलश्री. गौतमीपुत्र सातकर्णी याचा गौरव केलेला आहे. शक पलव व ग्रीक यांचे निर्दालन करणारा तसेच सातवां कुळाच्या यशाची प्रतिष्ठापना करणारा व ज्याचे घोडे तीन समुद्रांचे पाणी प्यायलेले आहेत, असा उल्लेख नाशिक येथील शिलालेखांमध्ये गौतमीपुत्रच्या मातेने केलेला आहे. या उल्लेखावरून गौतमीपुत्र सातकर्णीचे मांडलिकत्व दक्षिणेतील अनेक राजांनी स्वीकारलेले होते असे दिसते. सातवाहन राजे आपल्या नावा आधी आईचे नाव लावत असत. उदाहरणार्थ गौतमीपुत्र सातकर्णी वाशिष्ठीपुत्र पुळ्मावी इत्यादी. सातवाहन शासकांची राजवट ही महाराष्ट्रामध्ये प्रभावी तसेच वैभवशाली व संपन्न राहिलेली आहे. नाशिकच्या पांडवलेणी मध्ये गौतमीपुत्र सातकर्णीच्या आईने म्हणजेच माता बलश्रीने शिलालेख कोरून घेतला आहे.

सुमारे पाचशे वर्षे महाराष्ट्रावर आपले साम्राज्य सबल समर्थपणे गाजविले, त्या सातवाहनांची कारकीर्द म्हणजे तत्कालीन महाराष्ट्रीय संस्कृतीचे जीवनदर्शन घडविणारा आरसाच.

हाल सातवाहन याने प्राकृत भाषेत सातशे ओव्यामध्ये 'गाथा सप्तशिती' नावाचा एक प्रथ लिहिला आहे. त्यातील गोदावरी काठच्या पैठणच्या परिसरातील ग्रामीण स्त्री जीवनाचे त्याच्या रसिकतेचे, प्रियकराला भेटण्यास आतूर असतानाही संकेताची देवाणघेवाण करण्यात कुशलता दाखविणारी ही ग्रामीण स्त्री मोठी रसिक असल्याचे जाणवते. त्यातच त्यांची वेशभूषा, कथा, प्रथा, उत्सव यांची वर्णन निसर्ग वर्णनाच्या बरोबरीने मिळतात.

याच काळातील स्त्रीजीवनाचे दर्शन घडविणारे आणखीन एक महत्वाचे साधन म्हणजे उत्खननात सापडलेले तत्कालीन अवशेष पुष्कळ माहिती देतात. लेण्यांतील स्त्रीजीवना विषयी पोशाख, केशररचना, अलंकार यांचे दर्शन आपणास घडते. तरी उत्खननातील तत्कालीन अवशेषामुळे त्याचे अधिक स्पष्ट चित्र दिसते. अशा उत्खननात काही अभूतपूर्व अवशेष आढळतात. हल्ली आपण जशा प्लॅस्टर ऑफ पॅरिसच्या मूर्त्या तयार करतो व आकर्षक बनवतो. त्याप्रमाणे त्या काळामध्ये विशिष्ट लालमाती घेऊन वस्त्रगाळ करून अशा मूर्त्या बनविला जात.

कुटुंबातील व्यक्ती, मालमत्ता आणि व्यवहार यांच्यावर मातेची किंवा वडिलधार्या स्त्रीची अधिसत्ता चालते, अशा व्यवस्थेस मातृसत्ताक कुटुंबपद्धती असे म्हटले जाते. जगातील काही आदिवासी जमातींमध्ये ही पद्धती आढळते. मानवाच्या अप्रगत भटक्या अवस्थेमध्ये अपत्यप्राप्तीतील पित्याची भूमिका निश्चित माहित नसल्याने अपत्ये 'मातेची' मानली जात असत तसेच पुरुष शिकारीसाठी निवासस्थानापासून दूर जात असे. त्यामुळे निवासस्थाने व तेथील थोडीफार मालमत्ता ही स्त्रीची मानली जात असे आणि त्यातूनच मातृसत्ताक कुटुंबपद्धतीचा उगम झाला असे बॅंकोफेन, कलर, स्पेन्सर, टायलर, मॉर्गन इ. मानवशास्त्रज्ञांचे मत आहे.

या व्यवस्थेमध्ये कुटुंबाची वंशपरंपरा, कुलनाम व गोत्रनाम मातेकडून अपत्यांना प्राप्त होते. मालमत्ता स्त्रीची मानली जाते आणि तिच्या मुली ह्या तिच्या वारसदार मानल्या जातात. धार्मिक कार्यांमध्ये गृहप्रमुख या नात्याने स्त्रियांना प्राधान्य असते. विवाहानंतर वधू आपल्या मातेच्याच घरी रहाते. गरजेनुसार वर तिच्याकडे रहावयास जातो. काही जमातींमध्ये वधू-वर वराच्या मामाच्या घरी (म्हणजेच मातेच्या नातेवाईकांकडे) रहावयास जातात. काही ठिकाणी पुरुषाला स्वकष्टाने मालमत्ता जमवण्यास परवानगी असली, तरी ती पितृसत्ताक पद्धतीने त्याच्या अपत्यांना मिळत नाही तर ती त्याच्या भाच्यांकडे वारसा हक्काने जाते. ही पद्धती असणाऱ्या जमातींमध्ये विवाहप्रसंगी वधूमूल्य देण्याची प्रथा बहुधा आढळते. घटस्फोट सुलभ असतो. पती व पत्नी दोघेही घटस्फोट मागू शकतात. विधवा व घटस्फोटित स्त्रियांना पुनर्विवाहास मोकळीक असते. अनेक जमातींमध्ये बहुपत्निकत्वाची चाल आहे. बहुपत्नीकत्व क्वचितच असते व असले तरी भगिनी बहुपत्नीकत्व (सोरोराइट्स) असते. अशा जमातींमधील दैवतांमध्ये स्त्री-दैवते प्रमुख असतात आणि पुराणकथांमध्ये स्त्रियांच्या शौर्याच्या व मोठेपणाच्या कथा असतात.

पितृसत्ताक पद्धतीत स्त्रीचे स्थान जितके गौण असते, तेवढे मातृसत्ताक पद्धतीत पुरुषांचे स्थान गौण नसते. घरातील कामे स्त्रियांकडे व बाहेरील कामे पुरुषांकडे असे साधे श्रमविभाजन असते आणि कुटुंबप्रमुख जरी स्त्री असली, तरी तिचा भाऊ किंवा क्वचित मुलगा कार्यकारी प्रमुखाची भूमिका बजावतो. गोत्रप्रमुखही स्त्रीच असते; पण प्रत्यक्ष जबाबदारी पार पाडणारा तिचा भाऊ असतो. अशा तऱ्हेने बहिणीचा प्रतिनिधी म्हणून दैनंदिन व नैमित्तिक व्यवहारात पुरुषाला अनेक अधिकार व स्वातंत्र्य असते; फक्त त्याचे मत निर्णायक नसते. जेव्हा अशा मातृसत्ताक जमाती स्थिर होऊन शेती, मासेमारी असे अतिरिक्त उत्पन्नाचे व्यवसाय स्वीकारतात किंवा त्यांच्यावर वारंवार आक्रमणे होऊन त्यांना युद्धे करावी लागतात किंवा दुसऱ्या एखाद्या पितृसत्ताक संस्कृतीशी त्यांचा संपर्क प्रस्थापित होतो, अशा वेळी तेथील पारंपारिक मातृसत्ताक पद्धतीचा रूहास होतो. कारण या सर्व प्रकारच्या बदलांमुळे पुरुषांचे महत्त्व वाढते आणि ते वर्चस्व गाजवू लागतात. कालांतराने तेथे पुरुषांना समान अथवा श्रेष्ठत्वाचे स्थान प्राप्त होते.

आर्यांच्या आगमनापूर्वी भारतामध्ये राहणाऱ्या सिंधू संस्कृती व अन्य द्राविडी जमातींमध्ये मातृसत्ताक पद्धती होती असे मानणारा शिमट, कोपर्स, मार्शल, मॅंगीन इ. मानवशास्त्रज्ञांचा मोठा वर्ग आहे. वेदोत्तर वाङ्मयामध्ये मातृसत्तासूचक काही कथाभाग आढळतात; तथापि आर्यांच्या आगमनानंतर पितृसत्ताक पद्धतीच प्रभावी ठरली. विसाव्या शतकाच्या सुरुवातीपर्यंत भारतात ईशान्येस खासी व गारो या जमाती आणि दक्षिणेस तोडा, कादर व नायर हे मातृसत्ताक व्यवस्था पाळणारे होते. परंतु आधुनिक समाजाच्या संपर्कामुळे त्यांच्यात पितृसत्ताक पद्धतीचा हळूहळू

शिरकाव होत आहे. ब्रिटिश कायद्याने नायरांमधील बहुपतिकत्वाची चाल बंद केली व त्यांच्या वारसाहक्क कायद्यातही बदल घडवून आणले (१८९६ ते १९४२). त्यामुळे अप्रत्यक्षपणे त्यांच्या मातृसत्ताक पद्धतीलाच धक्का बसला. तोडा जमात आपली स्वतंत्र वैशिष्ट्ये टिकवू शकली नाही आणि खासी व गारो या हळूहळू पितृसत्ताक होण्याच्या मार्गावर आहेत; कारण भारतीय कायद्यांच्या चौकटीत त्यांना आपले जीवन नव्याने जुळवून घ्यायचे.

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वाचन : जीवन समृद्ध करणारी कला

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ग्रंथपाल

मुळा एज्युकेशन सोसायटीचे श्री. ज्ञानेश्वर महाविद्यालय नेवासा

सारांश : पुस्तके वाचणे हा वेळ वापरण्याचा सर्वात उपयुक्त मार्ग आहे. वाचन हे आपल्याला व्यस्त ठेवते आणि आयुष्यातील तणावातून मुक्त होण्यास मदत करते. एकदा आपण वाचनाची सवय विकसित केली की आपल्याला कधीही कंटाळा येऊ शकत नाही. वाचन मेंदूचे कार्य सुधारते तसेच मेंदूसाठी सर्वोत्कृष्ट व्यायाम देखील आहे.

की वर्ड्स : वाचन, पुस्तके, वाचन सवय

सतराव्या शतकातील इंग्रजी लेखक जोसेफ एडिसन यांनी म्हटल्याप्रमाणे ज्याप्रकारे व्यायाम शरीराला सुदृढ ठेवण्यासाठी उपयुक्त असतो, त्याचप्रमाणे वाचनाने मेंदू सुदृढ राहतो. वाचन हा एक प्रकारे मेंदूचा व्यायामच आहे.” वाचन हा एक अतिशय समृद्ध करणारा छंद मानला जातो, पुस्तके वाचल्याने आपल्याला जसा आनंद मिळतो जो आपल्याला इतर कोणत्याही क्रियाकलापातून मिळत नाही. वाचन ही एक सवय आहे जी आपल्याला एक चांगली व्यक्ती बनवू शकते. वाचनामुळे आपल्याला ज्ञान आणि प्रेरणा मिळते. ते आपल्याला स्मार्ट बनवते. चांगल्या आणि यशस्वी जीवनासाठी अनेक महान लोक वाचण्याची शिफारस करतात. वाचनाच्या सवयीमुळे आपले जीवन यशस्वी होऊ शकते असा त्यांचा विश्वास असून याची अनेक उदाहरणे आहेत. वाचनामुळे आपल्या मनात नवीन विचार आणि कल्पना येतात जे आपल्याला पुढे जाण्यासाठी योग्य निर्णय घेण्यास मदत करतात.

वाचन ज्ञान वाढवते आणि आपली बुद्धी तीक्ष्ण करते. केवळ शिक्षितांनाच पुस्तके वाचण्याचा आनंद घेता येतो. एक वेळ असा होता की आंधळे लोक हा आनंद घेऊ शकत नव्हते, परंतु तरीही ते ब्रेलच्या मदतीने वाचू शकतात. पुस्तकांचे वाचन खरोखर आनंदाचे स्रोत आहे. पुस्तके वाचल्याने आपल्या मनाला बौद्धिक आहार मिळतो.

वाचन हे एक महत्वाचे कौशल्य आहे जे आपल्या जीवनाच्या सर्व पैलूंमध्ये फायदेशीर ठरू शकते. वाचनामुळे आपल्याला नवीन माहिती मिळते, आपली भाषा कौशल्ये सुधारते, आपले विचार कौशल्ये विकसित होतात आणि आपले मानसिक आरोग्य सुधारते.

वाचनाचे महत्त्व

१) ज्ञानाचा विस्तार

वाचनामुळे आपल्याला जगाबद्दल आणि त्यातील विविध विषयांबद्दल नवीन माहिती मिळते. आपण पुस्तके, लेख, ब्लॉग, बातम्या इत्यादी वाचून विविध विषयांवर माहिती मिळवू शकतो. जेव्हा आपण नवीन गोष्टी शिकतो, तेव्हा आपले ज्ञान वाढते आणि आपण जगाकडे अधिक व्यापक दृष्टिकोनातून पाहू शकतो.

२) भाषा कौशल्यांचा विकास

वाचनामुळे आपली भाषा कौशल्ये सुधारतात. वाचन केल्याने आपले शब्दसंग्रह वाढते, आपण शब्दांचा वापर कसा करावा हे शिकतो आणि आपली व्याकरण आणि वर्तनी कौशल्ये सुधारतो. वाचनामुळे आपण भाषेचे अधिक चांगले आकलन करू शकतो आणि आपले स्वतःचे भाषा कौशल्ये अधिक प्रभावीपणे वापरू शकतो.

३) विचार कौशल्यांचा विकास

वाचनामुळे आपले विचार कौशल्ये विकसित होतात. वाचन केल्याने आपण एकाग्र होणे, समस्या सोडवणे, निर्णय घेणे आणि तर्क करणे शिकतो. वाचनामुळे आपण नवीन कल्पना आणि दृष्टिकोनांचा विचार करू शकतो आणि आपले स्वतःचे विचार अधिक चांगल्या प्रकारे मांडू शकतो.

४) मानसिक आरोग्य सुधारणे

वाचनामुळे आपले मानसिक आरोग्य सुधारते. वाचन केल्याने तणाव कमी होतो, चिंता कमी होते आणि मूड सुधारतो. वाचनामुळे आपण कल्पनारम्य जगात प्रवेश करू शकतो आणि आपल्या दैनंदिन जीवनातील तणावापासून दूर जाऊ शकतो.

पुस्तकांबद्दल काही महत्वाचे मुद्दे

१) **पुस्तके तुमची चांगली मित्र आहेत** : पुस्तके खरोखरच आपले चांगले मित्र आहेत कारण आपण कंटाळलेले, अस्वस्थ, उदास, एकटे किंवा रागावले असताना आपण त्यावर भरोसा ठेऊ शकता. आपल्याला पाहिजे तेव्हा ते आपले समर्थन करतील आणि आपला मनःस्थिती वाढवतील. आपल्यास आवश्यक असलेली माहिती आणि ज्ञान ते कधीही शेर करत नाहीत. चांगली पुस्तके आपल्याला आयुष्यात नेहमीच योग्य मार्गावर घेऊन जातात.

२) **पुस्तके तुमचे उत्तम शिक्षक आहेत** : केवळ चांगली पुस्तकेच तुमचा केवळ सर्वात चांगला मित्र नव्हे तर उत्तम शिक्षक देखील असू शकतात. चांगली पुस्तके वाचून आपल्याला अमर्यादित ज्ञान, माहिती आणि पूर्णपणे भिन्न अनुभव मिळेल. वाचन आपल्याला जीवनाचा एक नवीन आणि चांगला दृष्टीकोन देते. हे आपल्याला जीवनाचे नवीन धडे शिकवतात.

३) **पुस्तके वाचून मिळणारा आनंद** : एखादे पुस्तक वाचतो तेव्हा ते आपल्याला देत असतात. एक नवीन जग वाचण्यासाठी आणि अनुभव घेण्यास प्रेरित करतात. चांगले पुस्तक वाचणे आणि आयुष्यभर त्याचा आदर करणे नेहमीच आनंददायक असते.

४) **कम्युनिकेशन स्किल्स** : वाचन आपले शब्दसंग्रह सुधारते आणि आपले संप्रेषण कौशल्य विकसित करते. आपली भाषा सर्जनशीलपणे कशी वापरावी हे शिकण्यास मदत करते. हे केवळ आपले संप्रेषण चांगले करते असे नाही तर ते आपल्याला एक चांगले लेखक देखील बनवते. आयुष्याच्या प्रत्येक बाबतीत चांगला संवाद महत्वाचा असतो.

५) **गंभीर विचारसरणी विकसित होते** : चांगली पुस्तके वाचण्याचा मुख्य फायदा असा आहे की यामुळे आपली गंभीर विचारसरणी विकसित होते. आपण जितके अधिक सखोलपणे वाचता आणि माहितीवर प्रक्रिया करता. जीवनातील दिवसेंदिवस परिस्थिती व्यवस्थापित करण्यासाठी गंभीर विचार करणे आवश्यक आहे.

६) ताण कमी होतो : चांगले पुस्तक वाचणे आपल्याला एका नवीन जगात घेऊन जाते आणि आपल्या दिवसापासूनचा ताणतणाव दूर करण्यात मदत करते. त्याचे आपल्या मनावर, शरीरावर आणि आत्म्यावर बरेच सकारात्मक प्रभाव पडले आहेत. आपल्या मेंदूच्या स्नायूंना उत्तेजित करते आणि आपल्या मेंदूला निरोगी आणि मजबूत ठेवते.

निष्कर्ष

वाचन आपल्याला भरपूर लाभ मिळवून देते, आपली रचनात्मकता वाढवते, जीवनाला सकारात्मक दिशा प्रदान करते. नियमित वाचन करणारी व्यक्ति वेगवेगळ्या पद्धतीने विचार करू शकतो. वाचन सामाजिक रूपाने चांगला नागरिक घडवते. वाचनासोबत तुम्ही विविध क्षेत्रे जसे संस्कृति, कला, इतिहास इत्यादी क्षेत्राची माहिती मिळवू शकतात. वाचनामुळे तनाव दूर होतो.

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ई-कॉमर्स आणि डिजिटल मार्केटिंग

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सार:

डिजिटल मार्केटिंगच्या व्यापक प्रभावासह ई-कॉमर्सच्या जलद उत्क्रांतीने डायनॅमिक आणि इंटरकनेक्टेड डिजिटल बिझनेस इकोसिस्टमला जन्म दिला आहे. सदर शोधनिबंधात ई-कॉमर्स आणि डिजिटल मार्केटिंग यांच्यातील समन्वय समाविष्ट केलेला आहे. व्यवसाय आणि ग्राहक प्रतिबद्धता यावर त्यांचा परिवर्तनकारी प्रभाव आपण या शोधनिबंधातून पाहणार आहोत. सदर शोधनिबंधात ई-कॉमर्सच्या बहुआयामी गतीशीलतेचा शोध घेतलेला आहे. बाजारपेठेतील पोहोच वाढवणे, ग्राहकांच्या वर्तणुकीवर प्रभाव टाकणे आणि पारंपारिक व्यवसाय धोरणांचा आकार बदलणे यामध्ये त्याच्या भूमिकेचे विश्लेषण केलेले आहे.

शोधसंज्ञा:

ई-कॉमर्स, व्यापार, डिजिटल व्यापार, डिजिटल, मार्केटिंग, इलेक्ट्रॉनिक, सोशल मीडिया, पारंपारिक विपणन, शोध इंजिन

प्रास्ताविक :

ई-कॉमर्सच्या क्षेत्रामध्ये अभूतपूर्व वाढ झाली आहे, ज्याने पारंपारिक किरकोळ प्रतिरूपांमध्ये क्रांती केली आहे. ऑनलाइन मार्केटप्लेस, सुव्यवस्थित पेमेंट गेटवे आणि वैयक्तिक खरेदीचे अनुभव हे डिजिटल कॉमर्स लँडस्केपचे अविभाज्य घटक बनले आहेत. ई-कॉमर्स आणि डिजिटल मार्केटिंगचे एकत्रीकरण हे या अभ्यासाचे मुख्य केंद्र आहे, जे एक सहजीवन संबंध प्रकट करते जे दोन्हीची प्रभावीता वाढवते. धोरणात्मक डिजिटल मार्केटिंग उपक्रम, जसे की वैयक्तिकृत जाहिराती, प्रभावशाली सहयोग आणि डेटा-चालित विश्लेषणे, ई-कॉमर्स प्लॅटफॉर्ममध्ये ट्रॅफिक, रूपांतरण दर आणि ग्राहक टिकवून ठेवण्यावर त्यांच्या प्रभावासाठी शोधले जातात.

संशोधन पद्धती: सदर शोधनिबंध दुय्यम डेटा, पुस्तके, जर्नल्स, वर्तमानपत्रे, वेबसाइट, शोधनिबंध आणि इंटरनेटवर उपलब्ध माहितीवर आधारित आहे.

उद्दिष्टे:

-) ई-कॉमर्स ही संकल्पना जाणून घेणे.
-) ई-कॉमर्स ची वैशिष्ट्ये यांचा आभ्यास करणे.
-) ई-कॉमर्स चे महत्व जाणून घेणे.
-) ई-कॉमर्स चे स्वरूप जाणून घेणे.
-) ई-कॉमर्स चे घटक आणि प्रकार जाणून घेणे.
-) डिजिटल मार्केटिंगची मागणी व प्रकार जाणून घेणे.
-) डिजिटल मार्केटिंग ची पार्श्वभूमी गरज याचा अभ्यास करणे.

ई-कॉमर्स व्याख्या: १) **Vladimir Zwass:** 'Electronic commerce is sharing business information, maintaining business relationships and conducting business transactions by means of telecommunications networks'.

२) **डॉ.अजिनाथ डोके:** ज्या ठिकाणी इलेक्ट्रॉनिक माध्यमाच्या साहाय्याने वस्तू व सेवांची खरेदी-विक्री चालते त्यांना ई-कॉमर्स असे म्हणतात.

असे खरेदी-विक्रीचे व्यवहार प्रामुख्याने इंटरनेट अथवा इतर कॉम्प्यूटर नेटवर्कद्वारे होतात. इंटरनेटच्या जलद प्रसारानंतर अशा ई-व्यवहारांचे प्रमाणदेखील खूप वाढले. इलेक्ट्रॉनिक फंड ट्रान्सफर, पुरवठा साखळी व्यवस्थापन, इंटरनेट मार्केटिंग, ऑनलाइन व्यवहार प्रक्रिया, इलेक्ट्रॉनिक आकडेवारी आंतरबदल(EDI), साठा व्यवस्थापन पद्धती, स्वयंचलित आकडेवारी, संकलन पद्धती इत्यादींचा मोठ्या प्रमाणात उपयोग होऊ लागला. आधुनिक ई-कॉमर्सची पद्धतीमध्ये केव्हातरी जागतिक व्यापक जाळ्याचा(व्यवहार चक्रामध्ये उपयोग केला जातो.

ई-कॉमर्स ही नवीन संकल्पना इंटरनेटच्या जलद विस्तारामुळे त्याचा उपयोग व्यापक प्रमाणावर होऊ लागला. इंटरनेटमुळे व्यवहार करण्याच्या पद्धतीमध्ये बदल झाला. ई-कॉमर्स इंटरनेटद्वारा खरेदी व विक्रीपेक्षा अधिक व्यापक आहे. संगणकीय जाळे आणि भ्रमण संदेशवहनाद्वारे इलेक्ट्रॉनिक पद्धतीने व्यवहार करणे याचा समावेश ई-कॉमर्स मध्ये होतो. जागतिकीकरणामुळे ई-कॉमर्सचे महत्त्व खूपच वाढले. ई-कॉमर्स म्हणजे जागतिकीकरण या संकल्पनेची देणगी आहे असे म्हटल्यास वावगे ठरणार नाही. ऑनलाइन व्यवहारांमुळे जागतिक बाजारपेठ फक्त संगणक संपकी कि (Click) बलयाचा उपयोग करून प्राप्त करणे शक्य झाले आहे. शिवाय आपण आउवभाविक सांभाळण्याची गरज नाही. तास व्यवहार करू शकतो. त्यामुळे पूर्वीप्रमाणे बाजारपेठांच्या वेळा सांभाळण्याची गरज नाही.

ई-कॉमर्सची वैशिष्ट्ये:

1) व्यापाराधिष्ठित (Business Oriented): वस्तू व सेवांच्या खरेदी-विक्री व विनिमयाशी ई-कॉमर्स निरि असल्याने ते व्यापाराधित होय ई-कॉमर्सद्वारा बाजारपेठ विस्तारित करणे तसेच अधिकाधिक ग्राहक मिळविणे शक्य होते, सहकांसाठी ऑनलाइन शॉपिंग फारच सोईचे उरले आहे.

(2) सोईस्कर सेवा (Convenient Service): ई-कॉमर्सचे सर्वात महत्वाचे वैशिष्ट्य म्हणजे सोईस्करपणा हो व्यवसायसंस्था आणि ग्राहक या दोघांनाही त्याचा फायदा होतो.

(3) विस्तारित पद्धती (System Extendable): ई-कॉमर्ससाठी विस्तारित पचती ही स्थिरतेसाठी हमी होव ज्या वेळी सर्व्हर ट्रेफिक जाम अस्सले अशा वेळी विस्तारित पचती ही महत्वाची ठरते, कारण दोन मिनिटांच्या पा रिसेटमुळे अनेक ग्राहक जाण्याची शक्यता असते.

4) ऑनलाइन सुरक्षितता (Online Safety): ई-कॉमर्ससाठी सर्वात महत्वाची बाब म्हणजे ऑनलाइन सुरक्षितता होय, धोका, वायरटपिंग, संगणकीय विषाणू आणि अवैध प्रवेश ई-कॉमर्ससाठी धोक्याचे आहे. म्हणून इंटरनेट सुरक्षिततेचा उपाय योजणे गरजेचे ठरते. यामध्ये ट्रान्सस्क्रिप्शन यंत्रणा, डिजिटल सही यंत्रणा, फायरवॉल, सुरक्षित www सर्वांर आणि अन्टिव्हायरस सुरक्षितता इत्यादींचा समावेश होतो.

(5) समन्वय (Co-ordination): ई-कॉमर्स म्हणजे कर्मचारी, ग्राहक, उत्पादक, पुरवठादार आणि व्यावसायिक भागीदार यांच्यामध्ये समन्वय साधण्याची प्रक्रिया होय, ई-मेलचा उपयोग करून समन्वय साधता येऊ शकतो,

ई-कॉमर्सचे महत्त्व (Significance of E-Commerce)

ई-कॉमर्स सर्वसाधारणतः ई-व्यवहाराच्या विक्रीचा भाग (Sales Aspect) समजला जातो. ई-व्यवहाराचे शोधन (Payment) व वित्तपुरवठा सुकर व्हावा म्हणून आकडेवारीची देवाण-घेवाणदेखील (Exchange of Data) ई-कॉमर्समध्ये समाविष्ट आहे.

1. दिलंब टाळता येतो (Elimination of Delay): ई-कॉमर्समुळे आता बँकेत रांग लावण्याची गरज नाही. तसेच रेल्वे, विमान, एस.टी., सिनेमा इत्यादींसाठी रांगेत उभे राहण्याची गरज नाही, कारण ऑनलाइन व्यवहारामुळे या सेवा सुलभ झाल्या आहेत, घरी/कार्यालयात बसून आपण या गोष्टी करू शकतो.
2. व्यवहार ते व्यवहार वाढण्यासाठी उपयुक्त (Boost for Business to Business Segment): ई-कॉमर्सच्या आगमनामुळे व्यावसायिक संस्थांना ई-व्यवहार करण्याचे एक शास्त्र उपलब्ध झाले आहे. आज विक्रेता कोणत्याही वेळेला आपल्या पुरवठादाराला मोठी ऑर्डर इंटरनेटद्वारा कोठेही देऊ शकतो, त्यामुळे व्यवसाय वाढण्यास मदत होते.
3. पर्यायांमध्ये वाढ (Increase in Options): इंटरनेटमुळे विविध पर्याय उपलब्ध झाले आहेत. समजा, आपणास आपल्या प्रियजनांसाठी ब्रिटिंग प्यावयाचे असेल तर पूर्वी एखाद-दुसऱ्या दुकानामध्ये जाऊन तेथे उपलब्ध असलेल्या ब्रिटिंगमधूनच आपल्याला ब्रिटिंग निवडावे लागत होते. परंतु इंटरनेटमुळे आपण आता नेटवर ब्रिटिंगचे विविध नमुने पर्याय) पाहू शकतो/निवडू शकतो. प्रत्येक वस्तू व सेवेबाबत असा अनुभव आपणास घेता येतो.
4. सतत व्यवहार (Continuous Transactions): ई-कॉमर्समुळे आपण आठवड्याचे सातही दिवस चोवीस तास ऑनलाइन व्यवहार करू शकतो. त्यासाठी आपणास प्रत्यक्ष विक्रेता वा ग्राहकाकडे जाण्याची गरज नाही. सतत व्यवहारामुळे आपण केव्हाही वेळ मिळेल तेव्हा व्यवहार करू शकतो.
5. जागतिक बाजारपेठ मिळू शकते (Access the Global Market Place): इंटरनेटमुळे आपण कोणत्याही व्यावसायिकाशी व्यवहार करू शकतो की, जो इंटरनेटशी जोडलेला आहे. ई-कॉमर्समुळे आंतरराष्ट्रीय बाजारपेठ उपलब्ध झाली आहे.
6. जलद व्यवहार (Speedy Transactions): इलेक्ट्रॉनिक माध्यमाद्वारे आपण त्वरित संदेश (Message) पाठवून व्यवहार करू शकतो. पूर्वीप्रमाणे कॅटलॉगसाठी आता यांबण्याची गरज नाही. ई-कॉमर्समुळे जलद व्यवहार करणे शक्य झाले आहे.
7. वस्तूंची किंमत कमी करण्याची संधी (Opportunity to Reduce Cost) इंटरनेटमुळे वस्तू व सेवेसाठी शॉपिंग उपलब्ध होते. इतर शॉपिंग प्रकारांपेक्षा ते स्वस्त व अधिक प्रभावी होते. ऑनलाइन संशोधनाद्वारे काही वेळेस काही वस्तूसाठी मूळ उत्पादक शोधणे शक्य झाले आहे. इतर खर्च (उदा., कमिशन, प्रसिद्धी) वाचत असल्यामुळे किंमत कमी ठेवणे शक्य होते.
8. गुंतवणुकीवर मोबदला वाढू शकतो (Increase in ROI): जागतिक स्पर्धेच्या बाजारपेठेत प्रत्येक व्यावसायिक संस्था चांगल्या दर्जाच्या वस्तू बाजवी किमतीत देण्यासाठी गुंतवणूक खर्च कमी करण्याचा प्रयत्न करते. ई-कॉमर्समध्ये जादा लोकांवर अवलंबून राहावे लागत नाही, तसेच ई-कॉमर्समध्ये चुकांचे प्रमाण नगण्य होते. त्यामुळे गुंतवणुकीवर मोबदला वाढू शकतो.

9. ग्राहकांना माहिती पुरविणे शक्य होते (Allowing Customer Self-service of Customer Organising): ग्राहक केव्हाही व्यवसायाशी संबंधित व्यवहार करू शकतात, ग्राहकांनादेखील इंटरनेटद्वारा माहिती पुरविता येते. एकी त्यांना ती बाहेरून मिळवावी लागली असती, काही कामे ग्राहकांना घेऊन करता येतात, पालाप Customer Organising असे म्हणतात,

10. ई-कॉमर्सचा जागतिक दृष्टिकोन (Stepping beyond Borders to a Global विक्रमवज्जानाचा उपयोग करून आपला व्यवसाय इतरांना देता येतो (Source) आणि इतर व्यवसायाने दिलेल्या वस्तू व सेवा आपण इतर देशांत पाठवू शकतो, जर जागतिक ग्राहक मिळविणे हे तुमचे उद्दिष्ट असेल तर ई-कॉमर्स व्यवहारांचा जागतिक दृष्टिकोन ठेवणे उपयोगी ठरू शकते,

ई-कॉमर्सचे स्वरूप (Nature of E-Commerce)

जागतिकीकरणाच्या युगात व्यवसायाचे स्वरूप पूर्णतः बदलले आहे, विज्ञान व तंत्रज्ञानातील क्रांतीमुळे व्यवसायात आमूलाग्र बदल झाले आहेत. इंटरनेटच्या माध्यमातून केला जाणारा व्यापार व व्यवसाय पद्धतीला 'ई-कॉमर्स' असे संबोधले जाते, आज ई-कॉमर्समुळे सर्वसामान्य व्यक्ती, व्यावसायिक व सरकार यांना अनेक सेवा मिळत आहेत. त्यामुळे व्यवसाय व व्यवहारांमुळे गतिमानता, पारदर्शकता व सुलभता आली आहे.

सर्व प्रकारचे ई-व्यवसाय हे ई-कॉमर्समार्फत केले जातात. ई-कॉमर्स हे सर्वत्र उपलब्ध असून इंटरनेटच्या माध्यमातून खरेदी-विक्रीचे व्यवहार ऑनलाइन पद्धतीने केले जातात. ई-कॉमर्समुळे एखादी व्यक्ती कोणत्याही ठिकाणाहून केव्हाही, पाहिजे त्या विक्राणी स्वतःचा संगणक किंवा मोबाइल वापरून वस्तू किंवा सेवा खरेदी करू शकते. ई-कॉमर्समुळे संपूर्ण जग एक बाजारपेठ बनली असून तंत्रज्ञानाच्या माध्यमातून व्यक्ती व्यवहार करू शकतात. ई-कॉमर्समुळे दुसऱ्या देशाची संस्कृती कळते, त्याचबरोबर विदेशी व्यवसाय व व्यापार यांच्याशी संपर्क वाढतो. ई-कॉमर्समुळे ग्राहकांना अनेक तपशील, व्हीडिओ, आडिओद्वारे महत्त्वपूर्ण माहिती मिळते. इलेक्ट्रॉनिक साधनाच्या मदतीने खरेदीदार व विक्रेता यांच्यामध्ये प्रत्यक्ष संदेशवहन होते. ई-कॉमर्सद्वारे व्यक्ती आणि समूह यांना संदेश पाठविला जातो आणि त्यांचा अभिप्रायसुद्धा घेतला जातो. ई-कॉमर्समुळे वस्तू किंवा सेवेची गुणवत्ता सादर केली जाते. त्यामुळे अनावश्यक जाहिरातीवरील खर्च कमी होतो. ई-कॉमर्समध्ये इंटरनेटच्या मदतीने व्यवसायाची बाढ होते. ई-कॉमर्समुळे कंपन्यांना जागतिकीकरणामध्ये स्पर्धा करणे सोपे झाले आहे. ई-कॉमर्समुळे आधुनिक पद्धतीने विपणन होते, तसेच आधुनिक विक्रय पद्धतीचा अवलंब होतो.

ई-कॉमर्सचे घटक (Constituent Elements of E-Commerce)

ई-कॉमर्स ही संगणकाद्वारे खरेदीदार व विक्रेते यांच्यामध्ये ई-व्यवहार करण्याची प्रक्रिया आहे. आधुनिक व जागतिकीकरणाच्या युगामध्ये प्रत्येक व्यवसायाने तांत्रिक दृष्टिकोन लागू करणे आवश्यक असून व्यवसायाच्या वाढीसाठी ई-विपणन धोरण वापरले पाहिजे, त्यासाठी स्पर्धेत टिकण्यासाठी व्यवसायसंस्थेकडे ई-कॉमर्सचे पुढील घटक असणे आवश्यक आहे.

1. वेबसाइट (Website): ई-कॉमर्समध्ये उत्पादकाकडे स्वतःची वेबसाइट असणे आवश्यक आहे. वेबसाइटमुळे अवस्थाची माहिती, वस्तू व सेवांची माहिती ग्राहकांना देता येऊ शकते. ई-कॉमर्समध्ये वेबसाइट हा महत्वाचा भाग असून याद्वारे ग्राहक व खरेदीदार एकमेकांना ऑनलाइन भेटतात, तसेच या दोघांमध्ये वस्तूंची देवाण-घेवाण होऊन

व्यवहार होतो. वेबसाइट जर तपशीलवार, आकर्षक व मुद्देसूद असेल तर ग्राहक आकर्षित होतात आणि वस्तू खरेदीचा निर्णय घेतात.

2. ऑनलाइन व ऑफलाइन जाहिरात (Online and Offline Advertisement) ई-कॉमर्समध्ये संभाव्य अरेदीवारांचे लक्ष वेधण्यासाठी तसेच त्यांचे प्रत्यक्ष कायमस्वरूपी ग्राहकांमध्ये रूपांतर करण्यासाठी जाहिरात ही ऑनलाइन व ऑफलाइन पध्दतीने करणे आवश्यक आहे. आन ऑनलाइन जाहिरात करण्यासाठी अनेक सामाजिक साधनांचा (Social Platform) वापर मोठ्या प्रमाणावर केला जातो. त्यामध्ये Search Engine, Optimization (SEO), Pay Per Click (PPC), Facebook, Twitter, LinkedIn, Youtube, Instagram यांचा समावेश होतो. तसेच ऑफलाइन जाहिरातीसाठी फ्लेक्स, माहितीपत्रक, मॅगझिन, वर्तमानपत्रे, सजावट, विद्युतफलक व कॅटलॉग यांचा वापर केला जातो.

3. ऑनलाइन व्यवहार (Payment Gateway): इंटरनेटवरून कोणतीही वस्तू किंवा सेवा खरेदी करताना ऑनलाइन पैशाच्या व्यवहारासाठी Payment Gateway हा मार्ग वापरला जातो. पूर्वी ऑनलाइन व्यवहारासाठी क्रेडिट कार्ड वापरले जात होते. परंतु आज अनेक व्यवसायांनी ई-कॉमर्स पध्दतीमध्ये Paypal, Net Banking, Google Pay, Phone Pay, Debit Card यांसारखी अनेक साधने आपल्या वेबसाइटला जोडली आहेत, त्यासोबतच खरेदीदार कॅश-ऑन-डिलिव्हरी हा पर्यायसुद्धा वापरतात.

4. ई-कॉमर्स सुरक्षा (E-Commerce Security): ई-कॉमर्समध्ये ऑनलाइन सुरक्षाप्रणाली असणे आवश्यक आहे. जर व्यवसायसंस्था वेबसाइटद्वारे ग्राहकांकडून वैयक्तिक माहिती गोळा करत असेल तर Security Socket Layer (SSL) सारखी सुरक्षाप्रणाली वापरणे आवश्यक आहे. सवर सुरक्षित सर्व्हर सॉफ्टवेअर हे सर्व महत्त्वपूर्ण माहिती सुरक्षित करते आणि अनधिकृत प्रवेशापासून संरक्षण देते.

5. वस्तूचा दर्जा व उत्पादन (Product Quality and Production): ई-कॉमर्सद्वारे व्यवसायाची प्रगती करण्यासाठी संस्थेने वस्तूचा दर्जा हा उच्च होऊन उत्पादन पध्दती ही आधुनिक केली पाहिजे, जर वस्तूचा दर्जा आणि उत्पादन पध्दती आधुनिक असेल तरच व्यवसायाचा विकास होतो.

6. वस्तू वाहतूक (Product Transportation / Shipment): ई-कॉमर्सद्वारे ग्राहकांनी वस्तूची मागणी केल्यानंतर तो वस्तू सदर ग्राहकाला वेळेत पोहोचली पाहिजे, यासाठी व्यवसायाला विश्वासार्ह वाहतूक सेवा देणाऱ्या प्रदात्याची आवश्यकता असते. कारण नियोजित वेळेवर वस्तू ग्राहकांपर्यंत पोहोचली नाही तर व्यवसायसंस्थेची प्रतिष्ठा कमी होऊन नुकसान होऊ शकते. त्यासाठी ई-कॉमर्समध्ये वस्तू वाहतूक ही जलद व सुरक्षित असावी.

7. पुरवठा साखळी व्यवस्थापन (Supply Chain Management): ई-कॉमर्समध्ये ग्राहकांना त्यांची वस्तू व सेवा जलद गतीने आणि स्वस्त दरात प्रदान करण्यासाठी ऑनलाइन पध्दतीने पुरवठा साखळी व्यवस्थापन करणे आवश्यक आहे. पुरवठा साखळीमध्ये वेळापत्रक, समन्वय, वाहतूक व्यवस्थापन व ग्राहकांपर्यंत वस्तूची पोहोच इत्यादी अनेक घटकांचा समावेश होतो, एखाद्या व्यवसायसंस्थेला हे शक्य नसून व्यवसायाची वाढ व विस्तार होण्यासाठी पुरवठा साखळीतील अनेक व्यापारी संस्थांबरोबर करार करणे आवश्यक आहे.

8. गोदाम (Warehouse): ई-कॉमर्ससाठी गोदामाला खूप महत्त्व असून गोदामामध्ये व्यवसायसंस्था आपल्या वस्तूची साठवणूक करून त्यावर नियंत्रण ठेवते. गोदामे ही अनेक विभाग व परिसरनिहाय उभारली जातात. ऑनलाइनच्या एका किस्काद्वारे ग्राहकाने वस्तू किंवा सेवेची मागणी केल्यावर योग्य ठिकाणी वस्तू पोहोचविण्यासाठी

गोदामे महत्वाची भूमिका निभावतात, गोदामाची उभारणी करण्यासाठी व्यवसायसंस्थेकडे पुरेसे भांडवल, जागा, श्रम, उपकरणे, तांत्रिक माहिती व सॉफ्टवेअर असणे आवश्यक आहे.

9. ग्राहक सेवा साहाय्यक (Customer Care Assistance): ऑनलाइन व्यवसायाद्वारे ग्राहकांचे समाधान होणे आवश्यक आहे. ई-कॉमर्समध्ये ग्राहकांच्या समाधानावर विक्रेता व खरेदीदार यांचे संबंध अवलंबून असतात, जर ग्राहकांना उच्च दर्जाचे क्षेत्र या तत्परतेने विल्या तर ग्राहकसुद्धा प्रभावित होतात, त्यामुळे ई-कॉमर्समध्ये विक्रीपश्चात ग्राहकसेवा देणे आवश्यक आहे,

10. समाज व तंत्रज्ञान (Society and Technology): यशस्वीपणे ई-कॉमर्स व्यवसाय चालविण्यासाठी जागतिक ई-कॉमर्सचा समाजावर निर्माण होणारा प्रभाव व परिणाम जाणून घेणे आवश्यक आहे. त्याचप्रमाणे ई-कॉमर्सच्या साहाय्याने व्यवसाय करण्यासाठी इंटरनेट, वर्ल्ड वाइड वेब, कॉम्प्युटर, लोकल एरिया नेटवर्क, डेटाबेस, सॉफ्टवेअर, अप्लिकेशन, Payment Gateway, Client Server Computing, Digital Marketing, Website, Feedback अशा प्रकारच्या तांत्रिक घटकांची माहिती असणे आवश्यक आहे.

ई-कॉमर्सचे प्रकार (Various Kinds of E-Commerce)

1. व्यवसाय आणि व्यवसाय (Business to Business): व्यवसाय आणि व्यवसाय महणजे व्यवसायांमध्ये होणारे ई-व्यवहार होत. ई-कॉमर्स कंपनी पुरवठादार, वितरक अथवा एजंटशी व्यवहार करू शकते, असे व्यवहार साधारणतः इलेक्ट्रॉनिक डेटा इंटरचेंज (EDI) माध्यमाद्वारे होतात. EDI विविध व्यवसायांना खाजगी नेटवर्कद्वारे माहिती पुरविण्याची स्वयंचलित (Automated) यंत्रणा होय, यामुळे व्यवसायामध्ये पारदर्शकता निर्माण होते व त्यामुळे व्यवसाय अधिक कार्यक्षमपणे करता येणे शक्य होते, EDI हे विशिष्ट प्रमाणाचे बनविलेले असल्यामुळे व्यवसायाला एकमेकांशी कॉम्प्युटरद्वारे व्यवहार करणे सोपे होते.

2. व्यवसाय आणि ग्राहक (Business to Customer): व्यवसाय आणि ग्राहकामध्ये ई-व्यवहाराचे प्रमाण व्यवसायापेक्षा ग्राहकांवर केंद्रित केले जाते, उदाहरणार्थ, विमा सेवा, पर्यटन सेवा, बँकिंग सेवा इत्यादी व्यवसाय आणि ग्राहकाची उदाहरणे सांगता येतील.

3. ग्राहक आणि व्यवसाय (Customer to Business): ग्राहक आणि व्यवसायामध्ये ग्राहक वस्तू व सेवांची

किंमत निर्धारित करतात, यामध्ये व्यवहाराचे प्रमाण विक्रीपासून खरेदीकडे अधिक असते. यामध्ये ग्राहक हा केंद्रस्थानी ठेवून व्यवहार केले जातात. ग्राहकांना वस्तू व सेवांच्या निवडीला अधिक वाव असतो तसेच विक्री किंमत ठरविण्याची संधी ग्राहकांना प्राप्त होते,

4. ग्राहक आणि ग्राहक (Customer to Customer): या प्रकारामध्ये लिलाव पद्धतीने होणाऱ्या खरेदी-विक्रीच्या व्यवहारासारखे व्यवहार होतात. यामध्ये ग्राहकांचे ग्राहकांशी (Person to Person) व्यवहार होतात, व्यापार्यांचा येथे संबंध नसतो,

5. व्यवसाय आणि शासन (Business to Government): ई-कॉमर्सचा हा एक नवीन प्रवाह आहे. हा प्रकार सरकारी खाते (Government Department) उपयोगात आणते. सरकारी खाते वेबसाइट विकसित करून नागरिकांशी प्रत्यक्ष संपर्क साधत असते. या वेबसाइट्स म्हणजे सरकारी खात्याशी संबंधित सरकारचे धोरण, नियम व अटी होत. कोणीही अधिक माहिती मिळविण्यासाठी वेबसाइटचा उपयोग करू शकतो, प्रत्यक्ष सरकारी खात्यांमध्ये न

जाता जलद माहिती लोकांना मिळू शकते, यामुळे कर्मचारी व जनता दोघांच्याही वेळेत बचत होते, व्यवसाय आणि शासन ई-कॉमर्समधूनच स्मार्ट शहराची संकल्पना विकसित झाली आहे.

6. डायरेक्ट निर्माता कंपनी आणि ग्राहक (Direct to Customer): डायरेक्ट निर्माता कंपनी आणि ग्राहक हा ई-कॉमर्सचा नवीन प्रकार आहे. यामध्ये एखादी वस्तू किंवा प्रॉडक्ट हा डायरेक्ट कंपनीकडून ग्राहकांपर्यंत पोहोचविला जातो. यामध्ये डायरेक्ट कंपनीकडून मिळणारी वस्तू ही ग्राहकांना खूप कमी किमतीमध्ये मिळते. म्हणूनच अलीकडच्या काळात डायरेक्ट निर्माता कंपनी आणि ग्राहक हा मॉडेल सर्वाधिक लोकप्रिय झाला आहे. डायरेक्ट निर्माता कंपनी आणि ग्राहक या मॉडेलमध्ये इन्स्टाग्राम, फेसबुक, स्नॅपचॅट यांसारख्या समाजमाध्यमांचा खूप मोठा वाटा आहे.

7. व्यवसाय आणि प्रशासन (Business to Administration): ई-कॉमर्सच्या या भागामध्ये कंपनी आणि सार्वजनिक प्रशासन यांच्यात ऑनलाइन होणारे सर्व व्यवहार समाविष्ट आहेत. विशेषतः वित्तीय, सामाजिक सुरक्षा, रोजगार, कायदेशीर दस्तऐवज आणि नोंदणी इत्यादी विविध सेवा व क्षेत्रांमध्ये मोठ्या प्रमाणात हा प्रकार वापरला जातो. अलीकडच्या काळात ई-सरकारमध्ये केलेल्या गुंतवणुकीमुळे या प्रकारच्या सेवांमध्ये लक्षणीय वाढ झाली आहे.

8. ग्राहक आणि प्रशासन (Customer to Administration): ग्राहक आणि प्रशासन मॉडेलमध्ये व्यक्ती आणि सार्वजनिक प्रशासन यांच्यातील सर्व इलेक्ट्रॉनिक व्यवहारांचा समावेश होतो. या प्रकारामध्ये पुढील प्रकारच्या सेवा = क्षेत्रांचा समावेश होतो : (1) शिक्षणसेवा - माहिती प्रसारित करणे, दूरस्थ शिक्षण (2) सामाजिक सेवा - माहितीचेच वितरण, पेमेंट. (3) कर सेवा - टॅक्स रिटर्न भरणे, पेमेंट. (4) आरोग्यसेवा - भेटी, आजाराबद्दल माहिती, आरोग्य सेवांचेच पेमेंट, ग्राहक आणि प्रशासन या प्रकारात माहिती व संदेशवहन तंत्रज्ञानाच्या साहाय्याने सरकारद्वारे नागरिकांना पुरविल्या जाणाऱ्या सेवांचा समावेश होतो.

डिजिटल मार्केटिंग:

काही वर्षांपूर्वी, लोक आपला माल विकण्यासाठी आणि ग्राहकांपर्यंत पोहोचवण्यासाठी पोस्टर, टेम्प्लेट, जाहिराती, वर्तमानपत्र अशा विविध पद्धतींद्वारे त्यांच्या मालाची विक्री करत असत. परंतु या सर्व क्रियाकलाप (साधन) फार कमी ग्राहकांना आकर्षित करू शकले, म्हणून व्यापाऱ्यांनी त्यांच्या वस्तूंच्या मार्केटिंगची पद्धत बदलली आणि आजकाल प्रत्येकजण त्यांच्या फोनवर ऑनलाइन शॉपिंग करू शकतो, पैसे पाठवू किंवा प्राप्त करू शकतो, विविध प्रकारचे शिक्षण संबंधित अभ्यासक्रम इ. आपण करू शकता. लॅपटॉपवरून ते सहज करता येते.

डिजिटल मार्केटिंग, ही संज्ञा 2000 नंतर अधिक लोकप्रिय होऊ लागली. जेव्हा इंटरनेटमध्ये सर्च इंजिन मार्केटिंग, सोशल मीडिया, अॅप्ससारख्या इत्यादी विकसित झाल्या, तेव्हा हा शब्द लोकांमध्ये रूढ झाला. डिजिटल मार्केटिंग म्हणजे ज्यामध्ये आपण आपल्या उत्पादनाची जाहिरात आपल्या मोबाईल आणि संगणकासारख्या डिजिटल उपकरणांद्वारे जागतिक स्तरावर करू शकतो. 1980 च्या दशकात, प्रथम डिजिटल बाजारपेठ स्थापन करण्यासाठी काही प्रयत्न केले गेले परंतु ते शक्य झाले नाही.

डिजिटल मार्केटिंग का आवश्यक आहे

हे आधुनिकतेचे युग आहे आणि या आधुनिक काळात सर्व काही आधुनिक झाले आहे. या क्रमाने इंटरनेट हा देखील या आधुनिकतेचाच एक भाग आहे जो वणव्याप्रमाणे सर्वत्र पसरत आहे. डिजिटल मार्केटिंग इंटरनेटच्या माध्यमातून कार्य करण्यास सक्षम आहे.

आजचा समाज वेळेच्या कमतरतेचा सामना करत आहे, त्यामुळे डिजिटल मार्केटिंग आवश्यक बनले आहे. प्रत्येक व्यक्ती इंटरनेटशी जोडलेली आहे, ते प्रत्येक ठिकाणी ते सहजपणे वापरू शकतात. तुम्ही कुणाला भेटायला सांगितले तर ते म्हणतील माझ्याकडे वेळ नाही, पण त्यांना तुमच्याशी सोशल साईट्सवर बोलायला काहीच हरकत नाही. या सर्व गोष्टी पाहता डिजिटल मार्केटिंग या युगात आपले स्थान निर्माण करत आहे.

लोक त्यांच्या सोयीनुसार इंटरनेटद्वारे त्यांच्या आवडत्या आणि आवश्यक वस्तू सहज मिळवू शकतात. आता लोक मार्केटमध्ये जाणे टाळतात, अशा परिस्थितीत डिजिटल मार्केटिंगमुळे व्यवसायाला आपली उत्पादने आणि सेवा लोकांपर्यंत पोहोचण्यास मदत होते. डिजिटल मार्केटिंगमुळे एकाच वस्तूचे अनेक प्रकार कमी वेळात दाखवता येतात आणि ग्राहक त्यांना आवडेल तो उपभोग लगेच घेऊ शकतो. याद्वारे ग्राहकाला बाजारात जाण्यासाठी, वस्तू आवडण्यासाठी, ये-जा करण्यासाठी लागणारा वेळ वाचतो.

डिजिटल मार्केटिंग सध्याच्या काळात हि आवश्यक झाले आहे. व्यापार्यांनाही व्यवसायात मदत मिळत आहे. तो कमी वेळेत अधिक लोकांशी संपर्क साधू शकतो आणि त्याच्या उत्पादनाची योग्यता ग्राहकांपर्यंत पोहोचवू शकतो.

सध्याच्या काळात डिजिटल मार्केटिंगची मागणी

बदल हा जीवनाचा नियम आहे हे आपणा सर्वांना माहीत आहे. पूर्वीच्या काळात आणि आजच्या आयुष्यात किती बदल झाले आहेत आणि आजचे युग इंटरनेटचे आहे. आज प्रत्येक पात्राची माणसं इंटरनेटशी जोडली गेली आहेत, या सगळ्यामुळे सर्व लोकांना एका ठिकाणी गोळा करणं सोपं झालं आहे जे पूर्वी शक्य नव्हतं. आपण इंटरनेटद्वारे सर्व व्यावसायिक आणि ग्राहक यांच्यात एक संबंध प्रस्थापित करू शकतो. डिजिटल मार्केटिंगची मागणी सध्या मोठ्या प्रमाणात दिसून येत आहे. जो व्यापारी आपला माल बनवत असतो तो ग्राहकांपर्यंत सहज पोहोचवत असतो. यामुळे डिजिटल व्यवसायाला चालना मिळत आहे.

पूर्वी जाहिरातीची मदत घ्यायची. ग्राहकाने ते पाहिले, नंतर ते आवडले, मग त्याने ते विकत घेतले. मात्र आता थेट ग्राहकांना माल पाठवता येणार आहे. प्रत्येकजण **गुगल, फेसबुक, यूट्यूब** इत्यादी वापरत आहे, ज्याद्वारे व्यापारी आपले उत्पादन ग्राहकांना दाखवतो. हा व्यवसाय प्रत्येकाच्या आवाक्यात आहे – व्यापारी तसेच ग्राहक. कोणत्याही प्रयत्नाशिवाय प्रत्येकाला प्रत्येक उपयुक्तता आरामात मिळते. वृत्तपत्रे, पोस्टर्स, जाहिराती यांची मदत घ्यावी की नाही, याचाही विचार व्यापारी करत नाही. सर्वांची सोय लक्षात घेऊन ही मागणी करण्यात आली आहे. लोकांचा विश्वासही डिजिटल मार्केटकडे वाटचाल करत आहे. व्यावसायिकासाठी ही आनंदाची गोष्ट आहे. एक म्हण आहे “जे दिसते ते विकले जाते” – डिजिटल मार्केट हे याचे उत्तम उदाहरण आहे.

डिजिटल मार्केटिंगचे प्रकार

सर्वप्रथम, आम्ही तुम्हाला सांगतो की डिजिटल मार्केटिंग करण्यासाठी ‘इंटरनेट’ हे एकमेव साधन आहे. आपण इंटरनेटवरच वेगवेगळ्या वेबसाइट्सच्या माध्यमातून डिजिटल मार्केटिंग करू शकतो. आम्ही तुम्हाला त्याचे काही प्रकार सांगणार आहोत.

1. सर्च इंजिन ऑप्टिमायझेशन / SEO

हे एक तांत्रिक माध्यम आहे जे आपल्या वेबसाइटला सर्च इंजिन परिणामांच्या शीर्षस्थानी ठेवते, ज्यामुळे अभ्यागतांची संख्या वाढते. यासाठी, आम्हाला आमची वेबसाइट कीवर्ड आणि SEO मार्गदर्शक तत्वांनुसार बनवावी लागेल. उदा. seo च्या मदतीनं तुम्ही तुमच्या वेबसाइट ची रँक वाढवू शकतो.

2. सोशल मीडिया

सोशल मीडिया अनेक वेबसाइट्सचा बनलेला आहे - जसे की Facebook, Twitter, Instagram, LinkedIn, इ. सोशल मीडियाच्या माध्यमातून एखादी व्यक्ती हजारो लोकांसमोर आपले मत मांडू शकते. तुम्हाला सोशल मीडियाची चांगली माहिती आहे. जेव्हा आपण या साइटला भेट देतो तेव्हा काही अंतराने आपल्याला त्यावर जाहिराती दिसतात, हे जाहिरातीचे प्रभावी माध्यम आहे.

3. ईमेल मार्केटिंग

ई-मेल मार्केटिंग ही कोणतीही कंपनी आपली उत्पादने ई-मेलद्वारे वितरित करते. ईमेल मार्केटिंग प्रत्येक कंपनीसाठी प्रत्येक प्रकारे आवश्यक आहे कारण कोणतीही कंपनी वेळोवेळी ग्राहकांना नवीन ऑफर आणि सूट देते, ज्यासाठी ईमेल विपणन(Marketing) हा एक सोपा मार्ग आहे.

5. YouTube चॅनल

सोशल मीडिया हे एक असे माध्यम आहे ज्यामध्ये उत्पादकांना त्यांची उत्पादने थेट लोकांपर्यंत पोहोचवावी लागतात. यावर लोक आपली प्रतिक्रियाही व्यक्त करू शकतात. हे असे माध्यम आहे जिथे अनेक लोकांची गर्दी असते किंवा फक्त असे म्हणा की मोठ्या संख्येने वापरकर्ते/प्रेक्षक YouTube वर राहतात. व्हिडिओ बनवून तुमचे उत्पादन लोकांसमोर दाखवण्यासाठी हे एक सुलभ आणि लोकप्रिय माध्यम आहे.

6. अफिलिएट मार्केटिंग

वेबसाइट, ब्लॉग किंवा लिंकद्वारे उत्पादनांच्या जाहिरातीद्वारे मिळणाऱ्या मोबदल्याला अफिलिएट मार्केटिंग म्हणतात. या अंतर्गत, तुम्ही तुमची लिंक तयार करा आणि तुमचे उत्पादन त्या लिंकवर टाका. जेव्हा ग्राहक त्या लिंकवर क्लिक करतो आणि तुमचे उत्पादन खरेदी करतो तेव्हा तुम्हाला पैसे मिळतात.

7. PPC मार्केटिंग / Pay Per Click

जी जाहिरात पाहण्यासाठी तुम्हाला पैसे द्यावे लागतील त्याला पे पर क्लिक जाहिरात म्हणतात. त्यावर क्लिक करताच पैसे कापले जातात, असे त्याच्या नावावरून ओळखले जात आहे. हे सर्व प्रकारच्या जाहिरातींसाठी आहे. या जाहिराती मधेच येत राहतात. या जाहिराती कोणी पाहिल्या तर पैसे कापले जातात. हा देखील एक प्रकारचा डिजिटल मार्केटिंग आहे.

8. अॅप्स मार्केटिंग / Apps Marketing

इंटरनेटवर वेगवेगळी अॅप्स तयार करून लोकांपर्यंत पोहोचवणे आणि त्यावर आपल्या उत्पादनाची जाहिरात करणे याला अॅप्स मार्केटिंग म्हणतात. डिजिटल मार्केटिंगचा हा एक चांगला मार्ग आहे. आजकाल मोठ्या प्रमाणात लोक स्मार्ट फोन वापरत आहेत. मोठमोठ्या कंपन्या त्यांचे अॅप्स बनवून लोकांना अॅप्स उपलब्ध करून देतात.

समारोप:

या शोधनिबंधाने ई-कॉमर्स आणि डिजिटल मार्केटिंग यांच्यातील गुंतागुंतीच्या नातेसंबंधांचा अभ्यास केला आहे, ज्याने समकालीन व्यवसायाच्या भूप्रदेशात त्यांच्या एकात्मतेच्या परिवर्तनात्मक प्रभावावर प्रकाश टाकला आहे. ई-कॉमर्स प्लॅटफॉर्मची दृश्यमानता आणि पोहोच वाढवण्यासाठी डिजिटल मार्केटिंग एक उत्प्रेरक म्हणून काम करत

असून, नवीन डिजिटल मार्केटिंग धोरणांची अंमलबजावणी आणि चाचणी करण्यासाठी ई-कॉमर्स गतिमान जागा प्रदान करून या दोन कार्यक्षेत्र सहजीवन स्वरूप स्पष्ट करत आहे.

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हवामान बदलाचा संत साहित्यावरील प्रभाव

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* प्रास्ताविक :

पर्यावरणीय संकल्पनेत समग्र जीवसृष्टीचा विचार केला जातो. पर्यावरण संकल्पनेचे प्रामुख्याने नैसर्गिक पर्यावरण व मानवनिर्मित पर्यावरण असे दोन प्रकार पाडता येतात. नैसर्गिक पर्यावरणात ऋतुचक्र, भौगोलिक रचना, कृषिसंस्कृती, नैसर्गिक आपत्ती, जीवसृष्टी, भूगर्भ, अंतराळातील घडामोडी आदी घटकांचा समावेश होतो. तर मानवनिर्मित पर्यावरणात मानवी जीवनाच्या विविध भूजा अर्थात सामाजिक, धार्मिक, सांस्कृतिक, राजकीय, आर्थिक इत्यादी घटकांचा समावेश केला जातो.

निसर्गाचा मानवी जीवनाशी निकटचा संबंध आहे. साध्या सरळ शब्दात सांगायचे तर आपल्या भोवतालचे वातावरण म्हणजे पर्यावरण होय. पर्यावरणाचा समतोल टिकविण्याचे कार्य निसर्ग करतो. जेव्हा माणूस पर्यावरणात हस्तक्षेप करतो तेव्हा मात्र पर्यावरणाचा समतोल बिघडतो. मानवाचे स्वास्थ्य हे पर्यावरणाच्या स्वास्थ्यावर अवलंबून आहे. पर्यावरणाचे स्वास्थ्य बिघडले तर मानवाचे स्वास्थ्य आपोआप बिघडते. आपल्या आरोग्याची काळजी आपण घेतली पाहिजे. मुल जेव्हा स्वतःची काळजी घेत नाही तेव्हा आई-वडील त्याची काळजी घेतात. अगदी त्याप्रमाणे आपण पर्यावरणाची म्हणजे आपल्या आरोग्याची योग्य ती काळजी घेत नाहीत म्हणून संतरूपी आई-वडिलांनी आपली काळजी घेण्याचा स्तुत्य प्रयत्न केला आहे. संतांनी स्वतःच्या वर्तनातून पर्यावरणाचा समतोल सांभाळलाच शिवाय हा समतोल टिकवून ठेवावा म्हणून आपल्या काव्यातून मार्गदर्शनही करून ठेवले आहे.

एकंदरित असे म्हणता येते की, संत ज्ञानेश्वरापासून ते संतमेळ्यापर्यंत सर्वच वारकरी संप्रदायातील संतांच्या अभंगातून पर्यावरण विषयक अनेक संदर्भ आलेले आहेत. यामध्ये वृक्षसंवर्धन, जलसंवर्धन, कृषिजीवन, दुष्काळ, पशुपक्षी इत्यादी पर्यावरणविषयक घटकांचे चित्रण मोठ्या प्रमाणावर पहावयास मिळते. संतांच्या अभंगातून पर्यावरणविषयक जागृतीचा मंत्र मिळतो. त्याचबरोबर पर्यावरणविषयक दृष्टिकोन दिसून येतो. या सर्वच दृष्टिकोनातून संतसाहित्य पर्यावरणविषयक महत्त्वाची भूमिका बजावते.

* पर्यावरणीय संकल्पना :

पर्यावरणशास्त्र ही शाखा १९६० च्या आसपास प्रचलित झाली. पर्यावरण हा शब्द स्थान व वेळ सापेक्ष आहे. पर्यावरण म्हणजे आपण राहतो ते ठिकाण व त्याच्या अवतीभवतीची परिस्थिती होय. यामध्ये जैविक व अजैविक घटकांचा समावेश होतो. मोहन बाबरे यांच्या मते, "पर्यावरणातील नैसर्गिक व सांस्कृतिक घटकांचा मानवी जीवनावरील प्रभावांचा पध्दतशीर शास्त्रीय व संकलित अभ्यास म्हणजेच पर्यावरणशास्त्र होय."^१ मोहन बाबरे यांनी पर्यावरणशास्त्राची व्यापकता मांडली आहे. पर्यावरण हा आज पृथ्वीतलावरचा अत्यंत निकडीचा व गंभीर प्रश्न बनला आहे.

माणसांनी प्रचंड प्रमाणात जंगलातेड केली व त्याच्या अगोदर झाडांची लागवड केली नाही. भूगर्भातील पाण्याचा फक्त उपसाच केला जातो त्याच्या पुनर्भरणाकडे लक्ष दिले जात नाही. ही नैसर्गिक संपत्ती संपली तर मानवी जीवनाचे अस्तित्व धोक्यात येईल. जंगले, माती, प्राणी ही साधनसंपदाही नष्ट होईल. वनस्पती बेसुमार तोडीबरोबरच जंगलातील प्राण्यांची शिकार करणेही थांबले पाहिजे. वाढत्या औद्योगिकीकरणामुळे व शहरीकरण यांच्यापुढे

नैसर्गिक साधनसंपत्ती मोठ्या प्रमाणात नष्ट होत आहे. पाणी व हवा यांचे प्रदूषण वाढले आहे. त्यामुळे नैसर्गिक पर्यावरणाचे संरक्षण व संवर्धन करणे हे काळाची गरज बनली आहे.

* पर्यावरण व प्रदूषण :

अन्न, वस्त्र आणि निवारा या मूलभूत गरजांची पूर्तता करण्यासाठी मानव पर्यावरणातील विविध घटकांचा वापर करतो. वाढती लोकसंख्या आणि औद्योगिकीकरण यामुळे पर्यावरणातील घटकांचा वापर वाढला आहे. मानवी सृष्टिला पर्यावरणाची अत्यंत निकड आहे. पर्यावरण म्हणजे भोवती असणाऱ्या वस्तू, देखावा, माणसे इत्यादी मिळून झालेली परिस्थिती होय.

निसर्ग व मानवी जीवन यातील परस्पर संबंध म्हणजे पर्यावरण होय. निसर्ग हा परिवर्तनशील असतो व या परिवर्तनाचे मानवी जीवनावर बरेवाईट परिणाम होत राहतात. परंतु पर्यावरण ही व्यापक संज्ञा आहे. ते व्यापक संज्ञेचे स्वरूप गतीशील आहे. व्यक्तीच्या विकासावर या सर्व घटकांचा परिणाम होतो. हे घटक म्हणजे शारीरिक, मानसिक, सामाजिक, सांस्कृतिक, आर्थिक व राजकीय याचा परिणाम गर्भावस्थेपासून ते मृत्यूपर्यंत पडत असतो. अशा रितीने पर्यावरणाचा सर्वार्थाने परिणाम घडतो. आजूबाजूला कुटुंब, शाळा, समाज, हवा, वनस्पती, कारखाने, उद्योगधंदे, नद्या, धरणे, ऊर्जा, समूह संपर्क साधने इत्यादीचा पर्यावरणात समावेश होतो. या सर्व घटकांचा समवाय म्हणजे पर्यावरण होय.

मानव प्राणी हा सर्व सजीवांपेक्षा हुशार व बुद्धिमान प्राणी मानला जातो. मानवाने आपल्या क्षमतेनुसार निसर्गावर मात करण्याचा प्रयत्न केला आहे. नैसर्गिक शक्तीचा आपल्या स्वार्थासाठी उपभोग करून घेतला आहे. त्याचा परिणाम नैसर्गिक परिणामांची संरचना बिघडली जात आहे. मानवाने ही कृती वा आक्रमण थांबविले नाही तर उद्याच्या सृष्टीत भयानक परिणाम निर्माण होतील.

मराठी विश्वकोशात स्पष्ट केल्याप्रमाणे विविध प्रकारची जीवसृष्टी तसेच मानवी समूह वा समाज ज्या परिसरात राहतात, त्या परिसरातील सर्व घटकांना साकल्याने पर्यावरण असे म्हटले जाते. पर्यावरणात सामान्यतः बाह्य परिस्थितीचे म्हणून जे नैसर्गिक घटक संभवतात त्यांचा समावेश होतो. पर्यावरण भौतिक व जैविक घटकांचे बनलेले आहे. जैविक घटकांमध्ये वनस्पती, प्राणी व सूक्ष्म जीवांचा समावेश होतो. तर भौतिक घटकांमध्ये जमीन, पाणी, तापमान आणि वातावरणातील वायूंचा समावेश होतो.

पृथ्वीवर वनस्पती, मानव व इतर प्राणी ज्या पर्यावरणात वास्तव्य करतात त्यांचे पर्यावरणातील विविध घटकांत संतुलन प्रस्थापित झालेले असते. परस्पराबद्दल पर्यावरणाची अनेक प्रकारच्या भौतिक, रासायनिक आणि अजैविक क्रिया-प्रक्रिया घडून येतात. मानव आणि इतर सजीव सभोवतालच्या परिस्थितीशी मिळतेजुळते घेऊन राहत असतात. त्यांच्या चयापचयी उत्सर्गामुळे बरीच घाण निर्माण होते व हळूहळू सर्व परिसर दूषित होतो. तथापि इतर प्रकारच्या सजीवांच्या काही जाती या नैसर्गिक अपशिष्टांचा स्वतःच्या पोषणासाठी उपयोग करतात आणि थोड्याफार प्रमाणात परिसर शुध्द राखण्यास मदत करतात. बरीच घाण पाण्याबरोबर वाहून जाते. अशाप्रकारे परिसर मोठ्या प्रमाणात दूषित होत नाही व जीवनक्रम अव्याहतपणे चालू राहते.

आधुनिक युगात सामाजिक व नैसर्गिक परिस्थिती मोठ्या झपाट्याने बदलत आहे. विज्ञानातील क्रांतीमुळे पर्यावरणात मोठे परिवर्तन होत आहे. विशेषतः परिणामकारक बदल झाले पण अपायकारक घटक मोठ्या प्रमाणावर पर्यावरणात शिरले आहेत. त्यामुळे पर्यावरणाचे संतुलन बिघडलेले आहे. पृथ्वीवरील मानव व मानवोत्तर प्राण्यांच्या जीवनाचा धोका निर्माण होत आहे. विज्ञानामुळे जग समृद्ध बनले आहे. विज्ञानाचे मानवी जीवनास व सजीव सृष्टीला मोठे फायदे झालेले आहेत. ज्ञानाच्या स्फोटामुळे मानवाला अशक्य काहीच राहिले नाही. मानवात आत्मविश्वास, धैर्य, निर्भीडपणा निर्माण झाला आहे. परंतु दुसरीकडे आधुनिक तंत्रज्ञान, माहिती . तंत्रज्ञान, वैज्ञानिक शोधांमुळे मानवी

जीवन जसे सुखी व समृद्ध झाले तरच अधिकच असुरक्षितताही निर्माण झाली आहे. इंधनाच्या अमर्यादित वापरामुळे मानवाला समतोलाचे भान राहिले नाही. परिणामी निसर्गाचा समतोल बिघडू लागला आहे. आज सजीवांच्या अस्तित्वावालाच धोका निर्माण झाला आहे.

सजीवांच्या जीवनचक्रात सातत्याने अनिश्चितता निर्माण झाली आहे. एकिकडे निसर्गावर मानवाने मात केली तर दुसरीकडे अमर्याद वापराने मानवाने स्वतःचे नुकसान करून घेतले आहे. त्यामुळे सृष्टीतील अस्तित्त्व धोक्यात आले आहे. मानवाने स्वतःच्या विकासासाठी निसर्गाचा ऱ्हास करून वातावरणाचा समतोल बिघडविण्याचा उपद्रव्याप अजूनही थांबला नाही. मानवाने जंगलतोड केल्यामुळे हवेत दूषित वायुचे प्रमाण वाढले. त्यामुळे तापमानात मोठी वाढ झालेली आहे. लोकसंख्या वाढीमुळे त्यांच्या गरजा भागविण्यासाठी, जीवनाच्या आशा, आकांक्षा पूर्ण करण्यासाठी, उत्पादन क्षमता वाढविण्यासाठी इंधनाचा मोठ्या प्रमाणात वापर केल्यामुळे आज ऊर्जा समस्या मोठ्या प्रमाणात भेडसावत आहे. पेट्रोलजन्य खनिजतेलाच्या किमतीत मोठ्या प्रमाणात वाढ होऊन त्याच्या वापरातून हवेत मोठे प्रदूषण निर्माण होत आहे. अधिक धान्योत्पादनासाठी औषधांचा प्रमाणापेक्षा अधिक वापर तसेच धान्य टिकविण्यासाठी रासायनिक औषधे व किटकनाशकांचा वापर केला जातो. या सर्व बाबी मानवी जीवनाला घातक आहेत. त्यामुळे घातक व रोगमूलक द्रव्यांचे असंख्य कण नदीत, महानगरात, जमिनीत आणि वातावरणात विखरले जात आहेत. ते उपद्रव्यकारक प्रदूषकांचे असतात.

पर्यावरणात मोठ्या प्रमाणात कार्बन मोनॉक्साईड, कार्बन डायऑक्साईड, सल्फर डायऑक्साईड, विविध विषारी वायूचे कण पर्यावरणात मिसळतात. त्यामुळे पर्यावरण प्रदूषित होते. ते घटक मानवी जीवनास हानिकारक आहेत. मानवनिर्मित त्याज्य पदार्थांमुळे पर्यावरणात सजीवांना अपायकारक जे बदलत होतात त्यांना प्रदूषण असे संबोधले जाते. प्रदूषणामुळे पृथ्वीवरील व सजीवांच्या अस्तित्त्वाला धोका निर्माण होत आहे. त्यामुळे आज पर्यावरण दिन साजरा करण्याची वेळ येऊन ठेपली आहे. ६ जून हा दिवस जागतिक पर्यावरण दिन साजरा करू लागले आहेत. पर्यावरणाच्या अवनतीस मानवच जबाबदार आहे. सन १९५२ च्या भारताच्या राष्ट्रीय वन धोरणानुसार एकूण जमिनीपैकी ३३ टक्के भाग जंगलांनी व्यापलेला असणे आवश्यक आहे. परंतु प्रत्यक्षात मात्र १२ टक्के भाग जंगलांनी व्यापलेला आहे. भारतात दरवर्षी १० लक्ष हेक्टर जंगलांचा ऱ्हास होतो. जंगलतोडीमुळे हवेतील ऑक्सिजन कार्बनडाय ऑक्साईड यांचा समतोल बिघडत आहे. हवेतील आर्द्रतेचे प्रमाण कमी होत आहे. प्राणी जीवनाचा ऱ्हास, जमिनीची धूप, हवेत दूषितपणा, नापिक जमीन, पुरांचे, दुष्काळाचे प्रमाण यात वाढ होत आहे. आजचे आधुनिक विज्ञान, तंत्रज्ञान, माहिती तंत्रज्ञान याला परिणामकारक प्रतिबंध करू शकत नाही. १९८० पर्यंत भारतातील एकूण ३०.४ कोटी हेक्टर जमिनीपैकी १७.५ कोटी हेक्टर जमिनीची धूप, दलदल इ. पर्यावरणग्रस्त समस्या निर्माण होत आहे. १९८० च्या रिपोर्टनुसार ४ कोटी हेक्टर प्रदेश पूरग्रस्त झालेला होता. वाढत्या औद्योगिकीकरणामुळे कार्बन मोनॉक्साईड, सल्फरडायऑक्साईड व अन्य विषारी वायूचे वातावरण निर्माण होते. आज पवित्र गंगा मैली होऊन तिचे केंद्र सरकारकडून शुध्दीकरणाची योजना तयार केली. मोठमोठ्या शहरात तर शुध्द हवा, शुध्द पाणी मिळणेही कठीण झाले आहे. आवाजाच्या गोंगाटामुळे ध्वनी प्रदूषण निर्माण झालेले आहे. शहरात नैसर्गिक पर्यावरण संपुष्टात आले आहे. अणुऊर्जा तयार करण्यासाठी केलेला अणुस्फोट आणि त्यामुळे निर्माण होणारे किरणोत्सारी कण हे सर्व हवेत मिसळून हवेत मोठ्या प्रमाणात प्रदूषण होत आहे. हवा प्रदूषण, जल प्रदूषण, ध्वनी प्रदूषण, भू प्रदूषण हे प्रदूषणाचे प्रकार आहेत.

हवा प्रदूषण म्हणजे हवेमध्ये मिसळणारे वायू त्यात ऑक्सिजन, नायट्रोजन, कार्बन डाय ऑक्साईड, पाण्याची वाफ, सल्फरडायऑक्साईड, कार्बनमोनॉक्साईड व अन्य विषारी वायूमुळे हवेत प्रदूषण वाढते. शुध्द हवेचे प्रमाण कमी होऊन अशुध्द हवा तयार होते तेव्हा हवा प्रदूषण होते. हवेत प्रदूषण घडवून आणणारे घटक १) लोकसंख्यावाढ २) कारखानदारी ३) औद्योगिकीकरण ४) दळणवळणाच्या साधनात वाढ ५) जंगलतोड ६) नैसर्गिक आपत्ती ७) इंधनाचा अनावश्यक वापर हे सर्व घटक जागतिकीकरणाशी निगडीत आहेत.

जलप्रदूषण म्हणजे नैसर्गिकरित्या वाहणाऱ्या पाण्यामध्ये मानवाने त्याचा वापर करताना आरोग्य विघातक घटक, कचरा, घाण, रसायनयुक्त पाणी, निर्माल्य पाण्यात सोडणे त्यामुळे पाणी दुषित होते. पाणी पिण्यायोग्य राहत नाही. यास जलप्रदूषण म्हणतात. पाण्यात अपायकारक द्रव्ये मिसळल्यास उदा. पाण्यात साबणाचा वापर, गुरे धुणे, रासायनिक औषधांचा व खतांचा वापर करणे. किटकनाशकांचा प्रमाणापेक्षा जास्त वापर करणे. ते पाण्यात मिसळले तर जलप्रदूषण होते. जगातील बहुतांशी शहरे नद्याच्या काठी वसल्याने सांडपाण्यामुळे जलप्रदूषण जास्त होते. सदरचे पाणी वापरात आल्यामुळे त्वचारोग, हगवण, पोटदुखी इ. आजार उद्भवतात. टोकियो, मुंबई, कलकत्ता, सिंगापूर ही शहरे किनारपट्टीवर वसली आहेत. यांचे सांडपाणी महासागरात सोडल्याने पाणी दूषित होते. त्यामुळे जलचर प्राण्यांना धोका निर्माण होतो. त्याचा नाश होण्याची शक्यता असते. इराण, इराक युद्धाच्या वेळी समुद्राच्या पाण्यावर तेलवाहतुकीचे जहाज फुटल्याने तेलाचा तवंग आल्यामुळे पाण्यातील लाखो जीव जंतू, मासे मृत्यूमुखी पडले होते. कारखान्यातून बाहेर पडणारे पाणी, रसायनयुक्त पाणी यामुळे पाणी प्रदूषित होते.

ध्वनी प्रदूषणात भौतिक साधनाच्या आवाजामुळे मानवी जीवनावर ध्वनीचा परिणाम होऊन कर्ण इंद्रियांवर त्याचा विपरीत परिणाम होतो. ध्वनी प्रदूषण म्हणजे वाजवीपेक्षा अधिक मोठा आवाज, गोंगाट, कारखान्यातील आवाज भोंगे, रस्त्यावरील वाहने, विमान, रेल्वे, दूरदर्शन, रेडिओ याचे कर्णकर्कश आवाजामुळे ध्वनी प्रदूषण होते यासाठी शाळा, महाविद्यालये, रूग्णालये इत्यादीचे परिसर ध्वनीवर्जित म्हणून घोषित करावेत. मोठ्या आवाजात हॉर्न वाजवण्यास बंदी असावी. ध्वनी प्रदूषणापासून बहिरेपणा, डोळ्यातील बाहुल्या प्रसरण पावणे, हृदयाची स्पंदने वाढणे, मानसिक ताणतणाव, आवाजात दोष, निद्रानाश, रक्तदाब इ.सारखे आजार निर्माण होतात. महानगरात आजार वाढण्याचे हे प्रमुख कारण आहे.

भूमीप्रदूषण हाही प्रदूषणाचा एक प्रकार आहे. भूमी हा पर्यावरणातील महत्त्वाचा घटक आहे. मानव वेगवेगळ्या कारणांसाठी भूमीचा वापर करू लागला आहे. शेती, कारखानदारी, राहण्यासाठी, व्यावसायासाठी मोठ्या प्रमाणात भूमीचा वापर करू लागले आहेत. पाण्यामुळे, हवेमुळे, औषध फवारणी, रासायनिक खते, किटकनाशके यांच्या वापरामुळे भूमीचे प्रदूषण होत आहे. पुरोमुळे, अतिपाण्याच्या वापरामुळे, पाऊस जास्त झाल्याने जमिनीची धूप होत असते. अतिजलसिंचन झाल्याने जमिनीत क्षारांचे प्रमाण वाढते. मृदा क्षारयुक्त बनून नापिक बनते. वाळवंटी प्रदेशात वाळूच्या संचयनामुळे सुपीक मृदांमध्ये नापिक मृदा तयार होते. जमिनीचा कस कमी होता त्यामुळे उत्पादनक्षमता कमी होते. हे दुष्टचक्र थांबविणे आवश्यक आहे. त्यासाठी बांध घालणे, सेंद्रिय खतांचा वापर करणे, शेणखताचा वापर करणे, प्रमाणापेक्षा जास्त पिकांना पाणी न देणे आवश्यक आहे. प्लॅस्टिक, पदार्थ या अविघटनशील घटकांमुळे जमीन निरूपयोगी बनते. याची जाणीव समाजास करून देऊन वापरावर बंदी घालणे आवश्यक आहे. परंतु महानगरात प्लास्टिकचा सर्रासपणे वापर केला जातो. भविष्यात प्रदूषणामुळे भयानक समस्या निर्माण होतील, रोगराई, अवकाळी पाऊस, तसेच निसर्गाचाही समतोल बिघडेल.

महानगरीय पर्यावरणाचा विचार करताना आपणापुढे तुलनात्मकदृष्ट्या ग्रामीण परिसरापेक्षा असलेले पूर्णपणे वेगळेपण उभे राहते. कृषिजीवन व निसर्गापासून दूर, गर्दीने गजबजलेले, गगनचुंबी इमारतीपासून अस्ताव्यस्त पसरलेल्या झोपडपट्ट्यांपर्यंत बकाल जीवन, महाकाय रस्ते, उड्डाणपूल एकीकडे तर चिंचोळ्या वाकड्या-तिकड्या वाटा दुसरीकडे (झोपडपट्ट्या) अजस्र महाकाय, गटारी व पावसाळ्यात तुंबणारे नाले, दुर्गंधी, मोकळ्या हवेबरोबरच मोकळ्या भावसंबंधांचा अभाव, प्रदूषणाचा सर्वांगीण मारा, धडधडणाऱ्या लोकल गाड्या, बिनचेहऱ्यांची गर्दी, आर्थिक हितसंबंधांना झुकते माप, पैसा हाच सर्वेसर्वा, जगातील कोणतेही सुख पायाशी लोळण घेऊ शकते फक्त पैसा हवा ही भावना, बहुभाषिक व प्रांतिक, धार्मिक, रसमिसळ, संपर्काची साधने अद्ययावत परंतु संवादातले सूर हरवलेले, गुन्हेगारी जगताचा वरचष्मा, बंद पडलेल्या कारखान्यांमुळे कफळक झालेले कामगार संघटनांचे राजकारण, राजकारणाचे गुन्हेगारीकरण, दलाल वर्गाला आलेले महत्त्व, समूहभावनेचा अभाव व आत्मकेंद्रीत वृत्ती बळावलेली. पायाला घड्याळ बांधल्यासारखे वेगवान जीवन, बंदिस्तता, स्थलांतरांच्या लोंढ्यामुळे महानगरी व्यवस्थापनावर

पर्यावरण आणि मानवी आरोग्य

सहा.प्रा. मिलिंद प्र. कळंबे

राज्यशास्त्र विभाग
नवगण कला व वाणिज्य महाविद्यालय,
परळी वैजनाथ, जि.बीड, महाराष्ट्र

प्रास्ताविक :-

मानवी विकास आणि मानवी आरोग्य सर्वस्वी निसर्गावर अवलंबून आहे. मानवाचे, सजीवांचे अस्तित्व निसर्गावरच अवलंबून आहे. मनुष्याने स्वतःच्या स्वार्थी विकासासाठी नैसर्गिक गोष्टीमध्ये मोठ्या प्रमाणात हस्तक्षेप केला. 18 व्या शतकात औद्योगिक क्रांती झाली. औद्योगिकरणामुळे नैसर्गिक साधनसंपत्ती, संपदाचा वापर मोठ्या प्रमाणात वाढला. मोठी शहरे, गगनचूंबी इमारती, दळणवळणाच्या साधनात प्रगती झाली. मनुष्याची ऐश्वर्यसंपन्न जीवनाला सुरुवात झाली. हा विकास, प्रगती, ऐश्वर्यसंपन्न जीवन उपभोगण्यासाठी त्याने नैसर्गिक संपत्तीची अधिकाधिक हानी केली. यामुळे नैसर्गिक पाणी, हवा, वनस्पती, खनिज संपत्ती इत्यादीचा वापर मोठ्या प्रमाणात झाल्यामुळे नैसर्गिक संतुलन बिघडले आणि त्यांचा विपरीत परिणाम लवकरच दिसायला लागला. त्या अनुषंगाने-

1972 मध्ये 5 जून ते 16 जून दरम्यान स्वीडन देशामधील स्टॉकहोम शहरात, 'मानवी पर्यावरण, या विषयावर परिषद भरली. या परिषदेमध्ये 26 सूत्री जाहीर करण्यात आली या परिषदेचा उद्देश जागतिक स्तरावर वर्तमान आणि भविष्यासाठी पर्यावरण आरोग्य आणि मानवी आरोग्याचे संरक्षण व संवर्धनाची जबाबदारीची दखल घेण्याचा आहे.

विषयाचे महत्त्व :

मानवी आरोग्यासाठी, मानवी सर्वांगीण विकासासाठी पर्यावरण हे उपयुक्त साधनसंपत्तीचे अनमोल भांडार आहे. विकासाच्या हट्टापायी, विलासी उपभोगीवृत्ती, ऐश्वर्य संपन्न जीवनासाठी मानवाने जमीन, जल, वनस्पती, खनिजसंपत्ती, यांचा सर्वनाश केला व त्याजागी मानवनिर्मित पर्यावरणाचा विकास आपल्या गरजा भागविण्यासाठी केला.पृथ्वीतलावर ही नैसर्गिक संपदा निर्माण व्हायला हजारो वर्षे लागली. ती संपदा मानवाने काही वर्षांतच सहज नष्ट केली. नैसर्गिक संपदा नष्ट झाल्यामुळे मानवी स्वास्थाचा, आरोग्याचा प्रश्न दिवसेंदिवस गंभीर होत आहे. उद्योग, व्यापार, नोकरी करण्याकरीता लोक मोठ्या शहरात येऊ लागले. त्यामुळे झोपडपट्टी, अतिक्रमण, गलिच्छ वस्त्या, कचऱ्यांचा ढीग इत्यादी मानवनिर्मित समस्या निर्माण झाल्या. तुंबलेले नाले, गटारे, भटकी जनावरे यादीकाणी भ्रमण करतात. यामुळे रोगराईचा प्रसार होतो.

मानवनिर्मित समस्येमुळे शहरात क्षयरोग, हिवताप, कावीळ, त्वचारोग, हृदयरोग आणि फुफ्फुसाचे आजार यासारख्या रोगांना लोक बळी पडत आहेत. गेल्या दोन दशकात मौसमी पर्जन्यात अनियमितता आली आहे. त्यामुळे पावसाचे पाणी फारच कमी प्रमाणात मिळत आहे. आज कोटयावधी मानव अन्न, वस्त्र, निवारा, आरोग्य आणि शिक्षण यापासून वंचित आहेत. त्यात भरीसभर मानवाने पृथ्वीवरील संपदाचे अतिशोषण केले. त्याचा मानवनिर्मित निसर्गाच्या न्हासाची तसेच निसर्गावर उपजिविका असणाऱ्या शेतकरी, मजूर, कष्टकरी लोकांच्या हक्काची होत असलेली गळचेपी.

आदिवासी समूदायाचे पोट भरण्याचे साधन जंगलातील संपदा असते. जेव्हा ते रोजगारग्रस्त होतात, त्यांच्या कुटुंबाची वाताहत होते, उपासमार होते, जीवन जगणे कठीण होते. त्यांच्या अशिक्षितपणाचा गैरफायदा घेतला जातो. तेव्हा त्यांना सामाजिक आरोग्य विषयक समस्या निर्माण होतात. म्हणून पृथ्वीतलावावरील संपदा नष्ट झाल्यास प्रदूषित झाल्यास सर्व सजिवासाठी प्राणघातक

आहे. सर्व मानवाचे भवितव्य पर्यावरणावर अवलंबून आहे. पर्यावरणाचे संरक्षण व संवर्धन करण्याची जबाबदारी संपूर्ण मानवजातीची आहे.

भारतीय संविधानात सुध्दा पर्यावरणाचे संरक्षण व संवर्धनाची तरतूद केलेली आहे.

अनुच्छेद-48ए- राज्य हे देशाच्या पर्यावरणाचे संरक्षण व संवर्धन करण्यासाठी आणि वने व वन्य जीवसृष्टी यांचे रक्षण करण्यासाठी प्रयत्नशील राहिल.

अनुच्छेद-51ए- मूलभूत कर्तव्ये - सांगितली आहेत त्यामध्ये वने, सरोवरे, नद्या व वन्य जीवसृष्टी यासह नैसर्गिक पर्यावरणाचे रक्षण करून त्यात सुधारणा करणे आणि प्राणिमात्राबद्दल दयाबुद्धी बाळगणे.

भूतकाळाचा आढावा घेतला तर पृथ्वीवरील कितीतरी प्राण्यांचा नामशेष राहिला नाही. उद्या आम्ही सुध्दा नामशेष होवू? तेव्हा पर्यावरणाचे संरक्षण आणि संवर्धन ही काळाची गरज आहे.

शोधनिबंधाचे उद्देश :-

- 1) असंतुलीत पर्यावरणाचा मानवी आरोग्यावर होणारा परिणामाचा अभ्यास करणे.
- 2) पर्यावरणीय संपदाच्या पैलूचा अभ्यास करणे.
- 3) निरोगी पर्यावरण आणि मानवी आरोग्य यांच्या सहसंबंधाचा अभ्यास करणे.
- 4) पर्यावरण संरक्षण व संवर्धन काळाची गरज यांचा भूमिकेचा अभ्यास करणे.

पर्यावरण आणि मानवी आरोग्य

मानव, वनस्पती, प्राणी, सूक्ष्मजीव हे पर्यावरणातील परिसंस्थेमध्ये निसर्गचक्रानुसार कार्यरत असतात. आपल्या दैनंदिन गरजांची पूर्तता करण्यासाठी मानवाने पर्यावरणाचे शोषण केले. त्यामुळे पर्यावरणाचा कायमचा समतोल ढासळला आहे. मानवी पर्यावरण आणि मानवी आरोग्य यांचा सहसंबंध येतो. पर्यावरण शुध्द असेल तर मानवाचे आरोग्यही सद्दृढ आणि निरोगी राहते. मानवाचे आरोग्य हे गगनचूंबी इमारती, सर्व सोयीयुक्त दळणवळणाची साधने, तज्ञ चिकित्सक, ऐश्वर्यसंपन्न सोयीसुविधा यावर असलंबून नसून ते स्वच्छ पर्यावरणावर अवलंबून आहे. पृथ्वी तलावावरील नैसर्गिक साधनसंपत्ती, संपदाचे मानवाने स्वतःच्या स्वार्थासाठी अतोनात वापर केल्यामुळे पृथ्वीवरील नैसर्गिक परिस्थिती सतत बदलत आहे.

पर्यावरणाचा समतोल ढासळल्यामुळे, निसर्गचक्रामध्ये बदल झाल्यामुळे वातावरणात अनेक प्रदूषके निर्माण होवून त्यांचा मानवी आरोग्यावर विपरित परिणाम दिसून येत आहे. वातावरणातील विषारी वायुमूळे श्वसनरोग, दमा, विषबाधा, फूपफूसावर परिणाम, हायपरटेशन, हृदयरोग होण्याचा धोका संभवतो.

शीतयंत्रे, वातानुकूलीत यंत्रे, रासायनिक उत्पादने यामुळे वातावरणामध्ये क्लोरोफ्लुरो कार्बन मिसळणे त्यांना O_3 म्हणतात CO_2 पेक्षा O_3 चा वातावरणातील परिणाम सहस्त्रपटीनी हानीकारक ठरतो. O_3 हे ओझोनच्या नाशास कारणीभूत ठरले आहे. 1928 पर्यंत वातावरणात O_3 नव्हते. पेटोल व डिझेलच्या ज्वलनामुळे बेन्झीनची निर्मिती होते. हा वायु मानवी मज्जासंस्था व रोगप्रतिकारक शक्ती दोन्हीला नुकसान पोचवू शकतो. जास्त वाहतुकीच्या ठिकाणी याची हवेतील पातळी वाढते.

मानवी विकास हा निसर्गावर अवलंबून आहे. मानवी विकासप्रक्रिया ही अखंड चालणारी प्रक्रिया आहे. त्यामुळे मनुष्य पर्यावरणात हस्तक्षेप करतो. विकासाच्या हव्यासापायी अनेक सजीवांचा नामशेष झाला. त्याचा विपरित परिणाम निसर्गचक्रावर झाला आणि तो परिणाम सध्या मानवी

आरोग्यावर दिसून येत आहे. त्याचप्रमाणे मानवाने पृथ्वीच्या भूगर्भात शिरून खोदकाम केले. या खाणीमधून खोदकाम करताना मातीचे व खनिजाचे सूक्ष्मकण वातावरणात पसरतात. विविध प्रकारचे वायू हवेत मिसळतात. वातावरणात प्रदूषके पसरतात. त्यामुळे पर्यावरणाचा समतोल ढासळतो. पर्यावरणीय ढासळलेल्या समतोलाचा मानवी आरोग्यावर नकारात्मक परिणाम दिसतो.

“जागतिक आरोग्य संघटनेच्याच अंदाजानुसार अलीकडील काळात पर्यावरणातील होणाऱ्या बदलामुळे सुमारे 30 नवीन रोगाची निर्मिती झाली असून त्यामुळे होणारे मृत्यु वाढत आहेत काही जून रोग पुन्हा फैलावू लागले आहेत. 1918 साली एन्फ्यूएंझा रोगाच्या फैलामुळे सुमारे 3 ते 4 कोटी लोक दगावले होते. या काळात अमेरिकी सैनिक युरोपमध्ये मोठ्या प्रमाणात आल्याने या रोगाचा फैलाव झाला होता व संसर्गजन्य स्वरूपात अनेक लोकांना त्याची लागण झाली.”¹

भारतात मार्च-2020 पासून कोरोना हा सूद्धा संसर्गजन्य विषाणू होता. जो वातावरणातून मानवी शरीरात श्वासाद्वारे प्रवेश करित होता. मनुष्याची प्रतिकारशक्ती क्षीण करित होता. कोरोना विषाणू हा मानवनिर्मित असून या विषाणूने मानवी विकासाची गति संथ केली. मानवी जीवन उध्वस्त केले. या कोरोना विषाणूचा वातावरणातील प्रभाव सध्यापर्यंत कायम आहे. अशा वातावरणातील संसर्गजन्य विषाणूचा नाश करायचा असेल तर सर्वप्रथम आम्हाला पर्यावरण निरोगी, स्वच्छ करणे हे आत्यंतिक काळाची गरज आहे तेव्हाच मानवी आरोग्य स्वस्थ राहिल.

“विशेषतः औद्योगिकरण झालेल्या देशामध्ये कॅन्सरचे प्रमाण जास्त आढळते. अमेरिकेतील दोनपैकी एका पुरुषाला अथवा तीनपैकी एका स्त्रीला त्याच्या आयुष्यात एकदातरी कोणत्यातरी कॅन्सरची लागण होते. कारण तेथील पर्यावरणात विषारी रासायनिक घटकांचे प्रमाण वाढलेले आहे.”²

निसर्गातील सर्व सजीवांना पाणी आवश्यक आहे. साथीच्या रोगांचा प्रादुर्भाव पिण्याच्या पाण्यापासून होतो. या दूषित पाण्यामुळे मानवी आरोग्यावर त्याचे अत्यंत गंभीर परिणाम होतात. त्यामुळे हगवण, कावीळ, पीतज्वर, डोकेदुखी, त्वचारोग, अल्सर इ. रोगांचा प्रसार होतो. दूषित पाणी पिल्यामुळे अनेक लोक मृत्युमुखी पडतात. तिर्थक्षेत्राच्या ठिकाणी स्नान, सांडपाणी, कचरा पाण्यात सडतो. पाण्यात घरगुती साबनाचे रसायने पाण्यात सोडतात. पाणी दुषित होऊन त्यामुळे शरीरावर त्याचा परिणाम होतो. कावीळ, विषमज्वर, कॉलरा, क्षय या रोगांना आयते निमंत्रण मिळते. पाण्यावरील ऊर्जा निर्मितीला प्रचंड पाणी लागते. उष्ण पाण्यामुळे पाण्यातील ऑक्सीजन चे प्रमाण घटते. पाणी दूषित होते. पाण्याचा दूरूपयोग करून मानवाने ते दूषित केले आहे. मानवानेच पृथ्वीवरील सवांना शुद्ध पाणी मिळण्यासाठी सर्वतोपरी प्रयत्न केलेच पाहिजे. शुद्ध पाणीच मानवाला आणि पर्यावरणातील इतर सजीवांना आरोग्यदायी जीवन देऊ शकते.

वाढती लोकसंख्या, शहरीकरण त्यामुळे निर्माण होणारा घरगुती व सार्वजनिक कचरा, सांडपाण्याची विल्हेवाट नसणे, औद्योगिक कचरा, वापरलेली टाकाऊ रसायने, कृषीकचरा, खते, किटकनाशके जमिनीवर पडतात. जमिनीवर कचऱ्याचा ढीग जमा होतो. कचरा जागेवर सडतो त्याची दूगंधी येते. जमिन प्रदूषित होते. अशा जमिनीवरील वनस्पतींच्या वाढीवर दूष्परिणाम होतो. एकंदरीत या सर्व गोष्टींचा परिणाम मानवी आरोग्यावर होतो. लवकरात लवकर जास्तीत जास्त उत्पादन मिळविण्यासाठी मानव संकरित बी-बीयाणे, जलसिंचन, कीटक व जंतूनाशक औषधे, रासायनिक खते, यांचा मोठ्या प्रमाणात वापर करित आहेत. हयाचा दूष्परिणाम मानवी आरोग्यावर दिसून येत आहे.

अणुशास्त्रज्ञ वॉल्टर झीन यांनी इ.स. 1951 मध्ये प्रथमच अणुशक्तीच्या साहाय्याने वीजनिर्मिती केली. अणुशक्तीची निर्मिती मानवी विकासासाठी निश्चितच मैलाचा दगड आहे. पण याचा वापर हा विकासासाठीच हवा नाहीतर मानवी जगाचा अंतच आहे.

आण्वीक अपघातामुळे जलप्रदूषण, हवा प्रदूषण होते. प्राणहानी, कर्करोग, जैविक विविधतेला मोठ्या प्रमाणात धोका निर्माण होतो. तापमानात वाढ होते. किरणोत्सर्ग मानवी व्यक्तीच्या रक्तातील पांढऱ्या पेशीचे प्रमाण कमी करते. त्यामुळे रोगप्रतिकार शक्ती कमी होते. किरणोत्सर्गामुळे शारिरीक व्यंग, अपत्यांचा जन्म होऊ शकतो. किरणोत्सर्गामुळे हृदयरोग, मोतीबिंदु होतो. 1952 मध्ये कॅनडातील चॉकरिह्वर अणुप्रकल्प, 1986 मध्ये रशियातील चर्नोबिल अणुभट्टीत हवेत किरणोत्सर्ग, इंग्लंडमधील विंडस्केल येथे, 1979 मध्ये अमेरिकेमध्ये अणुभट्टीमुळे किरणोत्सर्ग झाला होता. जपान झूरुगा आणि भारतात सुध्दा तारापूरच्या अणुभट्टीत किरणोत्सर्ग पाण्याची गळती झाली होती. भविष्यात मानव जात आणि नैसर्गिक साधनसंपदा जर नष्ट झाली तर आण्विक शक्तीने होईल. त्यामुळे पर्यावरण आणि मानवी आरोग्याचे रक्षण करायचे असेल तर अणुशक्तीचा नियंत्रित वापर करणे भविष्यासाठी उपयुक्त ठरेल.

अॅलेक्झांडर ग्रॅहम बेल यांनी दूरध्वनीचा शोध लावला. त्यांनीच ध्वनीमापनाची पध्दत शोधून काढली. त्याला 'डेसीबेल' म्हणतात. 70-80 डेसीबेल दरम्यान व्यक्ती ध्वनी सहन करू शकतो. आज औद्योगिकरणामुळे शहरी भागात गगनचुंबी इमारती सिमेंट-कांक्रीटची आणि भिंतीला भिंत बांधलेली असल्यामुळे ध्वनीचे, आवाजाचे वितरण न होता प्रतिध्वनी व अवरोधाने ध्वनीची तीव्रता जास्त मारक ठरते. जास्त ध्वनीने बहीरेपणा, निद्रानाश, मानसिक विकृती आणि डोकेदुखी चा विकार संभवतो. प्रत्येकाच्या हातात आज स्मार्ट फोन आहे. व्यक्ती तासनतास मोबाईलवर आपला अमूल्य वेळ घालवत आहे. त्यामुळे त्याला जगाची माहिती लगेच कळते. पण त्या व्यक्तीची शारिरीक हालचाल कमी झाल्यामुळे त्याला शारिरीक व्याधी निर्माण होत आहे. मोबाईल अति वापरामुळे त्याची डोळ्याची नजर कमजोर बनत आहे. जास्त इअरफोन वापरल्यामुळे बहीरेपणा, निद्रानाश, डोकेदुखी, चिडचिडेपणा व्यक्तीध्ये दिसून येत आहे. याचे महत्वाचे कारण म्हणजे मानवाने निसर्गाच्या सान्नीध्यात राहणे कमी केले. त्याचा विपरित परिणाम त्याच्या आरोग्यावर होत आहे.

मांसाहाराचे वाढते प्रमाण आणि पशूकडून मानवाकडे संक्रमित होणारे संसर्गजन्य आजार बळावत आहेत. कुपोषण, अर्धपोषण, भूकबळी, अशांतता, अस्थिरता, साधनसंपदावर ताण, गलीच्छ वस्त्या, संघर्षमय जीवन तीव्र स्पर्धा, बेरोजगारी या समस्या निर्माण झाल्यामुळे अनेक रोगांना आमंत्रण मिळत आहे.

जंगल / अरण्य / वनमध्ये नैसर्गीक साधनसंपदा, वनस्पती असते. काही वनस्पतीचा उपयोग औषध निर्माण करण्यासाठी होतो. वनस्पतीमुळे वातावरणात थंडावा राहतो. जलसंवर्धन होते. पूराची तीव्रता कमी होते. जमीन सूपीक बनते. या वनस्पती सूर्यप्रकाशात प्रकाश संश्लेषण क्रियेद्वारे कार्बनडॉय ऑक्साईड घेतात व मानवाला उपयुक्त असणारा ऑक्सिजन सोडतात. जो मनुष्याचा प्राणवायु आहे.

मुंबई ते नागपूर 701 किलोमीटरचा समृद्धी महामार्ग हा मानवी विकासाचा मैलाचा दगड आहे. या समृद्धी महामार्गावर मोठ्या प्रमाणात वाहनांची वरदळ राहणार आहे. त्यामुळे पेटोल आणि डिझेल मधून सूटणाऱ्या विषारी वायूने 701 किलोमीटर महामार्गावर कोणाच्याही आरोग्यावर दूष्परिणाम होणार नाही. तसेच पर्यावरण सुध्दा निरोगी राहिल याची जबाबदारी मानवाचीच आहे. समृद्धी महामार्ग मानवनिर्मित आहे. तेव्हा पर्यावरणाची समृद्धी ही मानवनिर्मितच असेल.

उपाययोजना—

1. पर्यावरण दिन 5 जून रोजी साजरा केला जातो. परंतु जून महीन्यात शाळा, कनिष्ठ महाविद्यालय, वरिष्ठ महाविद्यालयाला सुट्टी असल्यामुळे फार मोठ्या भविष्याचा वेध घेणारा विद्यार्थी घरी असतो. म्हणून पर्यावरण दिवसाला पाहीजे तशी जनजागृती होत नाही त्या अनुषंगाने — 26 सप्टेंबर हा 'जागतिक पर्यावरण आरोग्य दिन' साजरा करावा. ह्या वेळेस शाळा, कनिष्ठ महाविद्यालये, वरिष्ठ महाविद्यालये सुरू असतात. त्यामुळे जनजागृती विद्यार्थी प्रिय होईल.

2. वृक्षारोपण फक्त फोटो काढण्यापूरते मर्यादित नसावे. प्रत्येक कार्यालय, शाळा, कनिष्ठ महाविद्यालये, वरिष्ठ महाविद्यालयात वृक्षारोपण नोंद वही असावी. वृक्षारोपण झाल्यानंतर त्या झाडाची त्याचे आयुष्य असेपर्यंत नोंद अद्ययावत करावी. वृक्षारोपण केलेले झाड काही कारणास्तव वाढले नाहीतर दूसरे झाड लावून वृक्षारोपण करावी त्याची सुध्दा नोंद ठेवावी.
3. ज्यांच्याकडे स्वतःची जागा असेल त्यांनी त्यांच्या घरासमोर कमीत कमी 5ग10 च्या बागेत जास्तीत जास्त ऑक्सीजन देणारे कमी उंचीची झाडे लावावी.
4. शासकीय रुग्णालये, खाजगी रुग्णालये येथे आवारात जास्तीतजास्त वृक्ष लावावीत.

सारांश :-

सध्याचा मानवी समाज पर्यावरणातील संपदांचा वापर करताना फक्त स्वतःचाच विचार करतो. भावी पिढ्यासाठी पर्यावरण निकोप ठेवण्याची मोठी जबाबदारी सध्याच्या पिढीवर व तिच्या तंत्रज्ञानात्मक वाटचालीवर आहे. मानवी समाजाच्या या दुर्लक्षितपणाची किंमत भावी काळातल्या पिढ्यांना नक्कीच मोजावी लागेल. मानव हाच पर्यावरणाच्या न्हासाचे मूलभूत कारण आहे. मानवाच्या स्वार्थी, लोभी, अतिरेकी व उपभोगी प्रवृत्तीमुळे पर्यावरणाचा न्हास वेगाने होत आहे. त्यामुळे त्याचा नकारात्मक परिणाम सामाजिक आरोग्यावर होत आहे. मनुष्य हा बुद्धीमान प्राणी आहे. त्याने स्वतःचे जीवन सुखी, ऐश्वर्यसंपन्न विलासी करण्यासाठी पर्यावरणास वेठीस धरले आहे. पर्यावरण रक्षणाची जबाबदारी मानवाचीच आहे. पर्यावरणीय समस्या निर्माण होण्यासाठी मानव हाच एकमेव घटक कारणीभूत आहे.

मानवी हस्तक्षेपामुळे आम्लपर्जन, हवामान परिवर्तन, ओझोनक्षय, भोपाळ वायु दुर्घटना, रशियातील चर्नोबील अणुवीज प्रकल्पातील दूर्घटना झाल्या आहेत. साहजिकच रोगांवर इलाज करण्यापेक्षा रोगाचे मूळ असलेले दूषित पर्यावरण शुध्द कसे करता येईल यासाठी प्रत्येकाने प्रयत्न करणे आवश्यक आहे. स्वच्छ व शुध्द पर्यावरणातच निरोगी व सदृढ आरोग्य लाभू शकते. नैसर्गिक साधनसंपदा जपण्यासाठी, नैसर्गीक व मानवनिर्मित समस्या निराकरणासाठी, निरोगी समृध्द व शाश्वत भविष्यासाठी, जैवविविधतेचे संरक्षण व संवर्धन करण्यासाठी, पर्यावरणाचे संरक्षण व संवर्धन करणे हे आपलेच प्राथमिक आद्यकर्तव्य आहेच. हे आपण टाळता कामा नये अन्यथा आपणच उद्या अनेक रोगांचे वस्तीस्थान, माहेरघर बनू!

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ध्वनी प्रदूषणाचे मानवी आरोग्यावर होणारे परीणाम आणि उपाय

प्रा. डॉ. वानखेडे उमाकांत ज्ञानोबा

राज्यशास्त्र विभाग प्रमुख
नवगण कला व वाणिज्य महाविद्यालय,
परळी वैजनाथ, जि.बीड, महाराष्ट्र

सारांश

ध्वनी प्रदूषण ही एक समस्या निर्माण झाली असली तरी त्यासाठी वरील उपाय योजना केल्यास ध्वनी प्रदूषणावर नियंत्रण ठेवता येते. गिरण्या, कारखाने राहत्या वस्त्यांपासून दूरवर स्थापित करणे, भर वस्तीतल्या कारखान्यांना ध्वनीप्रतिबंधक व्यवस्था करण्यास भाग पाडणे यासाठी कडक कायदे व त्यांची अंमलबजावणी करणे तसेच शहरात जागोजागी शांतता विभाग निर्माण करून सार्वजनिक जागी ध्वनीक्षेपकास बंदी केली पाहिजे. दाट लोकवस्ती असलेल्या भागात मुख्य रस्ते, कारखाने यांच्या सिमा भागात झाडांची दाट लागवड करून वृक्षांचे संगोपन करून आवाजाचे प्रदूषण बरेचसे नियंत्रित होऊ शकते. शहरातील वाहतूक रस्त्याचे रूंदीकरण करून पादचारी पथ ठेवावे. रस्त्यांच्या दोन्ही बाजूंनी जी घरे बांधायची त्यांच्या पायाच्या मानाने रस्त्याची पातळी जरा खाली ठेवावी.

प्रस्तावना :-

ध्वनी प्रदूषण ही मानव निर्मित समस्या असून ध्वनी प्रदूषणाचे नियंत्रण ठेवण्यासाठी मानवी प्रयत्न आवश्यक आहेत. ध्वनी प्रदूषण थांबवायचे असेल तर वैयक्तिक सामूदायिक आणि शासकीय स्तरावर प्रयत्नांची पराकाष्ठा करणे आवश्यक आहे. यासाठी मनुष्याला आपल्या भौतिक सुख-सोयींचा त्याग करून आपल्या जीवन पध्दतीत बदल करावा लागेल. या विषयाच्या बाबतीत समाज जागृती होणे महत्वाचे आहे. माणसाची कर्णोद्भ्रय विशिष्ट क्षमतेपर्यंत ध्वनीचा आघात सहन करू शकतात. त्या क्षमतेपेक्षा मोठा ध्वनी हानिकारक ठरत असतो. जेव्हा पर्यावरणात कर्णोद्भ्रयाच्या क्षमतेपेक्षा मोठा ध्वनी किंवा गोंगाट निर्माण होतो त्याला ध्वनी प्रदूषण असे म्हणतात. मनुष्याला नकोसा वाटणारा आवाज किंवा ध्वनी त्यात नादमाधुर्य नसते. तो कर्णकठोर व विसंवादी आवाज असतो. गोंगाट त्रासदायक, संतापजनक, निद्रानाशक असतो. गोंगाटामूळे चित्त विचलित होऊन एकाग्रता भंग पावते. मोठ्या आवाजातील मानवी संभाषण, सांस्कृतिक कार्यक्रमांच्या वेळी वापरण्यात येणारे ध्वनीवर्धक टेप रेकॉर्डर, नाचगाण्याचे कार्यक्रम, वाहनांचा आवाज भोंगे, कारखाण्यांचा आवाज, रेल्वे गाड्यांचा आवाज, फेरीवाले छापखाने, स्वयंपाक घरातील आवाज अशा ध्वनी प्रदूषणास अनेक घटक कारणीभूत असलेले दिसून येतात. परमेश्वराने निर्माण केलेल्या इतर संसाधनांचा मानवाने स्वतःच्या बेदरकार वृत्तीने जसा नाश केला तीच बाब ध्वनीच्या बाबतही होते आहे. आती तेथे माती किंवा अतित सर्वत्र वर्जयेत ही वचने ज्ञात असूनही आवाजावर नियंत्रण न ठेवल्याने ध्वनी प्रदूषण ही आज गंभीर समस्या बनली आहे. ध्वनी प्रदूषणाचा अभ्यास पूर्वीपासून शास्त्रज्ञांनी केला आहे. "दिवसेंदिवस वाढत जाणारा गोंगाट हाच एक दिवस मानवाचा प्रमुख शत्रू असेल असे आठ दशकापूर्वी सांगणारा रॉबर्ट कॉक हा दृष्टा वैज्ञानिक म्हणावा लागेल."¹

ध्वनी प्रदूषणाचे परीणाम:-

ध्वनी प्रदूषणाचे मानवावर अतिशय संध गतीने परीणाम होतात. ध्वनी प्रदूषण ही एक सार्वजनिक बाब असल्यामुळे लोकांना त्याची लवकर जाणीव होत नाही. लोक या समस्याकडे गांभीर्याने पहात नाहीत. मानवाचे लक्ष वायूप्रदूषण, जलप्रदूषण यावर केंद्रित झालेले दिसून येते. त्या

तूलनेत ध्वनी प्रदूषणाकडे मानवाचे लक्ष वेधले गेले नाही. वास्तविक पाहता ध्वनी प्रदूषण ही एक गंभीर समस्या आहे. ध्वनी प्रदूषणाचे मानवी आरोग्यावर पूढील परीणाम झालेले दिसून येतात.

1) श्रवणशक्तीचा न्हास:

मनूष्याच्या मस्तकातील 12 नसांपैकी 1 नस श्रवणाची असते. त्या नसेला स्वरतंत्रिका असे म्हणतात. श्रवण नसेवर मोठ्या गोंगाटाचा परीणाम होऊन तिची कार्यगती मंदावली जाते. कधीकधी ही नस पूर्णपणे निकामी होवून मनूष्याला बहिरेपणा येतो. "80 डेसिबेलपेक्षा अधिक तीव्रतेच्या आवाजामुळे श्रवणशक्तीला गंभीर इजा पोहचते तर 120 ते 140 डेसिबेल तीव्रतेमुळे श्रवणशक्ती कमकुवत होते. बहिरेपणा येतो. 140 डेसिबेलपेक्षा जास्त तीव्रतेच्या आवाजामुळे श्रवणशक्ती पूर्णतः नष्ट होऊन कायमचे बहिरेपण येते."²

2) झोपेच्या तक्रारी :-

सतत होणाऱ्या उच्च आवाजामुळे मनूष्याच्या झोपेत अडचणी निर्माण होतात. माणसाची झोप व्यवस्थित झाली नाही तर त्याचा मानवाच्या शारीरिक व मानसिक स्वास्थ्यावर परीणाम घडतो. निद्रानाश, अपुरी झोप यामुळे व्यक्तीत चिडचिडपणा, रागीटपणा निर्माण होतो. त्यामुळे मनूष्याची कार्यक्षमता कमी होते. "खराब झोपेच्या वेळापत्रकामुळे एखाद्या व्यक्तीच्या मानसिक आरोग्यावर वाईट परीणाम होऊ शकतो."³ झोपेमध्ये अडथळा निर्माण झाल्यास मनूष्याची एकाग्रता भंग होऊन मूड खराब होतो.

3) अनेक गंभीर आजार:-

ध्वनी प्रदूषणाच्या आजूबाजूस राहणाऱ्या लोकांना उच्च रक्तदाब, रक्तातील चिकटपणा आणि हृदय व रक्तवाहिन्यासंबंधी रोगांसारख्या आजारांचा धोका असू शकतो. "मोठा आवाज आणि ध्वनी प्रदूषणामुळे शरीरातील स्ट्रेस हार्मोन्स वाढून मज्जासंस्थेवरही वाईट परिणाम होतो. गरोदर महिलांसाठी ध्वनीप्रदूषण खूप धोकादायक ठरू शकते."⁴ डॉ. लोविस सोण्टेग यांच्यामते गर्भात असणाऱ्या अर्भकांवर सुध्दा उच्च ध्वनीचे भयंकर परिणाम होऊ शकतात. प्रचंड आवाजामुळे अशा अर्भकाचे संपूर्ण आचार-विचार व भावी जीवनात परिवर्तन होऊ शकते. गर्भाची हालचाल व वाढ योग्यरितीने होऊ शकत नाही.

4) हृदयावर होणारा परीणाम:-

ध्वनी प्रदूषणाचा उच्च तीव्रतेच्या आवाज क्षेत्रात काम करणाऱ्या व्यक्तींच्या शरीर क्रियांवर विपरीत परिणाम होतो. अशा व्यक्तीमध्ये अपचन, भूक न लागणे, निद्रानाश, थकवा येणे, कामात मन एकाग्र न होणे अशा तक्रारी आढळून येतात. तसेच ध्वनी प्रदूषणाच्या ठिकाणी काम करणाऱ्या कामगारामध्ये रक्तदाबाचे विकार निर्माण होऊन रक्ताभिसरण क्रियेवर परिणाम होतो. रक्तदाबाबरोबरच त्यांच्यात हृदय विकाराचे प्रमाणही वाढते. सततच्या गोंगाटामुळे रक्तात कोलेस्टॉलचे प्रमाण वाढते. त्यामुळे रक्त वाहिन्यांमध्ये अडथळे निर्माण होण्याची शक्यता असते. "कारखान्याचा सलग उच्चस्वराच्या आघाताने कामगार रक्तदाब व हृदयविकार, बहिरेपणाचे रूग्ण होतात."⁵

5) ध्वनी प्रदूषणाचा निर्जीव वस्तूवर होणारा परीणाम:-

ध्वनी प्रदूषणाचा मानवी जीवनावर जसा परीणाम होतो तसाच पशू पक्षी व वनस्पती यांच्यावरदेखील परीणाम होतो. एवढेच नव्हे तर ध्वनी प्रदूषणाचा सजीवांप्रमाणे निर्जीव वस्तूवर देखील परिणाम होताना दिसून येतो. "सुपर सौनिक, कॉंकर अशा विमानांच्या अति प्रचंड आवाजामुळे लेण्यांमध्ये, खडकांमध्ये तडे निर्माण होऊ शकतात. प्रचंड आवाजाच्या धमाक्यामुळे

खिडक्यांची काचेची तावदाने फुटतात. घरांचे छत हालते, भिंतीना तडे जातात.”⁶ अशाप्रकारे सजीवांप्रमाणेच निर्जीव वस्तूवर देखील ध्वनी प्रदूषणाचा परीणाम होत असल्याचे स्पष्ट होते.

ध्वनी प्रदूषणावर उपाय:-

- 1) सार्वजनिक ठिकाणी अथवा घरगुती कार्यक्रमात वापरण्यात येणाऱ्या ध्वनीवर्धकांचा वापर कमी करणे. त्यांचा आवाज मर्यादित ठेवण्याबाबत नियम करणे. बंड, झांजपथक यांचा वापर व आवाज मर्यादीत ठेवण्याच्या दृष्टीने प्रयत्न करणे.
- 2) ध्वनी अवरोधक तंत्र वापरून इमारतीचे बांधकाम करणे, ध्वनी प्रदूषण नियंत्रणासाठी कायदे करणे, ध्वनी अवरोधक यंत्रे, कर्ण आच्छादणे वापरण्यास प्रवृत्त करणे आणि ध्वनी प्रदूषण नियंत्रणासाठी जनजागृती करणे.
- 3) ध्वनी तीव्रता कमी करण्यात वनस्पती अतिशय फायदेशीर ठरतात. त्यामूळे घरे, दरवाजे, कारखाने, रस्त्यांच्या दोन्ही कडेने वृक्षांची लागवड केली पाहिजे. वृक्षामूळे ध्वनीतिव्रतेत सुमारे 10 डेसिबेल इतकी घट होते.
- 4) वाहनांनी वाहतुकीचे नियम काटेकोरपणे पाळल्यास हॉर्न वाजविणे टळेल. शहरातील शांतता विभागात भोंगे वाजविल्यावर कडक कार्यवाई करावी सर्व वाहनांना सायलेंन्सर बसवावेत. वाहनांचा वेग एकदम वाढवू नये. वेग मर्यादा पाळावी. शाळा, न्यायालय, दवाखाने या परिसरात सायलेन्स झोन असावेत.
- 5) आवाजाचे परिवर्तन कमीत कमी व्हावे यासाठी भिंतीवर ध्वनीनियंत्रण आच्छादन केले जावे. सभागृहे व प्रेक्षागृहे बांधताना प्रतिध्वनी निर्माण होणार नाही याची काळजी घेतली पाहिजे. त्यासाठी अशी सभागृहे व प्रेक्षागृहे बांधताना ध्वनी अवरोधक तंत्राचा वापर केला पाहिजे.

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संत तुकारामांच्या काव्यातील नैसर्गिक पर्यावरण

प्रा. पुंड वसंत लक्ष्मण

कला, वाणिज्य व विज्ञान महाविद्यालय माका,
ता. नेवासा, जि. अहमदनगर.

संत तुकाराम हे एक समाजमनस्क लोकशिक्षक होते. स्वानुभव आणि बाह्य जगाचे निरीक्षण, परिशीलन आणि तत्त्वचिंतन यातून त्यांची अभंगवाणी साकार झाली. सतराव्या शतकातील तुकारामांचे काव्य संवेदनशीलतेचा एक महत्त्वाचा आविष्कार आहे. संत तुकारामांच्या काव्य प्रतिभेविषयी भाष्य करताना डॉ. अशोक लिंबेकर म्हणतात, “संत तुकारामांची प्रतिभा ही एका महकवीची प्रतिभा आहे. ज्ञान आणि वैराग्याचे मूर्तिमंत प्रतिक म्हणजे तुकोबा! त्यांचे हे वैराग्य लौकिक आहे, बरी या दुष्काळे पीडा गेली असे म्हणणाऱ्या तुकोबांनी पुढे जो आधार घेतला तो भंडारा, भामा डोंगराचा, तेथील झाडा वेलींचा, नीरव शांततेच्या या प्राकृतिक लयीच्या संगतीने तुकारामांनी भक्ती आणि काव्य फुलले आणि निसर्गातील सर्व घटक त्यांना सोयरे वाटायला लागले.^१ डॉ. अशोक लिंबेकर यांनी अगदी मोजक्याच शब्दांत संत तुकारामांचे निसर्ग प्रेम आणि भक्ती उत्कटपणे व्यक्त केली आहे.

संत तुकाराम महाराजांची भूमिका लोकशिक्षकाची होती. त्यांनी माणसांच्या सुखी जीवनासाठी भक्ती, आत्मचिंतन आणि तात्त्विक मूल्यांची शिकवण दिली. त्याचबरोबर पर्यावरणाची दृष्टी दिली. निसर्गातील वृक्ष, वल्ली, प्राणी, पशु, पक्षी या सर्वच घटकांना काव्यातून उभे केले. एवढेच नव्हे तर त्यांना सगेसोयरे मानले होते. भंडारा डोंगरावरती ध्यान धारणा करताना ते निसर्गाशी तद्रूप झाले होते. त्यांच्या अभंगातून निसर्गप्रेम ओसंडून वाहते. निसर्गाचे वर्णन करताना तुकाराम महाराज म्हणतात,

“वृक्षवल्ली आम्हा सोयरे वनचरें। पक्षी ही सुस्वरें आळविती।

येणें सुखें रूचे एकांताचा वास। नाहीं कळो येत दुःख अंगा।

आकाश मंडप पृथिची आसन। रमे तेथे मन क्रीडा करी।

कथा मंडलू देह उपचारा। जाणवितो वारा अवसरू।

हरिकथा भोजन परवडी विस्तारू। ककनि प्रकार सेचूं रूची।

तुका म्हणे होय मनासी संवाद। आपुलाचि वाद आपणासी।।^२

(श्री तुकाराम गाथा, अभंग क्र. ३०७)

निसर्गाच्या सानिध्यात संत तुकाराम निसर्गाशी एकरूप होऊन जातात. वृक्षवल्ली, वनातील सर्व पशु, पक्षी, सुस्वर आळविणारे पक्षी या सर्वांना सगेसोयरे मानून वृक्ष संवर्धनाचा संदेश जणू काही त्यांनी दिला आहे. निसर्गातील एकांतवास त्यांना आवडतो. येथे मनाला केजाणताही गुणदोष लागत नाही. मन येथे क्रीडा करते. येथे मनाशी संवाद होतो. वृक्षवल्लीच्या सानिध्यात मन रमून जाते. मनाच्या चित्तवृत्ती तल्लीन होऊन हरी भजनात मन

गुंतून जाते. पशुपक्ष्यांच्या सहवासात बाह्यदोष नाहिसे होतात. म्हणूनच हा निसर्ग, त्यातील झाडे, झुडपे, पशु, पक्षी, वृक्ष, लता, वेली या सर्व रूपांना तुकाराम सोयरे मानतात. हा निसर्ग जपणे हे आपले कर्तव्य आहे अशा प्रकारचा संदेश त्यांच्या काव्यातून मिळतो.

पर्यावरणविषयी अतिशय समर्पक, सोप्या, सहज आणि प्रासादिक भाषेत जनसामान्यांना रूचेल पटेल अशा शब्दात मार्गदर्शन केले आहे. अहिंसा तत्त्वाचा ते पुरस्कार करतात.

“व्याघ्रचिये भुके वधावी ते गाय। त्याचे नाव काय पुण्य असे।।”

असा उपरोधिक समाचार घेत ते पशुहत्येचा निषेध करतात. निरपराध पशुपक्षी, प्राणी यांची शिकार करणाऱ्या व त्यांना ठार मारणाऱ्या पारध्यांचा ते धिक्कार व निषेध करतात.

निसर्ग हा मानवाचा मित्र आहे परंतु निसर्गाचा कोप झाला की, कधी ओला दुष्काळ तर कधी कोरडा दुष्काळ हा शेतकऱ्यांच्या नशिबी येतो. दुष्काळात लोकांचे अतोनात हाल होताना दुष्काळी परिस्थितीचे वर्णन करताना संत तुकाराम म्हणतात,

“दुष्काळे आटिले द्रव्ये नेला मान।

स्त्री एकी अन्न अन्न करिता मेली।

लज्जा वारे जीवना त्रासतो या दुःखे।

व्यवसाय देखे तुटी येतों।।”^३ (श्री तुकाराम गाथा, अभंग क्र. ७६७)

दुष्काळी परिस्थितीचे चित्र अभंगातून संत तुकारामांनी चित्रित केले आहे. दुष्काळ हा पर्यावरणाचाच एक भाग आहे. दुष्काळामुळे शेतकऱ्यांच्या शेतात अन्नधान्ये पिकत नाही. गुरेढोरे भुकेने मरतात. पाण्यासाठी दाही दिशा भ्रमंती करावी लागते. या दुष्काळाचे चटके स्वतः तुकारामांनी सहन केले. ह्या दुष्काळाचे सावट नको असेल तर झाडांचे संरक्षण झाले पाहिजे अशा प्रकारचा एक संदेशच जणू ते देतात.

अंगणातील तुळशी वृंदावनाचे महत्त्व सांगताना संत तुकाराम म्हणतात,

“जयाचिये द्वारी। तुळशी वृंदावन।

नाही ते स्मशान। गृहजागा।।”^४ (श्री तुकाराम गाथा, अभंग क्र.)

अंगणातील तुळशी वृंदावन हे हिंदुत्वाचे जसे लक्षण आहे तसेच घरातील गृहिणीच्या भावभक्तीचे कारणही आहे. तुळस ही पर्यावरण शुध्द राखणारी एक वनस्पती आहे. ती आरोग्यदायी असल्याने तिचे माहात्म्य परंपरने जनत करून वाढविले आहे. अहोरात्र शुध्द हवा व भरपूर प्रमाणात ऑक्सिजन देणारी तुळस हे अंगणातील वैभव समजले जाते. याविषयी लोकसाहित्याचे प्रसिध्द अभ्यासक डॉ. मधुकर वाकोडे म्हणतात, “तुळस औषधी वनस्पती म्हणून तिचे महत्त्व असल्याने धार्मिक अवगुंठण तिला दिले. वैष्णवांच्या गळा तुळशीच्या माळा आणि विठोबाच्या कृष्ण रूपातील वृंदावनातील तुळशीचा लळा लक्षात घेता तुळशीचे माहात्म्य तुकोबा अधोरेखित करतात.”^५ डॉ. मधुकर वाकोडे यांच्या मताशी मी सहमत कारण तुळस कट्ट्याचे भावण ही लोकतत्वीय जाणीव आहे. आजही प्रत्येक घराच्या दारात तुळस आहे. तिच्या औषधी गुणधर्मांमुळे ती पूजनीय

झाली आहे. वृन्देचे प्रतीक म्हणून तुळस लावली जाते. तुळशी वृंदावनाचे महत्त्व तुकोबांनी विषद केले आहे. ज्या घराच्या अंगणात तुळशी वृंदावन ते नांदते घर समजा असे तुकोबा सांगतात.

समाजातील अंधश्रद्धेवर प्रहार करताना तुकाराम महाराज म्हणतात,

“पुढे येती देवी। तिची जती चालो द्यावी।

मागील झाडावी। झाड मान आसडी।

एकवीरा आली अंगा। आता निवारील रोगा।

माझ्या भक्तापाशी सांगा। पूजाभावे करावी।

मेंढा मारावा लोवाळ। पूजा पावली सकळ।

तुम्ही केले बळ। मग मी ठायी न पडे।”^६

(श्री तुकाराम गाथा, अभंग क्र. ४१७)

खरे तर ही उपरोधिक रचनेतील तिरकस रचना आहे. अंधश्रद्धेपोटी लोक नवसायास फेडण्यासाठी मेंढी, बकऱ्यांचा बळी देवी, दैवतांना देतात. या दैवतांची मर्जी राखण्यासाठी पशुचा बळी देणाऱ्या लोकांना ते फटकारतात. प्राणी हे पर्यावरणाचे घटक आहेत. त्यांचा बळी अंधश्रद्धेपोटी देऊ नये हे सूचकत्व अभंगातून दिसून येते. बळीप्रथा नाकारून खऱ्या भक्तीमार्गाने सामान्यजनांनी चालावे हे त्यांच्या कवितेचे लोकोत्तर कार्य आहे.

वृक्षांचे महत्त्व विशद करताना संत तुकाराम म्हणतात,

“तेथे माझ्या मना होई पक्षीराज।

साधावया काज तृप्तीचेया।

तुका म्हणजे क्षणाक्षणा जातो काळ।

गोडी ते रसाळ अंतरेल।”

संत तुकारामांनी वृक्षवेलीविषयी आपली भूमिका मांडली आहे. पर्यावरणातील वृक्षराजांचे महत्त्व ओळखून लोकांनी वृक्षतोड न करता वृक्ष संवर्धन केले तर निसर्गाचा आनंद लुटता येईल. निसर्ग हा आनंदाचे भांडारच आहे. मनाच्या तृप्ततेसाठी आणि आनंदी जीवन जगण्यासाठी निसर्ग सानिध्य किती महत्त्वाचे ठरते हे संत तुकारामांनी विषद केले आहे.

संत तुकारामांनी भंडारा डोंगरावरती वृक्षवेलींच्या सानिध्यात निवांतस्थळी नामचिंतन केले. गिरीकुंजरात मनाची एकाग्रता वाढते. एकाग्रतेमुळे परमेश्वराचे रूप न्याहाळते येते. अशा ठिकाणी मन आनंदी होते. या अवस्थेचे चित्रण करताना संत तुकाराम सांगतात,

“ध्यानी योगीराज बसले कपाटी।

लागे पाठोपाठी तयांचिया।। १ ।।

तान भूक त्यांचे राखे शीत उष्ण।

झाले उदासीन देहभान॥ २ ॥

कोण सखें तयां आणिक सोयरे।

असे त्यां दुसरें हरीविण॥ ३ ॥

कोण सुख त्यांच्या जिवासी आनंद।

नाही राज्यमद घडी तयां॥ ४ ॥

तुका म्हणजे विष अमृतासमान ।

कृपा नारायण करितां होय॥ ५ ॥”^७ (तुकाराम गाथा, अभंग क्र.)

दाट अशा जंगलांच्या डोंगर कपारींमध्ये ध्यान चिंतनाला बसले असताना त्यांचा पाठीराखा प्रत्यक्ष देवच असतो. योगी देहावर उदासीन असल्यामुळे त्यांच्या तहानभूक देवालाच सांभाळावी लागते. परमेश्वर हाच तेथे सखा, सोयरा होतो. परमेश्वराची जवळिक या ठिकाणी होते. जंगलातील एकांतवासामुळे तेथील नैसर्गिकता अंगी येते. माणूस निसर्गाच्या अधिक जवळ जातो. निसर्गप्रेम आणि परमेश्वराचे अस्तित्वाची जाणीव तेथे होते. अशा प्रकारे निसर्गाचे थोरपण संत तुकारामांनी सांगितले आहे.

वन्यप्राण्यांची हत्या करणाऱ्या शिकारी जमातीचा निषेध करताना संत तुकाराम त्यांना खडे बोल सुनावताना म्हणतात,

“काय केले जलचरी।

ढीवर त्यांच्या घातावरी॥ १ ॥

हा तो ठायींचा विचार।

आहे यातिवैराकार॥ २ ॥

श्वापदातें वधी।

निरपराधें पारधी ॥ ३ ॥

तुका म्हणजे खळ।

संत पीडिती चांडाळ ॥४॥”

वन्यप्राणी ही नैसर्गिक संपत्ती आहे. पाण्यात राहणाऱ्या माशांनी कोळ्यांचे काय बिघडवले म्हणून कोळी जाळे टाकून मासे पकडतो. तसेच जंगलातील स्वतःचे जीवन मुक्तपणे जगणारी निरपराध वन्यप्राणी यांचा काही अपराध नसताना ते पारध्यांच्या शिकारीचे बळी ठरतात. एक प्रकारे हे वन्यप्राणी ठार मारून निसर्गाची हानी हे लोक करतात. हे कुठेतरी थांबले पाहिजे नाहीतर निसर्गाचे रूप नष्ट होईल. वन्य पशु-पक्षी जीवनाविषयी तळमळ तुकोबांच्या या अभंगातून व्यक्त होते.

वन्यप्राण्याबरोबरच पर्यावरणाच्या दृष्टिकोनातून जंगलात आढळणाऱ्या औषधी वनस्पतींची संवर्धन झाले पाहिजे. जंगल जीवन संपुष्टात आले तर पर्यावरणाचा तोल ढासळेल हा संकेत देताना संत तुकाराम महाराज म्हणतात,

“तोडूनि पुष्पवाटिका फळवृक्षयाती।

बाभळा राखिती करूनि सार॥ १ ॥

कोण हित तेणें देखिलें आपुलें।

आणीक पाहिलें सुख काई ॥ २ ॥

तुका म्हणे त्यास नाईक सांगतां।

तया हाल करिता पाप नाही ॥ ३ ॥” (तु. गाथा १०७)

जंगलातील वृक्ष, लतावेली, फुले, फळे नष्ट करून तुम्ही काय हित साधणार असा प्रश्न समाजातील लोकांना विचारला आहे. वृक्ष हे परमेश्वरांचे दूत आहे असे रूपकात्मक चित्रण त्यांनी अभंगातून केले आहे. आपण जर जंगलजीवन नष्ट केले तर आपले नैसर्गिक जीवनाचे मोठे हाल होतील हा संदेश तुकोबांनी दिला आहे. वृक्षांकडे देवत्वाच्या भावनेने पाहण्याची आणि वृक्षाकडून आदर्श शिकण्याची एक प्रेरणाच त्यांनी दिली आहे. संत तुकारामांचे पर्यावरण संवर्धनाची ही दृष्टी नवी दिशा देऊन जाते.

* संदर्भ व टीपा :

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आत्मनिर्भर भारत आणि शैक्षणिक धोरण 2020

सहा. प्रा. म्हस्के एस. बी.

सौ. निर्मलाताई थोपटे शिक्षणशास्त्र महाविद्यालय
सावित्रीबाई फुले पुणे विद्यापीठ

घोषवारा

आत्मनिर्भर भारत ही संकल्पना नवीन नाही. ब्रिटिश राजवटीत भारतीय स्वातंत्र्यसैनिकांनी ब्रिटिश राजवटीत भारतीय स्वातंत्र्यसैनिकांनी ब्रिटिश धोरणाविरुद्ध लढण्यासाठी ही संकल्पना वापरली. त्यांनी आत्मनिर्भर भारत ऐवजी स्वदेशी ही संज्ञा वापरली. दोन्ही संकल्पना जवळपास सारख्याच आहेत आणि भारताला भविष्यासाठी स्वावलंबी होण्यासाठी तयार करणे हा त्या मागचा मुख्य उद्देश आहे. म्हणून भारत सरकार आर्थिक, सामाजिक, पर्यावरणीय, राजकीय, सांस्कृतिक आणि शैक्षणिक अशा सर्व परिणामांमध्ये स्वावलंबी होण्यासाठी अनेक धोरणे आणि कार्यक्रम सुरु करत आहे. शैक्षणिक क्षेत्र हे अतिशय मुलभूत आणि महत्वाचे क्षेत्र आहे. कारण देशाच्या विकासात शिक्षणाची भूमिका खूप महत्वाची आहे म्हणून शिक्षणाद्वारे आत्मनिर्भर मिशन साध्य करण्यासाठी भारताने अनेक सुधारात्मक बदल केले आहेत आणि नवीन शैक्षणिक धोरण 2020 सादर केले आहे. राष्ट्रीय शैक्षणिक धोरण 2020 ;छम्च्छ ची जुन्या शैक्षणिक धोरणांच्या तुलनेत भिन्न मते आहेत आणि विस्तारित शिक्षण वाढवण्याचे उद्दिष्ट आहे. हे विद्यार्थ्यांना त्यांच्या वास्तविक जगातील अनुभव, उच्च शिक्षणातील उत्कृष्टता व्यावसायिक कौशल्यांच्या विकासाद्वारे परिमाणात्मक विचार आणि संशोधन आणि नवोपकमाला चालना देऊन अनुभवात्मक शिक्षण घेण्यास प्रोत्साहित करते.आत्मनिर्भर भारत मिशन साध्य करण्यासाठी हाती घेतलेल्या शिक्षण व्यवस्थेतील प्रमुख सुधारणांवर हा पेपर प्रकाश टाकतो.

कळशब्द:- आत्मनिर्भर भारत, भारतीय शिक्षण प्रणाली, स्थानिकांसाठी आवाज, राष्ट्रीय शैक्षणिक धोरण 2020 ;छम्च्छ

प्रास्ताविक :-

कला आणि विज्ञान विद्याशाखेमध्ये अभ्यासक्रम व अभ्यासक्रमेतर शैक्षणिक आणि व्यावसायिक प्रवाहात कोणतेही कठोर पृथक्करण केलेले नाही. त्यामुळे विद्यार्थ्यांना त्यांच्या आवडी, निवडी आणि कौशल्यांशी जुळणारे शिक्षण अभ्यासक्रम आणि कार्यक्रम निवडण्याचे स्वातंत्र्य मिळाले. हा एक आत्मनिर्भरतेचा प्रकार आहे. जिथे सर्व विद्यार्थी यांच्या पूर्ण क्षमतेचा उपयोग करतील तसेच समानता आणि समावेशावर लक्ष केंद्रीत करून समाजासाठी सकारात्मक योगदान देतील. 'वोकल फॉर लोकल' हे घोषवाक्य आणि अंतर्निहित संदेश जागतिक ब्रॅंड म्हणून भारतीय उत्पादनांचा प्रचार आणि प्रस्थापित मदत करण्याच्या इच्छेचे प्रतिध्वनीत होते. छम्च्छ 2020 चे उद्दिष्ट स्वयंपूर्ण राष्ट्राच्या यशस्वीतेच्या आवाहनासाठी आवश्यक असलेला महत्वाचा आत्मविश्वास जागृत करणे आणि भारतीय नैतिकतेमध्ये रुजलेल्या शिक्षण व्यवस्थेची कल्पना करते जी भारत किंवा भारत शाश्वतपणे न्याय देते आणि समाजबदलासाठी थेट योगदान देते. भारताला जागतिक महासत्ता बनविण्यासाठी शिक्षण ही महत्वाची भूमिका आहे. (ज्ञा. एट. 2020)

सत्य, धर्म, शांती, प्रेम, अहिंसा, वैज्ञानिक स्वभाव, नागरिकत्व मूल्ये आणि जीवन कौशल्ये यासारख्या मानवतावादी, नैतिक घटनात्मक आणि वैश्विक मूल्यांचा विकास होईल. सर्व मूल्ये आधारित शिक्षणामध्ये समाविष्ट केले जावे. सेवेचे धडे आणि सामुदायिक सेवा कार्यक्रमातील सहभाग हे सर्वांगीण शिक्षणाचे महत्वाचे घटक म्हणून पाहिले जातील. शिक्षणातील गुणवत्ता, समानता, प्रवेश, वाढविण्यासाठी केंद्रीय मंत्रिमंडळाने जुलै 2020 मध्ये राष्ट्रीय शैक्षणिक धोरणास मान्यता दिली. या धोरणाचा उद्देश भारतीय शैक्षणिकदृष्ट्या आंतरराष्ट्रीय स्तरावरील सर्वोत्तम पध्दती आहे. व्यावहारिक ज्ञान आणि भागधारकांचा सहभाग घेऊन धोरण विकसित करण्यासाठी व्यापक प्रयत्न केले. ध्येय उच्च आहे, परंतु ते कसे पार पाडले जाते हे दर्शवेल की ते खरोखरच सर्वसमावेशक शिक्षणास प्रोत्साहित करते की नाही ज्याने विद्यार्थ्यांना व्यवसायासाठी तयार केले.

भारतीय शिक्षण व्यवस्थेची एक झलक :-

भारतीय शिक्षणाच्या आदरणीय गुरुकुल प्रणालीतील विद्यार्थी गुरुच्या ठिकाणी राहायचे कौशल्ये आणि पध्दती शिकायचे आणि आत्मसात करायचे, जे नंतर वास्तविक जीवनातील समस्यांचे निराकरण करण्यासाठी आणि अर्थपूर्ण जगण्यासाठी लागू केले गेले. (वेद, 2007, कुमार, 2016, आणि राष्ट्रीय शिक्षण धोरण, डम्ब 2020). ज्ञान संपादन ही एक गतिमान प्रक्रिया होती ज्यामध्ये पुस्तके आणि तथ्ये लक्षात ठेवण्यापुरते मर्यादित न राहता वास्तविक जगातील घटना आणि नैसर्गिक जगाशी परस्परसंवाद समाविष्ट होता. धर्म, साहित्य, धर्मग्रंथ, वैदिकशास्त्र, ज्योतिष, युद्धशास्त्र, राज्यशास्त्र, इतिहास, सार्वजनिक घडामोडी इत्यादींच्या पलीकडे जाणारे ज्ञान गुरुंनी दिले. शिक्षणाचा दर्जा अतुलनीय होता आणि जगभरातून विद्यार्थी ज्ञान मिळविण्यासाठी भारतात येत असत. नालंदा, लक्षाशला आणि विकर्माशला यासारख्या भारतीय इतिहासाने जगासोबत समृद्ध वारसा सामायिक केला आहे, यापैकी प्रत्येक आपल्या काळात जागतिक दर्जाची विद्यापीठे म्हणून उभी राहिली. कालांतराने विशेषतः ब्रिटीशांच्या आगमनाने आणि वसाहतवादाची घुसळण यामुळे, ही प्राचीन भारतीय शिक्षण व्यवस्था पध्दतशीर आणि धोरणात्मकपणे मोडून काढली गेली. भारतामध्ये इंग्रजी शिक्षणाचा परिचय करून देणे आणि सरकार आणि जनता यांच्यात दुभाषी म्हणून काम करण्यासाठी एक वर्ग तयार करणे या उद्देशाने एक अधीनस्थ आणि निष्ठावान स्थानिक वर्ग तयार करणे हा होता जो भारतामध्ये ब्रिटीशांच्या हितासाठी पुढे जाईल.

1835 मध्ये लॉर्ड मॅकॉले यांनी प्रथमच भारतीयांसाठी इंग्रजी शिक्षण सुरु केले, या दृष्टिकोनाने भारतीय शिक्षण व्यवस्थेत हस्तक्षेप केला. स्वातंत्र्य मिळाल्यापासून, भारतामध्ये तीन भिन्न शैक्षणिक धोरणे आहेत. राष्ट्रीय शिक्षण धोरण :छम्ब 1968, राष्ट्रीय शैक्षणिक धोरण 1986 आणि नवीन राष्ट्रीय शैक्षणिक धोरण 2020. यातीनही शैक्षणिक धोरणांची गरजांनुसार वेगवेगळी उद्दिष्टे आणि दृष्टिकोन आहेत. तत्कालीन भारत आणि त्याची लोकसंख्या यावर भारतीय शैक्षणिक धोरणाचे यश अवलंबून आहे.

पहिले राष्ट्रीय शैक्षणिक धोरण 1968 मध्ये रोजगारक्षमतेसाठी शिक्षणाच्या प्रमुख उद्दिष्टांसह सादर करण्यात आले. राष्ट्रीय वाढ आणि एकात्मता, शिक्षणाचे सार्वत्रिकीकरण आणि इतर उद्दिष्टांसह नैतिक मूल्यांवर भर देणे. 1986 मध्ये दुसरे राष्ट्रीय शैक्षणिक धोरण आले आणि मुख्य उद्दिष्ट म्हणजे शिक्षणाच्या संधीमधील असमानता कमी करणे, शिक्षणात सतत शिकणे आणि विशेषीकरण करणत आणि भ्रम मध्ये प्रशासन आणि नियमन यंत्रणेचे मानकीकरण करणे हे इतर उद्दिष्टांमध्ये आहे आणि तिसरे धोरण म्हणजे नवीन शैक्षणिक धोरण 2020 चे उद्दिष्ट औद्योगिक क्रांतीच्या बदलत्या स्पेक्ट्रा आणि परिप्रेक्ष्याला सक्षम असलेल्या सर्वांगीण आणि परिपूर्ण व्यक्ती बनवायचे आहे. (राष्ट्रीय शिक्षण धोरण 1968, 1986, नवीन शैक्षणिक धोरण 2020)

नवीन शैक्षणिक धोरण 2020 चे ठळक मुद्दे:-

छम्ब ची दृष्टी ही अंमलबजावणी आणि त्याच्या रोड मॅपवर अवलंबून आहे. जे सार्वत्रिक शिक्षण, रोजगार निर्मिती, कौशल्य संपादन, समानता, जागतिक दर्जाची विद्यापीठे आणि त्यानंतर स्वावलंबी भारत निर्माण करण्यात मदत करण्यास किती सक्षम आहे हे निर्धारित करेल. छम्ब 2020 विद्यार्थ्यांना त्यांचे कौशल्य सुधारण्यास आणि भारताला विकसित डिजिटल आणि स्वावलंबी देश बनवण्यासाठी परिपूर्ण व्यावसायिक व्यक्तिमत्व तयार करण्यात मदत करते (सिंग आणि मलिक, 2021). छम्ब 2020 मधील एक महत्वाचा बदल म्हणजे उच्च शिक्षणासाठी एक छत्र संस्था म्हणून भारतीय उच्च शिक्षण आयोग ;म्बद्ध स्थापन करण्याची सूचना, वैदिकीय आणि कायदेशीर शिक्षण वगळता ;म्बद्ध उच्च शिक्षण क्षेत्रात सुधारणा करण्याचे उद्दिष्ट ठेवत आहे.

छम्ब 2020 परदेशी विद्यापीठे आणि महाविद्यालयांना भारतात येण्याची परवानगी देते आणि यामुळे देशांतर्गत संस्थांना त्यांच्याद्वारे प्रदान केलेल्या शिक्षणाचा दर्जा सुधारण्यासाठी एक बदल सुचवितो की राष्ट्रीय चाचणी एजन्सी उच्च शिक्षणसंस्थामध्ये (कुरियन, आणि चंद्रमण 2020) अंडरग्रेजुएट आणि ग्रॅज्युएट प्रवेश आणि फेलोशिप्ससाठी प्रवेश परीक्षा आयोजित करण्यासाठी एक प्रमुख, तज्ञ, एकल चाचणी मंडळ म्हणून काम करेल. याव्यतिरिक्त, परदेशी विद्यापीठांना परवानगी देणारे धोरण स्थानिक पातळीवर प्रवास न करता लक्षणीयरीत्या कमी किंमतीत उपलब्ध जागतिक दर्जाचे शिक्षण सक्षम करेल आणि अभ्यासासाठी आणि नोकरीच्या संधीसाठी इतर देशांमध्ये स्थलांतरित होणाऱ्या मानवी भांडवलाला मोठ्या प्रमाणात पदवी मिळेल. भारतीय उच्च शिक्षण प्रणाली परदेशी विद्यापीठांना देशात कॅम्पस स्थापन करण्याच्या सर्व संधी उपलब्ध करून देत आहे.

ब्रीदवाक्यासह छम्ह सिध्दांतासह कौशल्यावर भर देते जे एक पुढे पाहणारे आणि भविष्यकालीन पाऊल आहे. नवीन आव्हाने स्वीकारण्यासाठी विद्यार्थ्यांना तयार करण्यासाठी शैक्षणिक रचनेत मूलगामी फेरबदल करण्याचे धोरण सुचवते. सध्याचा 1023 शैक्षणिक पॅटर्न अनुक्रमे पायाभूत, पूर्वतयारी, मध्यम आणि दुय्यम टप्पा म्हणून लेबल केल्या अधिक विशेष आणि बहु अनुशासनात्मक 5334 संरचनेद्वारे बदलेला जाईल आणि ऑनलाइन शिक्षणाचा विस्तार हा राष्ट्रीय शैक्षणिक धोरण 2020 (शर्मा, 2021) मध्ये योग्यरित्या संबोधित केलेला आणखी एक महत्वाचा पैलू आहे. एक राष्ट्र एक शिक्षण ही संकल्पना शैक्षणिक व्यवस्थेतून सामाजिक आणि आर्थिक असमानता दूर करणारी एजंट असू शकते. अनुसूचित जमाती आणि अनुसूचित जाती आमदार आणि संसद सदस्यांच्या मंचाचे राष्ट्रीय कार्याध्यक्ष, श्री इंदर इकबाल सिंग अटवाल यांनी सप्टेंबर 2019 मध्ये डेक्कन हेराल्डाला दिलेल्या मुलाखतीत म्हटले आहे की, "जर आपल्याला खरोखरच लढाई करायची आणि भेदभाव मुळापासून नष्ट करण्याची गरज असेल तर शाळांपासून सुरुवात झाली पाहिजे. आमच्याकडे असे बरेच मंच आहेत, आम्हाला प्रथम स्थानावर इतके मंच का मिळाले पाहिजेत. या देशात एक बोर्ड असू द्या, जे अगदी सुरुवातीच्या टप्प्यापासून शिक्षणावर लक्ष ठेवेल" ; न्हैव्य 2013 द्द.

निष्कर्ष :-

देशाच्या विकासात शिक्षणाची अंत्यत महत्वाची भूमिका आहे. म्हणून शिक्षणाद्वारे आत्मनिर्भर मिशन साध्या करण्यासाठी भारताने अनेक सुधाराणात्मक बदल केले आहेत आणि नवीन शैक्षणिक धोरण 2020 सादर केले आहे. राष्ट्रीय शैक्षणिक धोरण 2020 ; छम्ह चि जुन्या शैक्षणिक धोरणांच्या तुलनेत भिन्न मते आहेत आणि विस्तारित पलीकडे शिक्षण वाढवण्याचे उद्दिष्ट आहे हे विद्यार्थ्यांना त्यांच्या वास्तविक जगातील अनुभव उच्च शिक्षणातील उत्कृष्टता व्यावसायिक कौशल्यांचा विकासाद्वारे परिमाणात्मक विचार आणि संशोधन आणि नवोपकमाला चालना देवून अनुभवात्मक शिक्षण घेण्यास प्रोत्साहित करते.

त्ममितमदबमरू

1^० छम्ह राष्ट्रीय शैक्षणिक धोरण मराठी प्रत

- [1] पदही 1^०ए – डंसपा छण 2022ए । टपेपवद जव मर्सा दृ त्मसपंदज प्दकपं वित ल्वनजीण 75 लंते वा प्दकमचमदकमदबम ।बीपमअमउमदजेए बीससमदहमे ।दक व्वचवतजनदपजपमे छपीं पदही [।जजचेरुध्णुतमेमंतबीहंजमण्दमजध्वनइसपबंजपवद३62173398^०](#)
- [2] 1^०तं ठण 2021ए त्मपउंहपदपदह म्कनबंजपवद पद च्वेज ब्वअपक ज्पउमेण प्द डमंदपदहनिस म्कनबंजपवद म्कपजपवदए जूमदजल थ्पतेज ब्मदजनतल च्नइसपबंजपवदे चंजपंसंए प्दछरू 978.93.90953.42.4^०
- [3] ज्ञनतपमद 1^० दक बींदकतंतं दं एठण 2020ए प्जचंबज वा छमू म्कनबंजपवद च्वसपबल 2020ए व्द भ्पहीमत म्कनबंजपवदए ।जउं छपतईत तींतंजरू । त्वंकउंच जव मर्सा. त्मसपंदज प्दकपं क्वरू [।जजचेरुध्णुतमेमंतबीहंजमण्दमजध्वनइसपबंजपवद३46654722^०](#)
- [4] श्रीं 1^० डण 1^० ज्ञण दक श्रीं १ ज्ञण 2020ए छंजपवदंस म्कनबंजपवद च्वसपबलए । जमच व्तके ज्मबीदवसवहल क्तपअमद म्कनबंजपवद दक मर्सा त्मसपंदज प्दकपं वसपमक जंजम ज्मबीदवसवहलए [।जजचेरुध्णुतमेमंतबीहंजमण्दमजध्वनइसपबंजपवद३52909776^०](#)
- [5] न्हैव्य 2020ए नदमेकवबण्णदमेबवण्वतह्द पउंहमे 0024 002481 248107 म्पचकणि ।बबमेमकण
- [6] टमक च्ण 2007ए ज्तमदके पद लतवूजी दक थ्पदंदबपदह वा भ्पहीमत म्कनबंजपवद पद प्दकपं म्बवदवउपब दक च्वसपजपबंस ममासल 42ए 31^० 3249.3258^०
- [7] ल्वहममी छण च्सेतववउ स्मंकमतीपचरू ।द ।चचतवंबी जव म्कनबंजपवदंस च्चेलबीवसवहलण्ण प्दजमतदंजपवदंस श्रवणतदंस वा मंतसल बीपसकीववक चमबपंस म्कनबंजपवदए अवसण 14ए दवण 3ए 2022ए चचण 3688.3691^० क्वरू 10^०9756६६७७.श्रमैध्दट14३७459
- [8] ल्वहममी छण च्चेलबीवसवहपबंस ।जजपजनकम वा स्मंतदमते पद जीम ब्वउउनदपजलण्ण ज्जतापी व्दसपदम श्रवणतदंस वा फंसपजंजपअम प्दुनपतल ; ज्जश्रफ्दण्ण अवसण 11ए दवण 4ए 2020ए चचण 1923.1930^० ।जजचेरुध्णुजवरुपण्णमजध्पदकमगण्णीचध्रवणतदंसधंतजपबसमध्अपमूध्णु9749६6907^०

अभ्यासू विद्यार्थ्यांसाठी आगळीवेगळी कहाणी : 'बुलेट फॉर बुलेट'

वैष्णव नामदेव शिंदे

संशोधक विद्यार्थी

देविनिमगाव ता. आष्टी जि. बीड

१९५३ च्या बॅचचे आयपीएस अधिकारी जे.एफ. रिबेरो यांचे 'बुलेट फॉर बुलेट' हे आत्मकथन असून त्याचा मराठीमध्ये अनुवाद मंजिरी दामले यांनी केलेला आहे. ख्रिश्चन कुटुंबात जन्मलेल्या रिबेरो या भारतीय पोलीस अधिका-याने कोल्हापूर, नाशिक, मुंबई, गुजरात, पंजाब अशा अनेक ठिकाणी उत्कृष्ट कामगिरी केली. ते १९८२-१९८६ या कालावधीत 'मुंबई पोलीस आयुक्त' होते. तसेच केंद्रीय राखीव पोलीस दलाचे 'प्रधान संचालक' म्हणून गुजरातमध्येही कार्यरत होते. पंजाबच्या भीषण दहशतवादाच्या काळात त्यांनी 'पंजाब पोलीस महासंचालक' हे पद यशस्वीरित्या सांभाळलेले आहे. पोलीस खात्यातील त्यांच्या कामगिरीची दखल घेऊन भातर सरकारने त्यांना 'पद्मभूषण' या पुरस्काराने सन्मानित केलेले आहे. 'बुलेट फॉर बुलेट' या आत्मकथनामध्ये जे. एफ. रिबेरो या आयपीएस अधिका-याची आगळीवेगळी कहाणी तर आहेच परंतु यापेक्षा त्यांच्या संघर्षमय जीवनाची धगधगती यशोगाथा आहे. आयपीएस अधिकारी जे. एफ. रिबेरो यांचा जन्म गोव्यामध्ये ख्रिश्चन कुटुंबात झाला. त्यांच्या पूर्वजांचा शिक्षण क्षेत्राशी जवळचा संबंध होता. त्यांच्या समाजात पदव्युत्तर शिक्षण घेण्याचा मान पहिल्यांदा त्यांच्या आजोबांनी मिळवला होता. बडोद्याच्या एम. एस. विद्यापीठात इंग्लिश हा विषय ते शिकवत होते. ते लहानपणापासूनच शाकाहारी होते. त्यांना गुजराती पध्दतीचे जेवण आवडत असे. गोव्याचे कॅथलिन कट्टर मांसाहारी होते. मांसाहारी व्यक्तींच्या कुटुंबात एका शाकाहारी माणसाला सांभाळणे जे. एफ. रिबेरो यांच्या आईसाठी सोपी गोष्ट नव्हती. त्यांचे वडीलही टपालसेवेत नोकरीला होते.

जे.एफ.रिबेरो यांचा किशोरवयातच पोलीसांशी पहिला संबंध कसा आला. हे सांगताना ते म्हणतात की, मी किशोरवयात असताना पोलीसांशी माझा पहिला संबंध आला, मी आणि माझे मित्र रोज आमच्या व शेजारच्या इमारतीमधील मोकळ्या जागेत हॉकी आणि क्रिकेट खेळत असू. एकदा आमच्या एका शेजा-याने त्याच्या खिडकीच्या काचेवर चेंडू मारल्याबद्दल आम्हाला भायखळ्याच्या पोलीस स्टेशनला नेले. एका पोलीसाने आम्हाला सर्वांना पोलीस स्टेशनच्या आवारात अगदी रांगेत उभे केले. थोड्याच वेळात त्या कार्यालयामधून एक पोलीस निरीक्षक आला. तो गोरवर्णी होता. ब्रिटिश होता की अँग्लो इंडियन ते मला आठवण नाही. तो उंच, शिडशिडीत, पण मजबूत शरीरयष्टीचा होता एवढेच मला आठवले. आमचा कप्तान कोण आहे असे त्याने विचारले. एकंदर परिस्थिती बघता ती जबाबदारी स्वीकारायला कोणीही तयार नव्हते. कोणी तरी माझे नाव घेतले आणि या नावाच्या मुलाने समोर यावे असे त्या पोलीस निरीक्षकाने सांगितले. मी खूप घाबरून गेलो होतो. चेंडू सरळ बॅटने कसा मारावा ते मी शिकावे व माझ्या संघातील इतर खेळाडूंना शिकवावे असा सल्ला त्याने मला दिला मी सुटकेचा निःश्वास टाकला. एवढ्याशा कानउघडणीवरच आमची सुटका झाली. त्यांच्या जन्म व बालपणाविषयी थोडक्यातच माहिती या आत्मकथनात आलेली आहे.

जे.एफ.रिबेरो यांचे वडील सुरजचे टपाल अधिक्षक होते. त्यामुळे त्यांचे प्राथमिक, माध्यमिक शिक्षण सुरत मध्येच झाले. त्यानंतर पदवीचे शिक्षणही त्यांनी गुजरातमध्येच घेतले. ४ ऑक्टोबर १९५३ रोजी त्यांची माऊंट अंबूला आय. ए. एस. या पोलीस प्रशिक्षणासाठी निवड झाली. जे.एफ.रिबेरो आपल्या कुटुंबाविषयी आत्मकथनात

सांगताना म्हणतात की, भारताच्या नकाशात एक छोटासा ठिपका असणा-या गोव्यात माझ्या कुटुंबाची पाळेमुळे रुजली आहेत. सुमारे पाचशे वर्षांपूर्वी तिथे पोर्तुगीजांनी आपले साम्राज्य स्थापन केले. मी रोमन कॅथलिक असण्याचे ते एक कारण आहे. माझे पूर्वज हिंदू होते. सोळाव्या शतकात पोर्तुगीजांनी त्यांचे धर्मांतर केले, त्या सर्वांना एका सामाईक गॉड फादरचे आडनाव दिले गेले. हा गॉड फादर म्हणजे एखादा धर्मगुरु किंवा लष्करी अधिकारी असायचा. अशी त्यांच्या कुटुंबाचा इतिहास त्यांनी सांगितलेला आहे. जे. एफ. रिबेरो यांच्या पूर्वजांचा शिक्षण क्षेत्राशी जवळचा संबंध होता. त्यांच्या समाजात पदव्युत्तर शिक्षण घेण्याचा मान प्रथमतः त्यांच्या आजोबांनी मिळवला होता. त्यांचे आजोबा बडोद्याच्या एम. एस. विद्यापीठात इंग्लिशचे प्राध्यापक होते. त्यांच्या आजोबा व वडील यांचे शिक्षण मुंबईच्या विल्सन महाविद्यालयात झाले. अशा शिक्षित कुटुंबात जे.एफ. रिबेरो यांचा जन्म झाला.

जे.एफ.रिबेरो यांनी अतिशय खडतर मेहनतीने केंद्रीय लोकसेवा आयोगाची परीक्षा उत्तीर्ण केली. त्याआधी त्याआधी त्यांचा पोलीस खात्याशी अगदी मर्यादित संबंध आला होता. ५ ऑक्टोबर १९५३ रोजी त्यांनी माऊंट अंबूला जावे. असा संदेश घेऊन केंद्रीय लोकसेवा आयोगाचे पत्र आले तेव्हा त्यांना आनंद झाला. ते लग्नेच ४ ऑक्टोबर १९५३ रोजी माऊंट अंबूला पोलीस प्रशिक्षणासाठी पोहाचले. तेथे त्यांनी शारीरिक मेहनत, कवायत आणि अश्वारोहण शिकून घेतले.

ज्येष्ठ आय.पी.एस. अधिकारी जे. एफ. रिबेरो यांनी आपल्या ३६ वर्षांच्या कारकिर्दीत पोलीस प्रशासनात भारतात अनेक ठिकाणी नोकरी केली. ज्येष्ठ आय.पी.एस. अधिकारी जे. एफ. रिबेरो यांची ५ ऑक्टोबर १९५३ रोजी पोलीस अधिकारी म्हणून निवड झाली. त्यानंतर त्यांनी माऊंट अंबूला सहा महिन्यांचे प्रशिक्षण घेतले. त्यांच्या सहा महिन्यांच्या प्रशिक्षणानंतर त्यांना कोल्हापूर जिल्ह्यातील गडहिंग्लज येथे पोलीस उपविभागाची जबाबदारी देण्यात आली. ११ जुलै १९५५ रोजी ते कोल्हापूरचे उपविभागीय पोलीस अधिकारी म्हणून कामावर रुजू झाले. नोव्हेंबर १९५५ ते नोव्हेंबर १९५७ या काळात ते नाशिक जिल्ह्याचे पोलीस अधिक्षक होते. त्यानंतर पूर्व खानदेशातही पाच महिने त्यांनी पोलीस अधिक्षक म्हणून काम पाहिले.

जून १९५८ मध्ये ते मराठवाड्यातील परभणी जिल्ह्याचे पोलीस अधिक्षक झाले. तेथे त्यांनी अतिशय अभिमान वाटावा अशी नोकरी केली. त्यानंतर दोन वर्षांनी त्यांनी नांदेड जिल्ह्याचे पोलीस अधिक्षक म्हणून सुत्रे हाती घेतली. नांदेडनंतर ते दोन वर्षे सोलापूरचे पोलीस अधिक्षक झाले. नोकरीच्या नेमणूकीविषयी सांगताना ते म्हणतात की, परभणीनंतर मी अडीच वर्षे नांदेडमध्ये, दोन वर्षे सोलापूरमध्ये घालवली आणि नंतर माझ्या कारकीर्दीत प्रथमच पोलीस अधिक्षक म्हणून शहरी भागात काम करण्यासाठी मी पुण्यात दाखल झालो. सुमारे पंधरा वर्षे जिल्ह्यांच्या ठिकाणी काम केल्यानंतरच माझ्या घरी म्हणजे मुंबईला १९६८ मध्ये माझी नेमणूक झाली. या त्यांच्या पोलीस अधिक्षकाच्या १५ वर्षांच्या कारकीर्दीत त्यांनी कोणतीही चुकीची वा अयोग्य गोष्ट केली नाही. जे.एफ.रिबेरो यांची नोव्हेंबर १९६८ मध्ये मुंबई शहर पोलीस उपायुक्त म्हणून निवड झाली. तेथे त्यांनी एक प्रामाणिक व सचोटीचा अधिकारी म्हणून उल्लेखनीय कार्य केले. वयाच्या पंचेचाळीशीनंतर म्हणजे १ मार्च १९७३ मध्ये ते केंद्रीय राखीव पोलीस दल हैदराबाद येथे पोलीस उपमहानिरीक्षक म्हणून रुजू झाले. तेथेही त्यांनी समाधानकारक काम केले. केंद्रीय राखीव पोलीस दलामधील त्यांच्या सहा वर्षांच्या कालावधीत तत्पर अधिकारी म्हणून त्यांची ओळख गृह खात्यात झाली. १९७९ मध्ये त्यांची पुन्हा महाराष्ट्रात पुणे सशस्त्र दलाचे पोलीस उपमहानिरीक्षक म्हणून निवड झाली. १९८१ मध्ये ठाण्याचे पोलीस आयुक्त म्हणून त्यांनी काम पाहिले. त्यानंतर त्यांच्या कामावर खुश होऊन महाराष्ट्र सरकारने त्यांना २५ फेब्रुवारी १९८२ रोजी मुंबईच्या पोलीस आयुक्तपदी निवड झाल्याबद्दल सांगताना जे.एफ.रिबेरो म्हणतात की, ज्या शहरामध्ये मी जन्मलो, लहानाचा मोठा झालो आणि जिथे क्रिकेटच्या चेंडूने शेजाऱ्याच्या खिडकीची काच

फोडल्याबद्दल लहानपणी मला भायखळ्याच्या पोलीस स्टेशनवर नेण्यात आले होते. तिथे पोलीस आयुक्त म्हणून नियुक्ती झाली, तो क्षण माझ्यासाठी स्वप्नासारखा होता. एक अतीव समाधान देणारी ही वेळ होती. येथे त्यांनी बेकायदा दारुव्यवसाय, जुगार, वेश्या व्यवसाय, गुंडागर्दी आणि इतर बेकायदा धंद्यांना पायबंद घातला. त्यानंतर ९ जुलै १९८५ मध्ये ते गुजरातचे पोलीस महासंचालक झाले. येथे घडलेल्या जातीय दंगलीस त्यांनी काबुत आणले. १ नोव्हेंबर १९८५ मध्ये त्यांच्या कामगिरीवर खुश होऊन गृह खात्यामध्ये विशेष सचिव म्हणून त्यांची निवड झाली. ही निवड त्यांच्यासाठी खास बाब होती. ही निवडीला राजेशी असे कामे केली. त्यामध्ये आय.पी.एस. अधिकाऱ्यांना पुरवण्याची शस्त्रे व साधनसामग्री, पदके, प्रतिनियुक्ती, मंडळाची नेमणूक, परदेशी व अंतर्गत प्रशिक्षण कार्यक्रम, सर्वसाधारण पोलीस प्रशिक्षण, निमलष्करी दले व त्यांना तैनात करणे आदी सर्व सेवाशर्तीची देखरेख करण्याची जबाबदारी त्यांनी पार पाडली. त्याचबरोबर प्रशासन आणि केंद्र-राज्य संबंधविषयक बाबी हाताळणाऱ्या संयुक्त सचिवांच्या काही कामांवरही त्यांनी देखरेख ठेवली. २८ मार्च १९८६ रोजी पंजाबमधील दहशतवाद मोडून काढण्यासाठी भारत सरकारने पंजाबचे पोलीस संचालक म्हणून निवड केली. येथे त्यांनी पंजाबमधील दहशतवाद मोडून काढून तसेच ऑपरेशन ब्लू स्टार यशस्वी केले. पंजाब पोलीसांची मान व नितीधैर्य उंचावले. याविषयी 'शिकागो ट्रिब्यून' चा अमेरिकी पत्रकार जोसेफ रिव्हज म्हणतात की, पंजाबमध्ये थैमान घालणाऱ्या हिंदू-शीख हिंसाचाराला पायबंद घालण्याचे काम ज्याच्याकडे आहे तो एक कडक ख्रिश्चन आहे. तो रस्त्यावरून जाताना जवळ बंदूक बाळगत नाही. त्यांने स्थानिक भाषाही आत्मसात केलेली नाही. भारतीय वृत्तपत्रे त्याला 'सुपरकॉप' म्हणतात. त्याच्या हाताखालच्या माणसांना तो 'हिरो' वाटतो. त्याचे शत्रूही ना खुशीने का होईना त्याचा आदर करतात.

श्रीमती इंदिरा गांधीच्या हत्येनंतर जी जाळपोळ झाली त्यावेळी कणखर नेतृत्वाचे अधिकारी म्हणून दिल्लीच्या पोलीस आयुक्तपदी रिबेरो यांची निवड झाली. 'अतिरेक्याचे कर्दनकाळ' म्हणून ख्याती मिळवली. इ.स. १९८९ मध्ये भारताचे राजदूत म्हणून रूमानिया देशात निवड झाली. रूमानियातील भारतीय अटलबिहारी वाजपेयी यांनी दुरध्वरीवरून जम्मू-काश्मीरचे राज्यपाल पद स्वीकारावे अशी विनंती केली. परंतू मुंबईमध्ये त्यांनी सुरु केलेल्या समाजसेवेच्या कामामुळे त्यांनी ते पद नाकारले. थोडक्यात असे म्हणता येईल की, ज्येष्ठ आय.पी.एस. अधिकारी जे. एफ. रिबेरो यांनी आपल्या जीवनाच्या कारकिर्दीत कोल्हापूरचे उपविभागीय पोलीस अधिकारी, नाशिक जिल्ह्याचे पोलीस अधिक्षक, पूर्व खानदेशचे पोलीस अधिक्षक, मराठवाड्यातील परभणीचे पोलीस अधिक्षक, नांदेडचे पोलीस अधिक्षक म्हणून नोकरी केली. सोलापूरचे पोलीस अधिक्षक (शहरी) म्हणून नोकरीस दाखल झाले. केंद्रीय राखीव पोलीस दल हैदराबाद, केंद्रीय राखीव दल पुणे येथे पोलीस उपमहानिरीक्षक म्हणूनही त्यांनी नोकरी केली. एक प्रामाणिक आणि सचोटीचा अधिकारी म्हणून भारत सरकारने त्यांची १९८२ मध्ये मुंबई पोलीस आयुक्तपदी बढती दिली. त्यानंतर गुजरातचे पोलीस संचालक, गृहखात्याचे विशेष सचिव, पंजाबचे पोलीस महासंचालक, रूमानियातील भारताचे प्रशासनातील राजदूत म्हणून भारतीय प्रशासनातील नोकरी केली. याकाळात अत्यंत प्रामाणिक व सचोटीचा पोलीस अधिकारी म्हणून त्यांनी कारकिर्द गाजवली.

'बुलेट फॉर बुलेट' या अनुवादीत मराठी आत्मकथनाचे आत्मकथनकार आय.पी.एस. जे.एफ.रिबेरो यांना जीवनात अनेक मानसन्मान मिळाला. त्यांनी आपल्या जीवनात पोलीस सेवेत प्रामाणिक व सचोटीने कार्य केले. त्यांच्या पोलीसी कारकिर्दीत त्यांना भारत सरकारने अनेक पदे त्यांचा सन्मानच होय. महाराष्ट्राच्या अनेक जिल्ह्यांमध्ये त्यांनी काम केले. त्या जिल्ह्यांमध्ये त्यांचा पारदर्शक होती. त्यांनी काही निर्णय लोकांच्या भल्यासाठीच घेतले. त्यांनी पोलीस निरीक्षक, पोलीस संचालक, पोलीस महासंचालक ते भारतीय दूतवास हे पदे उपभोगली. इथे काम करताना पोलीस दल आणि जनतेने त्यांना कायम पाठींबा दिला. तत्कालीन पंतप्रधान राजीव गांधी व मंत्री अरुण नेहरू यांनी त्यांच्या कार्यावर खुश होऊन गुजरात व पंजाबचे पोलीस महासंचालक पद दिले. हा त्यांचा

मानसन्मानच आहे. त्यांच्या जीवनाच्या कारकिर्दीत त्यांनी केलेल्या उत्तम गुणवत्तापूर्ण सेवेसाठी पोलीस पदक आणि विशिष्ट सेवेसाठी राष्ट्रपतींचे पोलीस पदकाचा पुरस्कार देऊन सन्मानित करण्यात आलेले आहे. अशाप्रकारे आय. पी. एस. अधिकारी जे. एफ. रिबेरो यांना पोलीस प्रशासकीय सेवेत असताना विविध उल्लेखनिय कामे केली. त्यामुळे भारत सरकारने त्यांना मानसन्मान देऊन राष्ट्रपतीपदक सारखे पुरस्कारही दिलेले आहेत. यामध्ये त्यांचा मानसन्मान आहे.

आत्मकथन हे एका व्यक्तीने स्वतःच स्व- जीवनाचा नेटकेपणाने काढलेला चैतन्यपूर्ण आलेख असतो. त्यामुळे आत्मकथनाला कलात्मकता प्राप्त होते. 'बुलेट फॉर बुलेट' या जे. एफ. रिबेरोच्या आत्मकथनाचा सहजसुंदर मराठी अनुवाद मंजिरी दामले यांनी केलेला आहे. इंग्रजी भाषेत आय.पी.एस. अधिकारी जे.एफ.रिबेरो यांनी जे कथन केले ते मराठीत आणण्याची कठीण कामगिरी मंजिरी दामले यांनी पार पाडली आहे. जे. एफ. रिबेरो यांची कथनशैली आठवून सांगण्याची आहे. मनात ठसलेल्या घटना, प्रसंग, आठवून सांगताना काही वेळेस एखाद्या घटनेची पुनरावृत्ती होत असते. या आत्मकथनात अनेकदा अशी पुनरावृत्ती झालेली आहे. जे. एफ. रिबेरो आपल्या आत्मकथनातील अनुभवांशी प्रामाणिक राहून सरळधोटपणे कथन करताना दिसतात. त्यामुळे 'बुलेट फॉर बुलेट' हे एक श्रेष्ठ दर्जाचे आत्मकथन आहे. 'बुलेट फॉर बुलेट' या नावाने मंजिरी दामले यांनी मराठीत केलेल्या या अनुवादीत आत्मकथनाची भाषा सरळ व प्रवाही आहे. त्यामुळे हा अनुवाद अत्यंत बोलका झाला आहे. या आत्मकथनात मराठी शब्दाबरोबर 'शिकागो ट्रिव्यून', 'सुपरकॉप', 'केडर', 'रॅबो', 'हिंदुस्तान टाईम्स', 'ब्रिटीश', 'रॉड्रिगज', 'पॅट', 'नॉर्थ ब्लॉक', 'कफर्यू', 'डेली' या इंग्रजी शब्दांचा वापर जशाचा तसा वापर केलेला आहे. त्याचबरोबर बागुलबुवा करणे, बळ अपुरे पडणे, कमनशिबी ठरणे, काटासलणे, नैराश्य निर्माण होणे, अतोनात हाल होणे, धारिष्ट्य करणे, जीवनाची लय बिघडून जाणे, अपेक्षा धरणे, पुरावाच कौल म्हणून मिळणे, विधिनिषेध बाळगणे, प्रतिहल्ला करणे, आदर्श घालणे, नामी संधी मिळणे, सुदैव असणे, मनोर्धैर्य उंचावणे, प्रतिहल्ला करणे, इरादा असणे, निष्प्रभ होणे, दडपण आणणे, ग्रहण करणे, ग्वाही देणे, निर्वाळा देणे, गुंतागुंत निर्माण होणे, मृत्यूला हुलकावणी देणे, संशय वाढणे, फेटावून लावणे, ताशेरे ओढणे, पायबंद घालणे, गोळीचे उत्तर गोळीने देणे, निष्कर्ष काढणे, एन अक्षरही न कळणे, एका सेकंदात विरघळणे, इगो जपणे, पिच्छा पुरवणे, स्वारस्य असणे, छडा लावणे, अतिशय वाईट वाटणे, फंदात पडणे, मतभेद निर्माण होणे, स्थानबध्दतेत ठेवणे, तळपायाची आग मस्तकात जाणे, उल्लु बनवणे यासारखे वाक्प्रचार वापरल्यामुळे आत्मकथनाच्या सौंदर्यात भर पडलेली दिसते. थोडक्यात मूळ 'बुलेट फॉर बुलेट' या इंग्रजी आत्मकथनाचा मराठीत चांगला अनुवाद करणे हे कौशल्याचे काम होते पण हे शिवधनुष्य उचलण्याइतके अवघड आव्हान मंजिरी दामले यांनी परिभाषेतील अनुरूप शब्द योजून साधी, सरळ, सोपी व ओघवती भाषा वापरून या अनुवादाची रंगत वाढवून हे आत्मकथन वाचनीय केलेले आहे.

'बुलेट फॉर बुलेट' या आत्मकथनाचा अभ्यास करताना असे लक्षात येते की, 'बुलेट फॉर बुलेट' या आत्मकथनामध्ये पोलीस अधिका-याने कसे काम करावे, याबाबतचे तत्त्वज्ञान आहे. या आत्मकथनातील अनुभवांपासून तरुण अधिका-यांना आपला दृष्टीकोन सिद्ध करण्यासाठी निश्चितच मदत होईल यात शंका नाही. पोलीस अधिका-यांना आपले कर्तव्य पार पाडताना कोणत्या समस्यांना तोंड द्यावे लागते. हे नवीन आय.पी.एस. तरुणींना या आत्मकथनाद्वारे समजावे. हाच आत्मकथन लिहिण्यामागचा हेतू आहे. मूळ इंग्रजीत असणा-या 'बुलेट फॉर बुलेट' या पुस्तकात मराठी अनुवाद मंजिरी दामले यांनी साध्या, सुबक भाषेत केल्यामुळे हे आत्मकथन वाचकप्रिय झालेले आहेत. सध्याच्या बदलत्या स्पर्धात्मक युगामध्ये जे.एफ. रिबेरो यांचे 'बुलेट फॉर बुलेट' हे आत्मकथन अभ्यासू विद्यार्थ्यांसाठी प्रेरणादायक ठरणारे आहे. यात शंका नाही.

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संत साहित्य व हवामान बदल

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प्राचीन काळापासून पर्यावरण आणि निसर्ग यांचे गोडवे ऋषीमुनी आणि संतांनी गायिले आहेत. पर्यावरणविषयक एक व्यापक दृष्टी संत महंतांनी आपल्या काव्यातून, साहित्यातून निर्माण केलेली आहे. पर्यावरणाचे संतुलन आणि पावित्र्य राखण्याचा संदेश संत साहित्यातून मिळतो. निसर्गालाच परमेश्वर म्हणून त्यांनी गौरविले आहे. आजच्या काळात पर्यावरणाचे संतुलन बिघडले आहे. त्यामुळे पर्यावरणविषयक शिकवणुकीचे धडे दिले जात आहेत. परंतु ज्या काळात संतांचे वाङ्मय निर्माण झाले त्याकाळी प्रदूषणाची कोणतीही काळजी नसताना, पर्यावरण घटकांवर आजच्या सारखी आक्रमणे होत नसताना, पर्यावरणाचे संतुलन राखले जात असतानाही पर्यावरणविषयक याची जाणीव होते. संतांची ही भूमिका निश्चितच लोकशिक्षणाची होती. मानवाचे अध्यात्मिक जीवन समृद्ध व्हावे म्हणून संतांनी भक्तीमार्ग, नामचिंतन, मूल्यशिक्षणाबरोबरच सदृढ आरोग्यासाठी पर्यावरणाची दृष्टी दिली. म्हणूनच निसर्गातील वृक्ष-वेली, वने, पशू-पक्षी, नद्या, नाले, पर्वत, अरण्ये या सर्व घटकांना देवत्व बहाल करून त्यांचे मोठेपण सांगितले आहे. या संदर्भात संत साहित्याचे अभ्यासक डॉ. रामचंद्र देखणे म्हणतात की, “मानवाचे अध्यात्मिक जीवन समृद्ध होण्यासाठी संतांनी भक्तीतत्त्व, अध्यात्मचिंतन आणि तात्त्विक मूल्यांची शिकवण दिली तसेच ज्या देहाच्या आधारे परमात्मा स्वरूपाकडे जायचे आहे तो देह निरोगी, सदृढ, प्रसन्न आणि आनंदी रहावा यासाठी पर्यावरणाचे मोठेपण सांगितले आहे. ज्याच्या सानिध्यात मानवी देह वावरणार आहे ते निसर्गसानिध्य विपूल, व्यापक आणि शुद्ध असायला हवे अशी संतांची धारणा आहे. एकीकडे भारतात अनंत काळापासून नांदत आलेली कृषिसंस्कृती आणि दुसरीकडे तत्त्ववेत्त्यांनी सांगितलेले पंचमहाभूतांचे महत्त्व या दोहोतून पर्यावरणाच्या संदर्भातील चिंतन प्राचीन ग्रंथात आणि संत साहित्यात प्रभावीपणे मांडले आहे. जीवन जगताना निसर्गात वावरताना अवती-भोवती दिसणारे, जाणवणारे पर्यावरणाचे घटक सर्वसामान्यांच्या परिचयाचे आहेत. वृक्ष-वल्ली, डोंगर, नदी, फुले-फळे, पशू-पक्षी, वारा, सूर्य, किटक, गायी-गुरे, वने, अरण्ये, पाऊस इत्यादी घटकांना कधी उपमा, कधी रूपक, कधी सिध्दांत तर कधी दृष्टांत अशा स्वरूपात ठायी-ठायी मांडून आपल्या काव्यातून, साहित्यातून मराठी संतांनी पर्यावरणाची नवी दृष्टीच दिली आहे.”^१ डॉ. रामचंद्र देखणे यांचे मत योग्य वाटते, कारण वृक्षवल्ली, जंगले, अरण्ये, वने, पशुपक्षी, झाडे, नदी, डोंगर आणि निसर्ग यांचे महत्त्व संतांनी ओळखले होते.

निसर्गातील वड, पिंपळ, औदुंबर यासारखे मोठे वृक्ष तसेच पशू-पक्षी यांना संतांनी देवांचे अवतरण किंवा देवांचे वाहने आहेत अशी श्रद्धा लोकांच्या मनात रूजविली होती. वृक्ष तोडल्यामुळे किंवा जंगलातील प्राण्यांची पशुपक्ष्यांची शिकार वा हत्या केल्यास देवदेवतांचा कोप होतो ही भीती समाजात निर्माण केलेली होती.

त्यामुळे लोक श्रद्धापूर्वक अंतःकरणांनी वृक्ष व प्राण्यांची पूजा करत होते. काळानुरूप माणसाने स्वतःच्या हव्यासापोटी जंगलांची आणि वन्य प्राण्यांचा प्रचंड विनाश केला. मोठ्या प्रमाणावर वृक्षतोड करून जंगले नष्ट केली. त्यामुळे ४७% जमिनीपैकी ८% जमिनीवर जंगले शिल्लक राहिली त्याचा परिणाम पाऊस पडण्यावर झाला. पर्यावरणाचे संतुलन बिघडले. वेळेवर व भरपूर पडणाऱ्या पावसाचे प्रमाण दिवसेंदिवस कमी झाले. मोठ्या दुष्काळाला मानवाला सामोरे जावे लागले. जमिनीतील पाणी पातळी खोलवर गेली. गावाजवळचा डोंगरदऱ्या वृक्षतोडीमुळे ओसाड झाले. सदाहरित वने नष्ट झाल्यामुळे निसर्गसौंदर्य नष्ट झाले. या सर्वांचा मानवी जीवनावर मोठा आघात झाला. माणूस बैचेन झाला. त्यामुळे पृथ्वीचे सौंदर्य अबाधित राखण्यासाठी पर्यावरणाचे संवर्धन करणे काळाची गरज आहे. हे पटवून देण्यासाठी संतांचे विचार सांगावे लागले. पशुपक्षी, झाडेफुले यातच परमेश्वराचे अस्तित्त्व दडलेले आहे, ही संतांची शिकवण आज उपयोगी पडत आहे.

सर्व संतांचे आदर्शस्थान असणारे संतश्रेष्ठ श्री ज्ञानेश्वरांनी 'ज्ञानेश्वरी' व अभंगांच्या माध्यमातून पर्यावरणाचा पायाच मजबूत केला आहे. याविषयी डॉ. अशोक लिंबेकर म्हणतात, "ज्ञानदेव हे जसे संत आहेत तसेच ते तत्त्वज्ञ आणि सौंदर्यवादी कवीही आहेत. त्यामुळे त्यांच्या काव्यातून निसर्ग वर्णनाची व कल्पनाविलासाची एकसंध मालाच दिसते. त्यांच्याइतका पर्यावरणप्रेमी आणि निसर्गातील प्रतिमांचा चपखल वापर करणारा कवी सापडणार नाही."१

पर्यावरणाचा संदेश देताना माऊली म्हणतात,

“नगरेचि रचावि। जलाशये निर्मावी,

महावने लावावी। नाविधे” (ज्ञाने. अ. १४, ओवी २३३)

अर्थात पाणी, वृक्ष, प्राणी हे पर्यावरणाचे प्रमुख घटक असल्याने, माणसाने गावे, नगर, शहरे बसविण्या अगोदर मोठ्या प्रमाणावर जलसाठे तयार करायला हवीत. पाण्याचे व्यवस्थापन करण्याचा आणि विविध प्रकारच्या वृक्ष लागवडीचा मंत्रही देतात. वृक्ष हे मानवाचे खरे मित्र आहेत. वृक्षामुळे पाणवठ्यामुळे विविध प्राणीमात्र तेथे आपोआप वास्तव्य करतील. त्या सर्वांचे एकत्रित येणे म्हणजेच पर्यावरणाचा समतोल राखला जाईल. अशा प्रकारे त्यांच्या मनातला हा पर्यावरण बदलाचा जिव्हाळाही येथे व्यक्त होताना दिसून येतो.

“जेथ अमृतानेची पाडे। मुळाहीसकट गोडे।

जोडती दारे झाडे। सदा फळती। पाडला पाऊस उदके।

वर्षाकाळेही अतिचोखे। निझरे का विशेषे। सुलभे जेथ॥

(ज्ञा. अ. ६, ओवी ७३)

या ओवीतून संत ज्ञानेश्वर त्यांच्या मनातील शांत, निवांत, अहंभाव सांडून जाण्याच्या निसर्गाच्या सहवासातील स्थळांचा निर्देश करतात. निसर्ग प्रतिमांच्या माध्यमातून विश्वरूप दर्शनाचे वर्णन केले आहे. निसर्गवर्णांचा सर्वांग सुंदर आविष्कार त्यांच्या साहित्यात दिसतो. एकूणच त्यांच्या साहित्याचा हा महत्त्वाचा गुणधर्म आहे. म्हणूनच या सृष्टीशी त्यांचे कसे अद्वैत नाते होते हे स्पष्ट होते. सूर्य, चंद्र, तारे, नक्षत्रे, झाडे, वेली, आकाश, पर्वत, पाणी मेघ, वर्षा, ऋतू, नद्या, सरोवरे सागर, वने, फुले, फळे, लता, वेली, उद्याने, पशु, पक्षी,

अग्नी, पंचतत्वासह निसर्गातील या नानाविध प्रतिमा-प्रतिकांची शब्दसृष्टी ज्ञानदेव आपल्या साहित्यातून उभी करतात. निसर्ग प्रतिमांचे चांदणे ज्ञानेश्वरांच्या काव्यावकशामध्ये पसरलेले आहे.

“पैं वसंताचे रिंगवणे। झाडांचेही साजेपणें।

जाणिजे तेंवी करणे। सांगती ज्ञान।

अगा वृक्षासि पाताळीं। जळ सांपडे मुळीं।

तें शाखांचिये बहाळी। बाहेर दिसे॥” (ज्ञा.अ.१३, १७८/७९)

वृक्ष हे माणसाचे जीवन समृद्ध करतात. झाडे ही निसर्गाचे वैभव आहे. माणसाच्या समृद्ध जीवनाचे ते प्रतीक आहे. वसंत ऋतूमध्ये वृक्षांना नवी पालवी फुटते. नवी पालवी फुटून फळाफुलांनी बहरलेले झाड हे समृद्धीचे प्रतीक समजून माऊली वसंत ऋतूलाच सद्गुरू मानतात. कुणावरही भेदभाव नव ठेवता मित्र आणि शत्रूवर संत जसे वागतात तसेच वृक्षांचेही लक्षण आहे. भेदभावाच्या पलीकडे केलेली दृष्टी तशी संतांकडे आहे तशीच सर्वांनाच शीतल छाया आणि रसाळ गोमटी फळे इतरांना देणारे वृक्ष ज्ञानेश्वरांना कर्मयोगी वाटतात.

“वसंत तेथें नवे। वन तेथे सुमनें।

सुमनी अलींगनें। सारंगाची॥” (ज्ञा.अ. १८ ओवी १६३५)

जेथे वने आहेत तेथे फळेफुले आलीच. जेथे फळेफुले आहेत तेथे भ्रमरांचे गुंजन नक्कीच होणार हे नयनरम्य दृश्य पाहण्यासाठी वृक्षांचे संवर्धन झाले पाहिजे. ही दूरदृष्टी ज्ञानेश्वरांच्या विचारातील परागकण आहेत. वृक्ष हा पर्यावरणाचा महत्त्वाचा घटक आहे. त्यांनी वृक्षांना पूज्य वंदनीय मानले.

ज्ञानेश्वरांनी आपल्या काव्यातून पर्यावरणाचा वेध चहूबाजूंनी घेतलेला आहे. त्यांच्या काव्यातून झाडे, वने, पाणी, पर्वत, मेघ, पशू, पक्षी, लता-वेली, जलतत्त्व, प्राणी, वारा, सूर्य, कीटक, अरण्ये, आकाश इत्यादी सर्व घटकांचे सूक्ष्म पध्दतीने वर्णन केलेले आहे. एकूणच ज्ञानेश्वरांचे काव्य व साहित्य पर्यावरणाविषयक नितांत श्रद्धाभाव व निसर्गाशी जवळिकता ठेवणारे आहे.

संत ज्ञानेश्वरांचे समकालीन संत नामदेव होते. त्यांनीही अभंगातून पर्यावरणविषयक संदेश दिला. भक्त शिरोमणी, असा त्यांचा सार्थ उल्लेख केला जातो. डॉ. यु. म. पठाण यांच्या मते, “महाराष्ट्रात वारकरी कीर्तन परंपरेचा पाया संत नामदेवांनी घातला. याबद्दल दुमत असण्याचे कारण नाही. त्यातून नामदेवांच्या संतत्त्वाचा एक लक्षणीय पदर तेजाळून निघतो. पंथ प्रसारक व पर्यावरणाची जाणीव उत्कटत्वाने त्यांनी किर्तनातून प्रत्ययाला आणून दिलेले आहे.”^१ डॉ. यु.म. पठाण यांनी मांडलेले मत अगदीच रास्त आहे कारण, नामदेवांनी कीर्तनाच्या माध्यमातून लोकजागृती करून डोळस भक्तीमार्गाचा प्रचार व प्रसार केला. ‘नाचू कीर्तनाच्या रंगी। ज्ञानदीप लावू जगी।’ याप्रमाणे त्यांनी वारकरी संप्रदायाची पताका पंजाबपर्यंत नेऊन पोहचवली. पर्यावरणाचे महत्त्व अभंगातून पटवून दिले. पशुहत्येचा संत नामदेव निषेध करतात. पशुधन हे पर्यावरणातील उपयुक्त धन आहे. वेताळ, खेताळ, झोटिंग अशा शूद्र देवतांना जे लोक पशूबळी देतात त्यांच्या वेदना त्यांना होतात. अशा प्रकारची हिंसा करणाऱ्या खाटिकांचा निषेध करताना उपरोधिक भाषेत ते समाचार घेतात,

“खाटकी जो चेपी पशुची नरडी।

अवचिता करंगळी सापडली।
मेलो मेलो म्हणून गडबडा लोळे।
परिकापी गळे आढवींना।।”

खाटिक रोज जनावरांचे गळे कापतो तेव्हा त्याला रडू येत नाही पण त्याच कोयत्याने चुकून त्याची स्वतःची करंगळी कापली की, तो जोराने विव्हळतो. अशाप्रकारे संत नामदेवांची अभंग कविता पशुहत्येचा तिरस्कार करून प्राणीसृष्टीचा गौरव करते.

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मानवी आरोग्य आणि पर्यावरणात माहिती तंत्रज्ञानाची भूमिका

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राज्यशास्त्र विभाग प्रमुख
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भूम, जि. उस्मानाबाद

सारांश:-

माहिती तंत्रज्ञानाने जगातील जवळपास सर्वच क्षेत्रात यशस्वी पदार्पण केलेले दिसून येते. यामुळे संपूर्ण जगातील सर्व देश भौगोलिकदृष्ट्या लांब अंतरावर असून ही एकमेकांच्या इतके जवळ आलेले आहेत. संपूर्ण जग एकत्र खेडयासारखे भासावे. यातूनच ग्लोबल व्हिलेज ही संकल्पना पूढे आली आहे. यावरून असे स्पष्ट होते की माहिती तंत्रज्ञान हे मानवाला मिळालेले फार मोठे मोलाचे योगदान आहे. माहिती तंत्रज्ञानाचे महत्त्व केवळ पर्यावरणीय दृष्टीनेच आहे असे नसून मानवी आरोग्याच्या बाबतीतही या तंत्राची भूमिका अत्यंत महत्वाची आहे. माहिती तंत्रज्ञानाद्वारे विविध प्रकारच्या रोगांची लक्षणे त्यावरील आधुनिक उपाय, रूग्णाविषयीचा संपूर्ण तपशील इतकेच नव्हे तर बऱ्याचशा हॉस्पिटलमध्ये ऑनलाईन मदत मिळवून रूग्णावर उपचार करून डॉक्टर रूग्णाचे प्राण वाचवू शकतात. माहिती तंत्रज्ञान म्हणजे पर्यावरण आणि मानवी आरोग्य याबाबतीत मानवाला मिळालेली एक गुरुकिल्लीच मानावी लागेल.

प्रस्तावना :-

मानवी आरोग्याचा पर्यावरणाशी अतिशय जवळचा संबंध असलेला दिसून येतो. मानवी आरोग्यावर पर्यावरणाचा परिणाम होत असतो. पर्यावरण शुद्ध असल्यास मानवी आरोग्यदेखील सुदृढ व निरोगी राहते. परंतु प्रदूषित पर्यावरणातील मानवास कोणत्या ना कोणत्या रोगाने पछाडलेले असते. जगात दरवर्षी दूषित पर्यावरणामुळे पसरलेल्या रोगांना लाखो लोक बळी पडतात. अनेक लोक आरोग्याच्या योग्य सुविधांचा अभाव कुपोषण, गलिच्छ वातावरणामुळे त्रस्त होऊन मृत्यूमुखी पडतात. सभोवतालचे पर्यावरण शुद्ध व स्वच्छ असल्यास अनेक प्रकारच्या आजारांना आपोआपच आळा बसतो. आज जगातील बहुतेक प्रदेशातील नदया, सरोवरे व तलावांमधील पाणी प्रदूषित झालेले दिसून येते. दुषित पाण्याद्वारे अनेक रोगांचा प्रसार होतो. उदा. डायरिया, काविळ, मलेरिया असे आजार पसरतात. भारतात दरवर्षी सुमारे 15 लाख लहान मूले डायरिया ला बळी पडतात. तर विकसनशील राष्ट्रांमध्ये दरवर्षी सुमारे 40 लाख लोक डायरियामुळे मरतात. सुमारे 70 दशलक्ष लोक टायफाईडने ग्रस्त होतात एका अंदाजानुसार दुषित पाणी पिण्यामुळे दरवर्षी 10 ते 25 दशलक्ष लोक मृत्यूमुखी पडतात.”¹ मानवी जीवनात पर्यावरणाला अनन्यसाधारण महत्त्व आहे. मनुष्याला स्वतःचा सर्वांगीण विकास करायचा असेल तर त्याने पर्यावरणाचा समतोल राखणे गरजेचे आहे. संपूर्ण पर्यावरणावर मानवी आरोग्य अवलंबून असते. जसे पर्यावरण असेल तसे मानवी आरोग्य असते.

1) मानवी आरोग्य व पर्यावरणात माहिती तंत्रज्ञानाची भूमिका:-

पर्यावरण आणि मानवी आरोग्यात माहिती तंत्रज्ञानाची भूमिका महत्पूर्ण मानली जाते. माहिती तंत्रज्ञान हे माहितीशास्त्र, संगणकशास्त्र, दूरसंचार तंत्रज्ञान आणि व्यवस्थापनशास्त्र यांचे एकत्रीकरण

आहे. या सर्व क्षेत्रातील सर्वोच्च आणि आधुनिक ज्ञान आणि तंत्रज्ञान मिळून माहिती तंत्रज्ञान असते. माहिती तंत्रज्ञान हा उच्चतंत्र उद्योगाचा मेंदू असून दुरसंचार हे त्याचे हृदय मानले जाते. माहिती तंत्रज्ञान ही जगाला मिळालेली फार मोठी देणगी आहे. उपग्रह तंत्रज्ञानाचा विकास, संदेश वहनाची बदललेली अत्याधुनिक साधने व त्याकरीता लागणारा कमी खर्च या सर्व गोष्टींचा विचार केला तर आज संपूर्ण जगावर माहिती तंत्रज्ञानाचे राज्य स्थापित झाले आहे. माहिती तंत्रज्ञानाने संपूर्ण जगालाच गतीमान करून सोडले आहे. पर्यावरण आणि मानवी आरोग्यात माहिती तंत्रज्ञानाची भूमिका पुढील मुद्दयांच्या आधारे आपल्याला स्पष्ट करता येईल.

2) विचार व आचारांत परिवर्तन :-

माहिती तंत्रज्ञानाचा आजच्या परिस्थितीत प्रत्येक क्षेत्रात प्रवेश झालेला दिसून येतो. माहिती तंत्रज्ञानाने केवळ प्रत्येक क्षेत्र व्यापलेले नसून मानवी मेंदूचा ताबा मिळवला आहे. माहितीचे जाळे केवळ व्यापार उद्योगावरच पसरलेले नसून त्याने सर्व देशांच्या भौगोलिक सिमा ओलांडून अनेकांना आपल्या महाजलात गुरफाटून घेतले आहे. त्यामूळे उद्योगक्षेत्रात तर प्रचंड बदल घडून आलेच आहेत याच बरोबर रेल्वे सेवा, विमानसेवा, दुरसंचार, दुरदर्शन, नित्यउपयोगी सेवा यामध्ये देखील प्रचंड उलथापालथ झालेली दिसून येते. माहिती तंत्रज्ञानाने एवढी प्रगती केली आहे की त्यामूळे "मानवी जीवन जगण्याची एकूण शैलीच बदलत गेली. त्याची दृष्टी पूर्वीपेक्षा अधिक धारदार झाली. "2 यावरून असे स्पष्ट होते की माहिती तंत्रज्ञानामूळे विचारात व आचारात परिवर्तन झाले आहे.

3) मानवाच्या हातातील हत्यार :-

आधुनिक काळात माहिती तंत्रज्ञानाच्या वापरावरच आपले यश-अपयश अवलंबून असलेले दिसून येते. माहिती या घटकाला प्रत्येक काळात महत्त्व देण्यात आलेले आहे. अश्मयुगावर लोहयुगाची मात, लोह युगावर ताम्रयुगाची मात ही माहितीच्या आधारावर झालेली आहे. यानंतर देखील वेगवेगळ्या क्रांत्या घडून आल्या. एका युगात महत्त्वपूर्ण असलेली माहिती ही दुसऱ्या युगात उपयुक्त ठरेलच असे नाही. उदा. दगडी हत्यार वापरण्याचे तंत्र आजच्या काळात निरुपयोगी बनले आहे. म्हणूनच असे म्हटले जाते की, "तंत्रज्ञानाने माणसाचे आयुष्य केवळ सुकर केलेले नाही, तर ते अंतर्बाह्य बदलले आहे आणि ही बदलाची प्रक्रिया शेकडो वर्षे चालू आहे. दगडावर दगड घासून आग्नी निर्माण करणाऱ्या माणसाला तंत्रज्ञान अवगत होते. तसेच पेरणी करून धान्य उत्पादन करणाऱ्या माणसाला सुध्दा शेतीचे तंत्रज्ञान अवगत होते."3

4) मानवी आरोग्याला मार्गदर्शक :-

माहिती तंत्रज्ञानामूळे नवनविन शोध लागल्यामूळे माहिती शास्त्राचा वापर मानवी आरोग्याला हितकारक ठरत आहे. आरोग्याच्या दृष्टीने वैद्यकीय क्षेत्र महत्त्वाची भूमिका पार पाडते." वैद्यकीय क्षेत्र हे प्रत्येक देशाची गरज आहे. अशा या महत्त्वाच्या क्षेत्रात देखील तंत्रज्ञानाने पाऊल ठेवले हे क्षेत्र देखील व्यापण्यास सुरुवात केली. याचे सर्वोत्कृष्ट उदाहरण म्हणजे लेझर ऑपरेशन. पूर्वी कोणतेही ऑपरेशन करण्यासाठी रुग्णाला भूल देऊन बेशुद्ध करून लहान लहान साहित्यांनी चिरफाड करून ऑपरेशन केले जात होते. यात जरा जरी चूक झाली की रुग्णाचा मृत्यू किंवा एखादा अवयव निकामी होण्याची फार शक्यता असायची. परंतु तंत्रज्ञानामूळे अशा काही यंत्राचा शोध लागला ज्यांचा उपयोग करून लेझर ऑपरेशन होऊ लागले. लेझर ऑपरेशन म्हणजे एका विशिष्ट प्रकारच्या किरणांपासून

शरीराला इजा न करता ऑपरेशन करणे हयामूळे ऑपरेशन दरम्यान चूका कमी होऊ लागल्या रुग्णाला होणारा त्रास कमी झाला आणि कमी खर्चात महागडे ऑपरेशन होऊ लागले.”⁴

5) इंटरनेटमूळे मानवात समन्वय :

“इंटरनेट हे जगभर पसरलेले नेटवर्क आहे. ज्याद्वारे संगणक जगातील इतर कोणत्याही संगणकाशी जोडला जाऊ शकतो. इंटरनेट हे परस्पर जोडलेल्या संगणकाचे जाळे आहे. इंटरनेट अंतर्गत विविध प्रकारचे प्रोटोकॉल तंत्रज्ञान वापरले जाते. ज्याद्वारे विविध कार्य केली जातात. आज इंटरनेटचा वापर लक्षात घेता हे जवळजवळ सर्व शहरांमध्ये आणि अगदी खेड्यापाड्यांमध्ये सुद्धा उपलब्ध आहे.”⁵ औद्योगिक क्रांतीने मानवाचा यंत्ररूपी पाया मजबूत केला आहे. तर संगणक क्रांतीने त्याच्या शिरावर यशस्वितेचा साज चढविला आहे. इंटरनेटमूळे सर्व जग आता लहान वाटू लागले आहे. पूर्वी निरोप पोहचविण्याचे काम पत्र करत असत पत्रांची जागा आता ई-मेलने घेतली आहे. ई-मेल द्वारे काही क्षणातच माहिती एका ठिकाणाहून दुसऱ्या ठिकाणी पाठविता येते. काळाने माहितीचे स्वरूप बदलले. आजच्या काळात माहितीचे आदानप्रदान करण्याची साधने बदलून गेलेली दिसून येतात. तंत्रज्ञानाने जणू काही काळावरच मात केली आहे की काय असे प्रश्नचिन्ह निर्माण झाले आहे. यावरून असे स्पष्ट होते की इंटरनेटमूळे मानवात समन्वय साधला आहे.

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प्राचीन भारतातील शेतीवर आधारित उद्योग धंद्याचा चिकित्सक अभ्यास

संशोधक :- डॉ.प्रा. राणी भास्कर केदार

प्रस्तावना

वर्तमान स्थितीत जगाचा संदर्भात विचार केल्यास भारताला महत्त्वाचे स्थान आहे. आज भारत एक विकसनशील देश आहे. विज्ञान तंत्रज्ञानाच्या क्षेत्रात भारताने प्रचंड प्रगती केली. विकास आणि औद्योगीकरणामुळे वाढ होण्यासाठी शक्य तेवढ्या तंत्रज्ञानाचा वापर आज भारत करत आहे. विज्ञान तंत्रज्ञानात झपाट्याने प्रगती करत असलेला भारत आज कृषी क्षेत्रात आवश्यक तेवढी प्रगती करू शकला नाही. भारताला कृषीच्या विकासासाठी अनुकूल असलेली संपन्न भौगोलिक परिस्थितीचा वापर भारत पूर्णपणे करू शकला नाही. शेतीकडे पाहण्याचा दृष्टिकोन व शेतीकडे होणारे दुर्लक्ष हे याचे कारण आहे. आज शेती करणे म्हणजे एखादे कमी दर्जाचे काम समजले जाते. परंतु हीच शेती असणे म्हणजे श्रीमंती अशी या अगोदर म्हणजे प्राचीनकाळी समजूत होती. प्राचीन काळी शेताला देण्यात आलेले महत्त्व शेतीतून घेतले जाणारे उत्पन्न व शेतीला पूरक म्हणून होणाऱ्या उद्योगांची प्रगती ही आपला शेतीकडे पाहण्याचा दृष्टिकोन बदलू शकते.

शेती पूरक उद्योग प्राचीन भारतातही प्रगतीच्या पथावर होते व त्यापासून मोठ्या प्रमाणात व्यापार विनिमय चालत असे. भारत देशाला "सोने की चिडिया" अशी जीव उपमा मिळाली ती येथील भौगोलिक परिस्थितीमुळेच व कृषीतून उत्पन्न होणाऱ्या मालाच्या महत्त्वामुळे. प्राचीन भारतातील कृषी व कृषीला पूरक उद्योगधंद्याच्या स्थितीवर सर्वकष व सविस्तर प्रकाश टाकण्यासाठी "प्राचीन भारतातील शेती आधारित उद्योगधंद्याचा चिकित्सक अभ्यास" या विषयाची निवड करण्यात आली आहे.

आजच्या विज्ञान तंत्रज्ञानाच्या युगात भारताला कृषी क्षेत्रकडून जास्त प्रमाणात आर्थिक फायदा मिळत नसला व कृषीच्या क्षेत्रापेक्षा उत्पन्नात कमी वाटा असला. तरी देशातील प्रचंड लोकसंख्येला रोजगार पुरविण्याच्या बाबतीत कृषी चा प्रथम क्रमांक लागतो. इ.स. पूर्व ९००० च्या आसपास शेतीची सुरुवात झाली असावी. शेतीच्या शोधाने मानवाच्या जीवनात क्रांती घडवून आणली. शेतीमुळे मानवाची भटक्या जीवनातून सुटका होऊन माणूस स्थायी जीवन जगू लागला यामुळे आजतागायत शेतीला अनन्यासाधारण महत्त्व आहे. प्राचीन भारताच्या इतिहासाचा अभ्यास करताना आपल्याला जाणवते की अभ्यासकांनी इतिहासाची शेतीला अनन्य साधारण महत्त्व दिले आहे व त्यावर लिखाणही केले आहे. परंतु शेतीवर आधारित उद्योगधंद्याची सविस्तर माहिती आणि दिलेली नाही. काही ठिकाणी फारच अल्प प्रमाणात या उद्योगधंद्याचा अभ्यास झालेला आहे. त्यामुळे कृषी पूरक उद्योग धंद्याचे किती महत्त्व होते, त्याचा अभ्यास करणे येथे आवश्यक आहे, "प्राचीन भारतातील शेती आधारित उद्योगधंद्याचे चिकित्सक अभ्यास" या शीर्षकातर्गत या शेतीपूरक उद्योगधंद्याचा सविस्तर व सर्वकष अभ्यास करण्याची येथे आवश्यकता वाटते.

उद्दिष्टे

१) प्राचीन भारतातील शेती, शेतीला पूरक असलेले उद्योगधंदे व त्याची स्थिती यांचा अभ्यास करणे. २) प्राचीन काळात शेतीच्या विकासाला कारणीभूत ठरली सामाजिक, राजकीय, आर्थिक, भौगोलिक परिस्थितीचा अभ्यास करणे.

३) या उद्योगधंद्यात समाजावर कसा प्रभाव पडला व त्याच्या जीवनात कोणते बदल झाले याचा अभ्यास करणे.

अ) ऐतिहासिक पार्श्वभूमी

भारत वर्षाचा इतिहास हजारो वर्ष जुना आहे. अगोदर अनेक इतिहासकार हे मान्य करत नव्हते, परंतु हडप्पा-मोहनजोदडो किंवा सिंधू संस्कृतीच्या पुरातत्त्विक अवशेषांच्या शोधामुळे सर्व जगाला हे मान्य करावे लागले की, प्रागैतिहासिक काळातही या भारत देशाला एका महान संस्कृतीचा इतिहास आहे. ज्याला आपण चार कालखंडात विभाजित करून अभ्यास करतो. १) पूर्व पाषाण आणि उत्तर पाषाण संस्कृती २) प्रागैतिहासिक काळातील संस्कृती ३) सिंधू संस्कृती ४) वैदिक संस्कृती यालाच काही इतिहासकार पूर्व वैदिक काळातील भारताचा इतिहासही म्हणतात.

ब) सामाजिक स्थिती

सिंधू संस्कृतीमध्ये समाज अनेक भागात विभागला होता. कुटुंब व्यवस्था ही पितृसत्ताक होती. काही प्रमाणात मातृसत्ताक पद्धतीच्या कुटुंबाचा उल्लेख आढळतो परंतु पितृसत्ताक पद्धतीला जास्त महत्त्व देण्यात आले होते. पूर्व वैदिक काळात समाजव्यवस्था एकत्र कुटुंब पद्धती अस्तित्वात होती. धर्माच्या आधारावर तीन वर्ग होते. अस्पृश्यतेला समाजात स्थान नव्हते स्त्रियांची स्थिती समाजात उत्तम होती व त्यांना समाजात प्रतिष्ठा होती. उत्तर वैदिक काळात मात्र या परिस्थितीत बदल होण्यास सुरुवात झाली. या काळात रेशमी वस्त्रांचा वापर होऊ लागला, मनोरंजनाच्या साधनाचा विकास झाला. स्त्रियांचे स्थान कमी दर्जाचे होण्यास सुरुवात झाली. विशेष करून उत्तर वैदिक काळात अनेक वाईट प्रथा सुरुवात झाली. जातीव्यवस्थेत अधिक कठीणता आणि गुंतागुंत निर्माण झाली. इ.स. पूर्व सहाव्या शतकात भारतात सामाजिक जीवनात अनेक बदल झाले. जैन बौद्ध धर्माने समाजातील असमानतेला समाप्त केले. इ.स.पूर्व ३२७ मध्ये ग्रीक शासक सिकंदर याने भारतावर आक्रमण केले त्या सुमारास भारतात मौर्य सत्ता होती. भारतात त्या नंतर सामाजिक स्थिती अधिक गुंतागुंतीची होत गेली वर्गानुसार समाजात चार वर्ण आणि अनेक जातीच्या संबंधाने समाजाचे संघटित राहू शकले नाही. वर्ण आणि जाती परिवर्तन निश्चित केले गेले. जन्मावरून वर्ण आणि जातीला मान्यता देण्यात आली जाती व्यवस्था अधिक कठीण होत गेली आर्य अनार्य यावरून समाजात अनेक जातींचे घर बनले. एकत्र कुटुंब पद्धतीला जास्त महत्त्व दिले गेले. मातृसत्ताक पद्धती मातृसत्ताक पद्धती जरी कधी अस्तित्वात राहिली होती परंतु जास्त लोकांनी पितृसत्ता पद्धतीला महत्त्व दिले. स्त्रियांची स्थिती अखंडपणे कमी कमी होत गेली. दास प्रथेने समाजातील एका वर्गाला शोषित केले. शिक्षा स्वातंत्र्य आणि समानतेची संधी सर्वांनी मिळत नव्हती. श्रीमंत लोकांचा आहार वेशभूषा आणि राहणीमान असा दर्जा गरीब लोकांच्या तुलनेत उच्च दर्जाचा होता हिंदू समाजात सात्त्विक जीवनाला महत्त्व दिले गेले.

क) धार्मिक स्थिती

प्राचीन काळापासून भारतात लोकांच्या जीवनात धर्माला महत्त्व राहिले आहे. आपल्या कुटुंबाला आणि समाजाला एकत्र करण्यासाठी मनुष्याचे सर्व काम धर्मानुसार होत होती. प्रारंभी याला वर्ण-धर्माची संज्ञा दिली. आश्रम व्यवस्थेच्या नियोजन नंतर या वर्णश्रम-धर्म म्हटले जाऊ लागले. यामध्ये नैतिकता, अस्तिकता, सदाचार, ज्ञान आणि बुद्धिमत्ता होती. इतर घटकांप्रमाणे धर्माच्या संकल्पनेतून काळानुरूप व परिस्थितीनुरूप बदल होत गेले. जैन व बौद्ध धर्माने धर्म या संकल्पनेत व्यापक व जनसामान्यांच्या सोयीनुसार बदल केले गेले. देवापर्यंत आपली प्रार्थना व

भाव पोहोचण्यासाठी व यज्ञ परवडणाऱ्या धार्मिक विधी करण्याची गरज नाही,असे या धर्माने पटवून दिले. धर्मांमध्ये त्या काळात बदल झाले परंतु त्यानंतर धर्माला अधिकच गुंतागुंतीचे स्वरूप प्राप्त झाले. स्वतः धर्म संस्थापक गौतम बुद्ध यांना मूर्तिपूजा मान्य नसताना त्यांच्या अनुयायांनी त्यांच्या महापरिनिर्वाणानंतर त्यांच्या विविध प्रकारच्या मूर्ती तयार करून बुद्धांना मूर्ती रूप प्राप्त करून दिले. धार्मिक जीवनात वेगवेगळ्या कालखंडात वेगळे स्वरूप प्राप्त झाले, परंतु त्यात कायमच अशा सुधारणा झाल्या नाहीत. आजच्या विज्ञान तंत्रज्ञानाच्या युगातील धर्माचे वर्चस्व आपल्याला पहावयास मिळते.

ड)आर्थिक स्थिती

भारताच्या आर्थिक प्रगतीची सुरुवात हिंदू संस्कृती पासून झाली असे मानले जाते. सिंधू संस्कृतीची अर्थव्यवस्था मुख्यतः व्यापारावर आधारित दिसते, प्रगतीच्या आधारे आपल्याला समजू शकते. इ.स.पूर्व ६ व्या शतकात महाजनपदांनी खास चिन्हांकित नाणी काढण्यास सुरुवात केली. हा कालखंड मोठ्या प्रमाणातील व्यावसायिक विकास आणि शहरी विकासाचा कालखंड आहे. इ.स.पूर्व ३०० पासून मौर्य सत्तेने भारतीय उप महाद्वीपाचे एकीकरण केले. राजकीय एकीकरण आणि लष्करी सुरक्षतेने शेती उत्पादकतेत वाढ, व्यापार व वाणिज्य मुळे आर्थिक प्रक्रियेला सहाय्य मिळाले.

ई) राजकीय स्थिती

मानवाचे इतिहासात भारत देश हा प्राचीन देशांमध्ये गणला जातो. येथील लिखित इतिहास २५०० हजार वर्षांपूर्वीचा असून इतर पुरावांवरून भारतात १०००० वर्षांपूर्वी पासून मानवी अस्तित्व आणि इतिहास आहे हे निश्चित आहे. भारताचा इतिहास वैभव संपन्न आणि सामर्थ्यशाली असाच राहिलेला आहे भारतामध्ये प्राचीन काळापासून ते आधुनिक काळापर्यंत अनेक राजवटीत आल्या व या सत्तांनी भारतामध्ये दीर्घकाळापर्यंत राज्य केले. यामधील सर्वात प्रभावी आणि सामर्थ्यशाली राज्य म्हणजे मौर्य साम्राज्य होय. हे भारतातील पहिले प्रभावी असे केंद्रीय शासन होते. भारतामध्ये ही सत्ता दीर्घकाळ टिकून राहिली देशातील ती पहिली केंद्रित अशी सत्ता होती. या काळात राज्यकर्त्यांनी मोठा प्रदेश आपल्या अमलाखाली आणला आणि प्रजा कल्याणकारी शासन व्यवस्था निर्माण केली. मौर्य नंतर सत्तेनंतर भारतातील विविध प्रदेशात वेगवेगळ्या सत्तांचा उदय झाला. या सत्तांनी आपल्या अधिपत्याखालील प्रदेशाचे परकीय आक्रमापासून संरक्षण केल्यावर आपली राजकीय कार्ये यामध्ये कुशान, शुंग, सातवाहन, पल्लव इत्यादींचा समावेश होतो.

फ) सांस्कृतिक स्थिती

प्रागैतिहासिक काळात कला व कौशल्य विकसित होते. मातीची भांडी धातूच्या मूर्ती यावरून त्या काळातील लोकांची प्रगती लक्षात येते.पूर्व वैदिक काळात वेदांची रचना झाली होती त्या वेळेपर्यंत लेखन कलेचा विकास झालेला नव्हता,परंतु वैदिक काळात ऋचा ऋषीमुनीनी पाठ करून ठेवलेल्या असत. याच ऋचाना तोंडी पद्धतीने एका पिढीकडून दुसऱ्या पिढीकडे संक्रमित केले जात होते. आर्यनी लेखन कलेचा विकास करेपर्यंत ही प्रक्रिया चालली. उत्तर वैदिक काळात आश्रम व्यवस्थेचा शिक्षणाची व्यवस्था झालेली होती. वेदा बरोबर उपनिषदे, तर्क शास्त्र व

व्याकरण दर्शन, ज्योतिषशास्त्रवरही त्याकाळी ग्रंथ लिहीले गेले.सातवाहन काळात राज दरबारात विद्वानांना आश्रय दिला जात होता.

वरील माहितीनुसार स्पष्ट होते की प्राचीन काळातील भारताची सामाजिक, धार्मिक, राजकीय व सांस्कृतिक स्थिती निरंतर विकसित होत गेली. देशाच्या प्रत्येक क्षेत्राचा वेळेनुसार विकास होत गेला व येथे परकीय संस्कृतीच्या अंतर्भावामुळे प्रत्येक संस्कृतीमध्ये नवीनता आणि परिवर्तन आहे त्यामुळे देशाच्या अर्थव्यवस्थेला विकसित होण्याची संधी मिळाली. विविध प्रकारचे उद्योग निर्माण झाले. लघु, कुटीउद्योगांचा विकास झाला. त्यात विविधता आणि वेगळेपणाही आला. प्राचीन भारतात अनेक उद्योगधंदे होते जे आयुष्य व पूर्ण रूपाने शेतीवर आधारित होते यापैकी काही उद्योग म्हणजे कापड उद्योग, रंग उद्योग, साखर उद्योग आणि सुगंधित पदार्थ निर्मिती उद्योग इत्यादी होती. या उद्योगाच्या सविस्तर अभ्यास या संशोधन अहवालात करण्याचा प्रयत्न केला आहे.

उद्योग प्राचीन भारतात लघु कुटीर उद्योग हस्तकला उद्योगासाठी घरगुती असं काही उद्योग होते जे मोठ्या प्रमाणात केले जात असत. यात सूतीकापड, लोकरी कापड, याचा समावेश होतो. वस्त्रांची निर्मिती सिंधू संस्कृतीतील उत्खननामध्ये सापडलेल्या अनेक वस्तूंच्या शोधावरून हे सिद्ध होते की कापूस आणि लोकर कताई हे त्या काळी सामान्य होते. दगड, माती,धातू , टेराकोटा किंवा लाकडापासून बनवलेल्या स्पिडल चाकाचे सर्वात जुने नमुने हडप्पा मोहेंजोदडो लोथल सुरकोटाडा आणि कालीबंगा यासारख्या सिंधू संस्कृतीच्या ठिकाणावरून सापडले आहे.हडप्पा संस्कृतीतील व्यवसायिक पिकांमध्ये कापसाला महत्वाचे स्थान आहे प्राचीन भारतात शिलाईची कला ही प्रचलित होती अनेक स्थळावरून सापडलेल्या सुयाच्या संख्येने हे स्पष्ट होते. सिंधू संस्कृतीच्या नाशानंतर एक हजार वर्षातील कापडाच्या पुराव्याचा अभाव आहे परंतु सर्व पाचव्या शतकात ग्रीक चिकित्सक सिटीजन च्या लेखनात फारसी लोकांमध्ये चमक्या रंगाच्या भारतीय कपड्यांच्या लोकप्रियतेचा उल्लेख आहे .जो सिंधू संस्कृतीच्या नाशानंतर भारतीय कापडाची निर्यात चालू राहिली असे दर्शवितो. वैदिक काळ इसवी सन पूर्व पंधराशे ते आठशे वेशभूषा चे प्रकार आणि शैलीवरून पुरावे मिळतात कपड्याच्या विकासाकडे सूचित करतात.

रंग उद्योग मानवी संस्कृतीच्या अस्तित्वाचे पुरावे जेव्हापासून उपलब्ध आहेत स्थायी वस्ती व शेतीला सुरुवात केली तेव्हापासून कापडाच्या उत्पादनाला आणि वापरायला सुरुवात झाली आणि त्याचवेळी कापडात रंग टाकण्याची सुरुवात झाली. यातच भारताच्या कापड उद्योगात महत्वाची भूमिका बजावली. प्राचीन काळापासून भारत नैसर्गिक रंग बनविण्यात कुशल आहे प्राचीन काळातील हा एक महत्वाचा उद्योग होता. भारतीय लोकांच्या मनात काही रंगांबाबत प्रचंड आवड दिसून येते.जसे की केशरी आणि पिवळ्या रंगाचे संयोजन होय तर त्याकाळी निसर्ग कडून मिळविले जात होते. काही लोकांनी लवकर या रंगांना कधी सामाजिक तर कधी धार्मिक चिन्हांचे संकेत दिलेले दिसून येते. सुती कपडा वरील जांभळा रंग होता तो मदार (रुई) झाडापासून बनवला जात होता.हडप्पा आणि मोहनजोदडो मधून मधून मिळालेली रंगीत भांड्यावरून त्याकाळी रंग देण्याची कला अवगत होती.आणि चांगली विकसित होती असे दिसून येते. रंगांसाठी प्रामुख्याने माती हळद निळ आणि फुलांचा उपयोग केला जातो वैदिक ग्रंथा त काही मजकुरात ठराविक रंगांचा उल्लेख आढळतो जे कापडांसाठी वापरले जात ऋग्वेदातील वर्णनावरून त्याकाळी कापडांना रंग देण्याचा व्यवसाय होता असे लक्षात येते.

उत्तर वैदिक काळात रंग देण्याची पद्धत चालू होती तेव्हा लोथरा फुलाच्या रसापासून रंग बनवला जात. लोकांना आपले कपडे स्वच्छ आणि सुंदर असलेले आवडत असे आणि कपडे सुंदर दिसण्यासाठी त्याला नक्षी आणि रंगाची आवश्यकता असेल यातूनच रंगांनी महत्त्वाची भूमिका बजावली जगाच्या संदर्भात भारत नैसर्गिक रंगाच्या बाबतीत महत्त्वाचा स्रोत ठरले विविध भौगोलिक प्रदेश आणि वातावरण विविध सुतांची झाडे नैसर्गिक रंगाच्या निर्मितीसाठी कारणीभूत ठरलेली दिसून येतात. प्राचीन भारतात शेतीवर आधारित असलेल्या उद्योग धंद्यामध्ये साखर उद्योग महत्त्वाचा उद्योग मानला जातो. जीवनात साधारणतः प्रचलित ईख शब्दाचा उल्लेख ऋग्वेदात सापडत नाही " कुशर शब्दाचा बोध ईख या शब्दाशी केलेला आहे. उत्तर वैदिक कालीन ग्रंथ अथर्ववेदात स्पष्टपणे 'वनस्पती' असा याचा उल्लेख प्राप्त होतो.

भ) पदार्थ निर्मिती उद्योग

प्राचीन भारतासंबंधी वस्तूंची ही उद्योग प्रचलित होते .फुल, चंदन इत्यादींच्या मिश्रणातून सुवासिक द्रव्य, जल, अत्तर ,अंगारा उटणे इत्यादी बनवत होते .याचा व्यवसाय गंध व्यवसाय वर्गाचे लोक करत होती ज्यांना गंधी असे म्हणत होते. या निसर्गाच्या उदरात फुलणाऱ्या या फुलांना निवडून सुगंधीत बनवले जात होते . केसर शलालू याचा उपयोग मोठ्या प्रमाणात केला जात होता.

निष्कर्ष

सिंधू संस्कृतीचा कालखंड सुमारे इ.स.2500 ते इ.स.पूर्व1500 मानला जातो. सिंधू संस्कृती ही नागरिक संस्कृती होती. सिंधू लोकांनी सर्व क्षेत्रात प्रगती केली होती, त्याचप्रमाणे कापड उद्योग, साखर उद्योग, इ. क्षेत्रातील प्रगती केली. कापसाच्या शेतीचा पुरावा मोहजोदडो येथे सापडला, त्यामुळे ते लोक कापसापासून कापड बनवण्यात कुशल होते हे लक्षात येते. त्यांनी बनवलेल्या मातीच्या भांड्यांचा विचार केला तर ते लाल तपकिरी रंगाच्या पृष्ठभागावर काळा रंगाने नक्षीकाम केले दिसते. म्हणजेच ते रंग बनवण्यात आणि वापरण्याच्याही कलेत ही निपून होते हे लक्षात येते. काळानुसार या उद्योगांमध्ये प्रगती होत गेली व वैदिक संस्कृती, उत्तर वैदिक संस्कृती, मौर्य काळ खंडापर्यंत उद्योग क्षेत्रात मोठ्या प्रमाणात प्रगती झाली वैदिक ग्रंथात कापड, रंग, ऊस इत्यादी विषयी अनेक उल्लेख आढळतात चाणक्याच्या अर्थशास्त्रात तर या उद्योगांविषयीची नियम स्पष्टपणे लिहिलेले आहेत.

यावरून आपल्याला लक्षात येते की नैसर्गिक वस्तूंपासून तयार होणाऱ्या वस्तूंच्या उद्योगात भारत अग्रस्थानावर आहे. प्राचीन काळी विदेशात भारताच्या दर्जेदार कापडाला मोठ्या प्रमाणात मागणी होती. येथील भौगोलिक स्थिती, वातावरण, सुपीक जमिनी हे अशा प्रकारचे उद्योगधंदे विकसित होण्यास कारणीभूत ठरले व यामुळे भारताचा विकास होत गेला. मानवी संस्कृती जेव्हापासून अस्तित्वात आली तेव्हापासून मानवाला गरजेचे असलेल्या वस्तूंची निर्मिती करायला माणसाने सुरुवात केली. कृषी हा मुख्य व्यवसाय असल्याने कृषीवर आधारित असलेल्या उद्योगांचे मोठ्या प्रमाणात वाढ झाली. या उद्योगांनी समाजातील स्थिती सुधारण्यास मदत केली आणि आर्थिक स्थिती चांगली होण्यास यामुळे हातभार लागला. कापड उद्योग हा जगाच्या आर्थिक रचनेचा पहिला मानवी उद्योग आहे. मानवी संस्कृतीच्या प्रगतीनुसार विविध पदार्थांपासून वस्त्रे बनवण्याची कला अवगत होत गेली. यात कालानुक्रमे विकास होत गेला.

आज आधुनिक मानवाने सर्व क्षेत्रात मोठ्या प्रमाणात प्रगती केली परंतु या सर्वांचे सुरुवात प्राचीन कालखंडापासून झालेली आहे. जेव्हा कापड बनवण्यास सुरुवात झाली तेव्हा त्यांनी एक गरज म्हणून रंग तयार होण्यासाठी सुरुवात झाली. प्राचीन काळी सर्व रंग ये नैसर्गिक पदार्थ पासून बनत असत त्यात झाडांची फुले, फळे, माती, इत्यादींचा समावेश होता. याने पदार्थ पासून विविध प्रकारचे रंग तयार करण्यास मानवाने सुरुवात केली. या रंगाचा उल्लेख ही अनेक प्राचीन ग्रंथात आढळतो. काही विशिष्ट गोष्टींसाठी काही ठराविक रंग हे संकेतचिन्ह म्हणूनही नंतरच्या काळात ओळखले जाऊ लागले. कपड्याला सुंदर दिसण्यासाठी रंग हा महत्त्वाची भूमिका बजावत असतो त्यामुळे कापड उद्योगातील विकासाबरोबरच उद्योगाचा विकास होत गेला. साखर उद्योगाबाबत पाहिल्यास असे लक्षात येते की या जगात भारताचा साखर उत्पादनात प्रथम क्रमांक आहे.या उद्योगाची सुरुवात ही प्राचीन कार्य झाली. त्यावेळी तंत्रज्ञान विकसित नव्हते किंवा साखर उद्योगाच्या आजच्या इतका विकसित नव्हता परंतु साखर आणि गुळ बनवण्याची कला तात्कालीन लोकांना अवगत होती. प्राचीन साहित्यात उसासाठी 'ईक्षू'हा शब्द वापरला आहे तर साखरेसाठी 'शर्करा' हा शब्द प्रयोग केला आहे. अनेक प्रक्रिया करून साखर आणि गुळ बनवला जात असे. प्राचीन काळातील लोकांच्या आहारात यांचा समावेश असे व गुळ हा मद्य बनवण्यासाठी वापरत असत म्हणून साखर उद्योग चांगल्या स्थितीत होता असे आपल्याला सांगता येते.

प्राचीन काळी पूजेसाठी देवाला वाहण्यासाठी सुगंधी फुलांचा उपयोग होत असे. त्यातून सुगंधी पदार्थाची निर्मिती होण्यास सुरुवात झाली. चंदन सुगंधी फुले इत्यादी पासून अशा पदार्थाची निर्मिती होत असे. यापासून अन्तर बनवले जाई याचा उपयोग साधू दरबारातील लोक करत असतात. अन्तराबरोबरच सुगंधी तेल, सुगंधीतले उटणे, इत्यादींची ही निर्मिती केली जाई. परंतु हे समाजातील काही विशिष्ट वर्गच वापरत असत, सर्वसामान्य लोक याचा उपयोग सहसा करत नसत अशा प्रकारचे सुगंधित पदार्थ निर्मितीच्या उद्योगाची स्थिती दिसून येते.

संदर्भ ग्रंथ

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साहित्यामधील पर्यावरण

प्रा.डॉ.निवृत्ती विनायक मिसाळ

मराठी विभाग प्रमुख,
कला वाणिज्य व विज्ञान महाविद्यालय,
सोनई, ता. नेवासा, जि. अहमदनगर.

मानवी जीवनाच्या जडणघडणीत पर्यावरणाचा महत्वाचा वाटा राहिलेला आहे. समाजात विविध घटना घडत असतात बदल होत असतांना आणि जीवनावर त्याचा प्रभाव पडत असतो. ह्या सर्व घडामोडीचे चित्रण निश्चितच साहित्यातून उमटत असते समाज हा सभोतलच्या निसर्गानी व्यापलेला आहे. समाजाचा सर्वांगीण विकास पर्यावरणावर अवलंबून असतो आणि या समाजातूनच मानव निर्मित पर्यावरण आकाराला येते भौगोलीक प्रदेशानुसार वातावरणाशी निगडित मानवाची बोली भाषा त्यांचे रंग, वर्ण, उंची, राहणीमान संस्कृती व्यवसाय त्याची विचार पद्धती इ. आकाराला येत असतात.

प्रत्येक मानवी घटना ही निसर्गामुळे बदलते. सतत बदलणाऱ्या निसर्गचक्रानुसार मानवाचे जीवन प्रवाहित होत असते. तसे-तसे मन-बुद्धी सुख-दुःख इत्यादीवर या पर्यावरणाचा प्रभाव पडत असतो एकंदरीतच मानवी विकास-अविकास निसर्गाशी, पर्यावरणाशी संबंधित आहे आणि म्हणूनच साहित्य याला अपवाद नाही. निसर्ग आणि मानव हे परस्पर एक दुसऱ्यावर अवलंबून आहे. साहित्यातून नैसर्गिक पर्यावरणाचे प्रतिबिंब उमटत असते. रा.ग. जाधव यांनी व्यापक दृष्टीने पर्यावरणाची संकल्पना मांडली आहे. "मानव हा देखील पशुपक्षी व वनस्पती यांच्या सारखाच एक सजीव आहे. हा सजीव प्राणी बुद्धीमान आहे. नैसर्गिक पर्यावरणाशी प्राणी व वनस्पती यांच्या सारखाच एक सजीव आहे. हे खरच आहे. पण हे नैसर्गिक पर्यावरण स्वतःशी अनुकूल घेण्याची क्षमता त्यात अधिक आहे."

साहित्य हा एक पर्यावरणाचा भाग आहे. निसर्ग आणि मानव यांचे दृढ संबंध असल्यामुळे सातत्याने प्राचीन साहित्यापासून ते आर्वाचीन साहित्यापर्यंत कवी लेखकांनी कथा कादंबऱ्या कविता नाटक व प्रवासवर्णने ह्या साहित्य प्रकाराद्वारे मराठी साहित्यात निसर्गाचे सुंदर, रमणीय, मनोहरी, वेधक चित्रण केले आहे. फादर दिब्रटो म्हणतात. "मी निसर्गाच्या सानिध्यात वाढलो आहे. निसर्गाने मला घडविले आहे. आपले पर्यावरण आपल्याला घडवित असते. त्यामुळे मी निसर्गाच्या प्रेमात आहे. निसर्ग वाचला तरच माणूस वाचणार आहे. 16 व्या शतकात संत तुकारामांनी मानवी जीवनात पर्यावरणाचे महत्व सांगितले आहे.

वृक्षवल्ली आम्हा सोगरे वनचरे ।

पक्षी ही सुस्वरे अळविती ॥
येणे सुखे रुचे एकांताचा वास ।
नाही गुण दोष अंगा येत ॥
आकाश मंडप पृथ्वी आसन ।
रमे तेथे मन क्रीडा करी ॥
कथा कमुंडलू देह उपचारा ।
जाणवितो वारा आळासरु ॥
तुका म्हणे होय, मनांशी संवाद ।
आपुलाची वाद आपणाशी ॥

संत तुकाराम महाराज चित्त शुद्धी साठी निसर्गाच्या सानिध्यात जातात. निसर्गाशी एकरूप होवून अंतर्मुख पावतात पवित्र रम्य वातावरण मनुष्य दूर करू शकतो एक प्रकारचा निसर्ग हा अनादिकाळापासून मानवाच्या सानिध्यात आहे. संतांनी सुद्धा मान्य केले आहे.

संताप्रमाणेच थोर समाजसुधारक शेतकऱ्यांचे तारणहार महात्मा फुले यांनी सुद्धा पर्यावरणाच्या प्रतिकूल परिस्थितीचे मानवी जीवनावर होणारे परिणाम त्यांच्या शेतकऱ्यांचे आसूड या ग्रंथांत स्पष्ट केले आहे. दुष्काळामुळे शेतकऱ्यांची जी दयनिय आवस्था होत असते त्यांचे अत्यंत भेदक वर्णन महात्मा फुलेंनी केलेले नाही दुष्काळ मुळे हवालदील झालेला शेतकरी कसा कर्जबाजारी होतो ही वास्तविकता त्या ग्रंथाद्वारे लक्षात येते. या संबंधी महात्मा फुले लिहितात "दुष्काळात चारापाण्यावाचून लक्षावधी बैलांचा सरसकटीने खप होवून त्याचे वाटोळे झाले दुसरे असे की, शेतकऱ्यांजवळ उरलेला खल्लड बैलास फॉरेस्ट खात्याच्या अनिवार त्रासामुळे व गायरानाच्या कमतरतेमुळे पोटभर चारा वैरण मिळेनाशी होवून त्याची संतती दिवसेंदिवस होत चालल्या रोगाने दर वर्षी शेतकऱ्यांचे गोठ्यातील दावणीचे खुंटे उपटले जातात."

महाराष्ट्रातील शेतकरी शेतीवर अवलंबून असतो आणि शेती निसर्गावर काही-काही दुर्गम भाग निसर्गाच्या वाईट परिस्थितीचाच सामना शेतकऱ्यांना करावा लागतो. पावसाअभावी सर्वसामान्य जनजीवन, सामाजिक आर्थिक परिस्थिती विस्कळीत होते. परंतु या संकटातून वाचण्याचा मार्ग शासनाने व मानवाने काढला पाहिजे. हे विचार मराठी साहित्यातून व्यक्त होते."

शेतकरी हा ग्रामीण जीवनाचा अविभाज्य अंग असल्यामुळे शेतकऱ्यांचा विचार करताना त्याचा भोवतालच्या वातावरणाचा त्याच्या जीवनाशी सुसंगत असलेल्या घटकांचा विचार प्रामुख्याने करावा लागणार

आहे. शेतकऱ्यांच्या जीवनात पर्यावरणमुळे वाईट प्रसंग येतात तसेच काही आनंदचेही प्रसंग येतात ना. धो. महानोरांच्या रानातील कविता मध्ये रानाचे सौंदर्य निसर्गाचे वेगळेपण रान आणि शेतकरी यांचे अखंड नाते व्यक्त केले आहे. डॉ. रविंद्र ठाकूर लिहीतात त्याप्रमाणे "महानोरांच्या कवितेत शहरी ताण प्रथमच कमी झालेला दिसतो हे रान शेतकऱ्यांचे आहे. त्यांच्या कवितेत शेत व शेतकरी दोघेही बीजारोपण अंकुरसंवर्धन करतात व या निमितीच काम रानात राहणाऱ्या माणसाच्या जीवनाचा एक भाग बनलेला आहे. रानाची व मानसाची निर्मीती शक्ती, सर्जनशक्ती एकमेकांशी बांधलेली आहे. या जाणवेतूनच महानोरांची कविता जन्म घेते."

पर्यावरण खऱ्या अर्थाने ग्रामीण भागात जीवंत आहे. ग्रामीण भागातील सध्या भोळ्या माणसांनीच निसर्गावर खरे प्रेम केले आहे निसर्गावर अवलंबून असणारे ग्रामीण क्षेत्रातील माणसांना कधी कधी पर्यावरणाच्या भीषण परिस्थितीचा सामना करावा लागतो त्याचे दर्शन मराठी साहित्यातून घडते वन्यप्रेमी प्रसिद्ध कादंबरीकार व्यंकटेश माडुलकर व यांनी मराठी साहित्याचे दालन समृद्ध केले आहे. ग्रामीण भागातील साधे-भोळे माणसं यांची भौगोलिक परिस्थिती, सामाजिक व्यवस्था, रुढी-परंपरा व्यवसाय येते. 'बनगर वडी' या गावातील भौगोलिक प्रदेशाची हुबेहुब वातावरण निर्मीती माडगुळकरांनी त्यांच्या शब्दात वर्णन केल्यामुळे अजूनही वाचकांच्या मनात "बनगरवाडी" घर करुन आहे. मानदेशी माणसं ह्या पुस्तकात माडगुळकरांनी अनेक व्यक्तीरेखाद्वारे तिथल्या भौगोलिक प्रदेशाची पोतखोल केली आहे.

मराठी साहित्यात असणाऱ्या लोकसाहित्यात नैसर्गिक पर्यावरणाचे पारंपारिक अधिष्ठान आहे. मौखिक परंपरेतून प्रवाहीत असणाऱ्या लोककथा, लोकगिते, लोकसंगित, लोकनृत्य परंपरागत मिथकांतुन, प्राणिकथातून साधारपणे निसर्गाचे पार्थिव स्वरुप, त्यातील प्राणि सृष्टी, वनस्पतीसृष्टी या संबंधाचे संवेदन प्रकट झाले आहे. मरमाणासांचे म्हणून असणारे घर कसे असते ? या प्रश्नांचे एक सुंदर उत्तर डॉ. सरोजिनी बाबर यांनी "निराशा दुधाची घागर" (1978) या पुस्तकात दिलेल्या एका लोकगीतातून मिळते.

"जन पुशीत्या ती सांगा कुणाचे हे घर-

जाई मोगरा समूर

सावळ्या सुरतीला न्हाई नटाया लागत

लाल केवडी बागेत,

भोरलं माजं घर पुढं लोटिता मागं केर.

राघु मैजे ग खेळकर,

केळी नारळी मोडूनी इटी दांडूला जागा

ल्योक अवकाळ जलामला..!"

असे ते लोकगीत केवळ सुंदरच नाही तर विलक्षण अर्थपूर्णही आहे. या गीतात आलेले नैसर्गिक पर्यावरण वास्तवाचे नेमले भान घराच्या संदर्भात प्रकट करतात. पण आज विज्ञान युगात हे परंपरागत पर्यावरण हळुहळु नाहीसे होत असल्याचे संकेतही या गिताच्या शेवटी आहे. नव्याने आगमन होताना जुने उद्धवस्त केले जाते असा उद्वेगही येथे आहे. इंटी दांडूला जागा करतांना लेकाने गत वैभवाच्याकेळी नारळी तोडून टाकल्या असा हा लेक मुलगा अवकाळ म्हणजे विपरीत काळ जन्माला आला. सूचितार्थाने नैसर्गिक पर्यावरणाचे आता सांस्कृतिक पर्यावरणात रुपांतर होत आहे ही जाणीव आधुनिक परिभाषेत ई कॉलॉजिकल म्हणजे परिस्थितीची अशी जाणीव आहे. नैसर्गिक पर्यावरणाशी एक प्रकारचे जैविक नाते मराठी लोकसंस्कृतीने जोपासले आहे.

आम्ही दोघी बहिणी

दोन गावांच्या बारवा

मध्ये चंदन हिरवा भाईराजा

या जात्यावरील ओव्या रुपकात्म आहे. त्यामागील संवेदन पर्यावरणीय जैविक नात्यांस अतुटता दाखविणारे आहे दोन बहिणी म्हणजे दोन बारवा आहे. पण त्या दोन लांबच्या लावला आहेत तरी त्या दोघांनी एकत्र जोडणारा सेतु म्हणजे हिरवा चंदनरुपी असणारा त्याचा लाडका भाऊ या भावाला हिरवी श्रीमंती लाभते तो या दोन बारवातील पाण्यामुळे असे यातील पर्यावरणातील पर्यावरणीय संवेदन अपूर्ण विलक्षण आणि अर्थपूर्ण आहे. असे हे लोक साहित्यातील नैसर्गिक पर्यावरण समुद्ध आहे.

एकूणच मराठी साहित्यात पर्यावरणाचे स्थान अनादीकाळापासून अबाधीत आहे. पर्यावरणाचा जसा सामाजिक जीवनावर परिणाम होतो. तसा सांस्कृतिक जीवनावरही प्रभाव पडतो मराठी साहित्यात प्रादेशिक, ग्रामीण, दलित आदिवासी स्त्रीवादी सामाजाच्या सांस्कृतिक जडणघडणीत पर्यावरणांचा मोठा वाटा आहे. भौगोलिक प्रदेशानुसार पर्यावरणातील जीवनातही विविधता आढळून येते यांचे प्रत्यक्ष दर्शन मराठी साहित्यातून घडते.

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