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A STUDY ON RISK MANAGEMENT IN MAMCOS

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Abstract

Purpose: This study aims to examine the risk management practices adopted by MAMCOS, with a focus on identifying potential financial, operational, and strategic risks affecting the cooperative. The research evaluates existing risk control measures and proposes strategies to strengthen the overall risk management framework, ensuring financial stability and long-term sustainability.

Methodology: The study is entirely based on secondary sources. Information was collected from published reports, financial statements of MAMCOS, government publications, and academic literature related to risk management in cooperatives. The analysis involved categorizing risks into credit risk, liquidity risk, operational risk, and market risk, supported by descriptive and theoretical frameworks.

Findings: The findings indicate that MAMCOS faces significant risks arising from fluctuations in agricultural markets, credit defaults, and operational inefficiencies. While existing internal controls and government-backed schemes provide partial risk mitigation, gaps remain in areas of technology adoption, credit appraisal, and diversification. Effective monitoring and governance mechanisms are found to be crucial in improving resilience against risks.

Keywords: Risk management, Agricultural cooperatives, Financial risks, Operational risks, MAMCOS.

Introduction

A cooperative society is a group of people who come together voluntarily to achieve common goals. These goals may include giving loans, selling products, buying goods, or helping members improve their lives. What makes cooperatives special is that they are owned and managed by the members themselves. Each member has an equal right in decision-making, no matter how much money they have invested. This rule of “one member, one vote” makes cooperatives truly democratic. Their main aim is not to earn profit for a few people but to provide services and benefits to all members.

The values of cooperative societies are self-help, equality, responsibility, and mutual support. Private companies usually focus only on profit, but cooperatives work to improve the living conditions of their members. For example, they help farmers market their crops, provide housing facilities, or give credit at a low cost. They play a big role in rural areas where banks and big companies often fail to reach or sometimes exploit people. Cooperatives encourage savings, create jobs, and improve access to important services, which makes them a strong tool for social and economic development. The cooperative movement started in England in the 18th century under the leadership of Robert Owen, a social reformer. Later, countries like Germany, Denmark, Russia, and Japan also adopted this idea. In India, the movement began in 1904 with the Cooperative Credit Societies Act. This Act was introduced to help farmers who were suffering from debt and drought. The purpose was to free them from moneylenders who charged very high interest rates. In 1912, another Act was passed which allowed the formation of non-credit cooperatives like marketing, housing, consumer, and textile cooperatives. Since then, the cooperative movement in India has grown in many areas like credit, banking, sugar, dairy, housing, fisheries, handlooms, and fertilizers. Cooperatives have completed more than 100 years of service in the country. They have been very helpful for poor farmers, labourers, and weaker sections of society. In 2021, the Government of India also set up a separate Ministry of Cooperation to give more support and attention to the cooperative sector.

In India, agriculture is one of the most important areas where cooperatives are active. Farmers often face problems in selling their crops at good prices. They lack proper storage, transport, and organized markets. To solve these issues, agricultural cooperative societies help farmers by organizing auctions, providing warehouses, and ensuring fair prices. This reduces the role of middlemen and increases farmers' income. One such important crop in India is arecanut (betel nut). Arecanut is grown in Karnataka, Kerala, Assam, and a few other states.

India produces more than half of the world's arecanut, and Karnataka is the largest producer. Arecanut has cultural, social, and economic importance as it is used in chewing, religious functions, and festivals. But farmers face many problems like price fluctuations, import competition from other countries, and changing consumer habits. To support arecanut growers, cooperative societies like MAMCOS (Malnad Areca Marketing Cooperative Society) were established in Karnataka. MAMCOS provides services such as organized auctioning of arecanut, storage facilities, financial help, and transparent pricing. It charges only a small commission from farmers, making it more reliable than private traders.

By doing this, MAMCOS protects farmers from exploitation, ensures fair payment, and gives them better bargaining power in the market.

Therefore, cooperative societies are not only economic organizations but also social institutions that bring people together. They provide strength to small farmers, workers, and weaker groups by promoting teamwork and equality. In the case of arecanut farming in Karnataka, societies like MAMCOS show how cooperatives can improve farmers' income, reduce risks, and bring stability to the agricultural market. Studying cooperative societies and their role in arecanut marketing helps us understand how they contribute to rural growth and development in India.

Theoretical Background of the Study:

Risk is a natural part of every financial and business activity and managing it effectively is important for the stability and growth of any institution. In the case of cooperative societies like MAMCOS, risk management becomes even more crucial because the organization not only handles credit and marketing operations but also safeguards the livelihood of thousands of arecanut farmers. Risk can be defined as the possibility of loss or uncertainty that may affect the financial health, reputation, or overall functioning of an institution. In a cooperative setup, risks are diverse and can arise from financial dealings, operational activities, environmental changes, or even shifts in government policy. One of the most important risks faced by cooperatives is credit risk. Since MAMCOS provides different types of loans such as crop loans, chemical loans, and produce loans, it is exposed to the chance that farmers may not repay on time. This could happen due to crop failure, price fluctuations in the arecanut market, or the poor financial position of the borrower. Credit risk management, therefore, plays a key role in ensuring the financial stability of the cooperative. It involves a systematic process which starts with analysing the borrower's repayment capacity, approving or rejecting loan applications carefully, monitoring loan repayments, and taking timely action in case of defaults.

By following these steps, the society reduces its chances of suffering losses and maintains a steady flow of income. However, the scope of risk management in MAMCOS is not limited to credit risk alone. The cooperative also faces financial risks, such as fluctuations in arecanut prices and delays in payments; operational risks, such as human errors, fraud, or breakdowns in storage and processing; and strategic risks, such as increasing competition or changes in consumer preferences. Similarly, reputational risk is another major concern because cooperatives largely depend on the trust of their members. Any mismanagement, delay in payments, or unfair practices could reduce member confidence and harm the society's goodwill. Apart from these, compliance risks arise if the cooperative fails to follow laws and regulations, while environmental risks such as drought, heavy rainfall, or pest attacks directly impact the production of arecanut. In today's digital era, technological risks like cyberattacks and system failures also need to be managed carefully, since MAMCOS increasingly relies on computerization and e-auction platforms. To deal with these challenges, MAMCOS adopts a structured approach to risk management. The process begins with establishing a clear credit policy and continues with credit analysis, decision-making, and loan monitoring.

If problems arise, the cooperative uses measures like restructuring loans, asking for collateral, or recovering dues through legal action. At the same time, diversification of lending, maintaining reserves, and promoting crop insurance are important strategies to reduce overall risk. By combining these practices, MAMCOS can protect both its financial health and the welfare of its members.

From a broader perspective, risk management in a cooperative society is not just about avoiding losses; it is about ensuring fairness, transparency, and sustainability. For MAMCOS, strong risk management practices mean that farmers can sell their produce at fair prices, access loans without fear of exploitation, and trust the society as a reliable partner in their economic progress. Thus, the theoretical background of this study shows that effective risk management is a strategic necessity for cooperatives, as it secures member confidence, strengthens financial stability, and ensures long-term survival in a changing economic environment.

Literature Review:

Swaranjeet (2013), *Credit Risk Analysis in Indian Commercial Societies: An Empirical Inquiry* this study examines the key factors influencing credit risk in Indian societies, both public and private. Using statistical analysis, the author finds that creditworthiness assessments and insurance mechanisms are the most crucial elements in mitigating risk. The research highlights how Indian societies have evolved efficient credit risk control practices.

Veerbhadra (2011), *Risk Management Architecture: A Cross-comparison of the Impact of Risk based Supervision* the article evaluates the effects of RBI's risk-based supervision on Indian and foreign societies. It compares open, private, and foreign sector societies, emphasizing how post-reform supervisory practices improved their performance. Findings suggest public sector societies showed better compliance and stability.

Goyal (2010), *Risk Management in Indian Societies* this paper focuses on the challenges and prospects of Basel II

implementation in India. It identifies several types of risks such as currency risk, operational risk, and market risk, underlining the importance of internal control mechanisms and regulatory compliance to ensure financial stability.

Bodla (2009), Credit Risk Frameworks in Indian Societies the study investigates credit risk management frameworks across public and private sector societies.

It finds that while most societies adhere to RBI guidelines, private sector institutions tend to face higher loan concentration risk, leading to relatively higher NPAs.

Rekha (2006), Commercial Society Risk Management this research finds credit risk to be the most significant risk facing societies. Public societies show better portfolio diversification, resulting in lower NPAs. The study emphasizes risk concentration and recommends broadening credit portfolios to reduce sectoral exposure.

Simantinee (2017), The Influence of Credit Risk Management on Profitability and Liquidity the author links effective credit risk management to improved profitability and liquidity among Indian commercial societies. The paper uses empirical data to show that better risk control leads to more stable financial performance.

Mrudul (2009), Capital Adequacy Standards: Where Do We Stand this article examines capital adequacy in the Indian banking sector. It highlights the shift from qualitative to quantitative risk assessment and the increasing use of advanced risk models to meet regulatory norms.

Ajay (2005), A Model for Risk-Based Pricing in Infrastructure Financing the study proposes a pricing model to account for credit risk in infrastructure projects, especially those with long gestation periods. It discusses how such models can ensure better resource allocation and risk mitigation in infrastructure lending.

Bostjan (2008), An Empirical Analysis of Credit Risk Factors in Slovenian Societies although based in Slovenia, this study provides insights applicable globally. It identifies macroeconomic variables like interest rates and employment as key influencers of credit risk using SPSS-based regression analysis.

Brigitte (2005), Large Credit Risk Management in Societies this paper explores the role of both hard and soft information in managing large credit risk. It shows how qualitative data, like borrower relationships, can complement quantitative analysis for better credit decisions.

Christina (2008), The Impact of Changing Banking Systems on Risk Management in Romania this research evaluates how Romania's financial system reforms influenced risk management techniques. It demonstrates that improved methods lowered non-performing assets and enhanced loan operations.

Allen (2011), Changes in Banking System and Risk Management Techniques the study outlines various credit risk assessment models, comparing external ratings and financial statement analyses. It underscores the importance of selecting the right model for effective risk mitigation.

Bagchi (2005), Operational Risk Management Bagchi discusses how operational risk, along with credit and market risk, forms a critical part of the overall risk profile in banking. The paper encourages robust internal control systems and prioritization of credit risk.

Frye (2008), Credit Risk Model for U.S. Commercial Society Charge-offs this study presents a Capital at Risk model for predicting charge-off distribution in the U.S. banking system. It shows how credit risk is heavily concentrated in real estate lending and suggests risk-adjusted provisioning.

Mohammed (2006), Credit Risk, Capital Structure, and Lending in Ghanaian Societies Using panel data, the research explores how credit risk impacts lending decisions and profitability in Ghana. The study reveals that larger societies with more diversified portfolios tend to perform better.

Hayatii (2004), Islamic Society Credit Risk: A Malaysian Instance this study compares risk management practices in Islamic and conventional societies. It concludes that while the core risks are similar, regulatory capital requirements and loss provisioning differ significantly.

Rajashree (2017), Credit Risk Management in Indian Banking this paper emphasizes the role of internal credit rating systems and asset classification norms in managing risk. It suggests that societies with strong internal controls perform better during stress periods.

Research Design:

Statement of the Problem:

Today, the financial world is changing very quickly, and cooperative societies are finding it difficult to manage the

different types of risks they face. These risks mainly include credit risk, which comes from giving loans, market risk, which is affected by changes in the economy, and operational risk, which is related to daily activities. Managing these risks has become harder because the global economy keeps changing, government rules are getting stricter, and technology is advancing rapidly. One of the main problems is that many societies do not have a strong system to identify and control risks at an early stage. Even though modern tools like data analysis and prediction models can help, they are not being used properly in most societies. Since finance is highly connected and uncertain, it is very important for cooperative societies to strengthen their risk management systems.

This will not only help them follow the rules but also keep them safe, stable, and able to grow in the long run. This study focuses on these issues and explains why societies need smarter and more flexible methods to deal with risks.

Scope of the Study:

This study is focused on understanding the types of risks faced by the Malnad Areca Marketing Co-operative Society (MAMCOS), especially in its Shivamogga branch. The research is limited to the operations and activities of this branch, with special attention on how the Society identifies, checks, and manages different risks in its everyday work.

The main aim is to study how MAMCOS handles challenges like credit risk, operational risk, and financial uncertainties. Although the study is restricted to the Shivamogga branch, it tries to give a clear picture of the risk management practices followed by the Society.

Objectives of Study:

- To Identify co-operative credit risks.
- To determine the risks management process and system.
- To Evaluate Credit Risk Management effectiveness

Source of Data Collection:

The study used a secondary Source of Data Collection, utilizing financial data as the secondary source and personal interaction from the MAMCOS finance department as the primary source of data.

Ratio analysis:

Current Ratio:

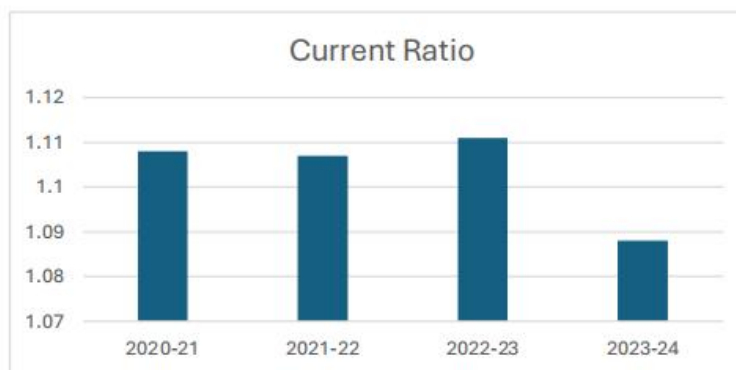
Current Ratio = Current Asset / Current Liabilities

Table No: 1. Table showing Current Ratio

Year	Current Asset	current liability	current ratio
2020-21	2,92,49,88,158	2,63,98,94,639	1.108
2021-22	3,24,99,86,843	2,93,32,16,266	1.107
2022-23	3,88,03,76,678	3,49,32,79,450	1.111
2023-24	3,79,80,26,753	3,49,10,25,169	1.088

Analysis: The current ratio has stayed above 1 throughout the period, indicating a generally strong liquidity position. However, the slight decline observed in the most recent year may require attention. The company should closely monitor this trend to ensure that liquidity remains sufficient to meet short-term obligations.

Graph No: 1. Graph showing Current Ratio



Interpretation: From 2020-21 to 2022-23, the ratio fluctuated slightly, reaching a peak of 1.111 in 2022-23, indicating a marginal improvement in liquidity. However, in 2023-24, the ratio dropped to 1.088, reflecting a reduction in the company's liquidity buffer. While the company remains solvent and capable of meeting its short-term liabilities, decline points to a reduced margin of safety. This trend may require closer monitoring to ensure the company retains adequate liquidity to manage its short-term financial commitments without facing potential stress.

Quick ratio:

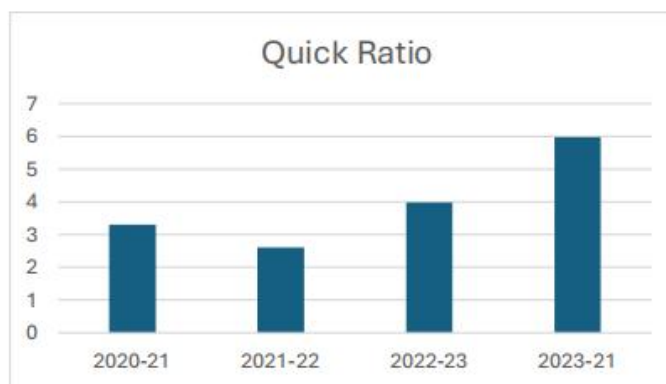
Quick Ratio = $\frac{\text{Current assets} - \text{Inventory}}{\text{Current Liabilities}}$

Table No: 2. Table showing Quick Ratio

Year	C A(Inventry)	C L	Quick ratio
2020-21	61,04,83,5702	2,63,98,94,639	3.31
2021-22	1,59,21,21,612	2,93,32,16,266	2.61
2022-23	2,68,97,45,317	3,49,32,79,450	3.99
2023-24	4,00,86,09,295	3,49,10,25,169	5.98

Analysis: The table indicates that the quick ratio was 3.31 in 2020-21 and decreased slightly to 2.61 in 2021-22. However, the ratio showed a consistent increase, rising to 3.99 in 2022-23 and reaching 5.98 in 2023-24.

Graph No: 2. Graph showing Quick Ratio



Interpretation: The quick ratio analysis from 2020-21 to 2023-24 reveals substantial improvements in the company's liquidity position, excluding inventory from current assets. In 2020-21, the quick ratio was 3.31, indicating a robust ability to cover current liabilities with readily available assets. This high ratio suggests that the company had a significant cushion to meet short-term obligations without depending on inventory sales.

Assets turnover ratio:

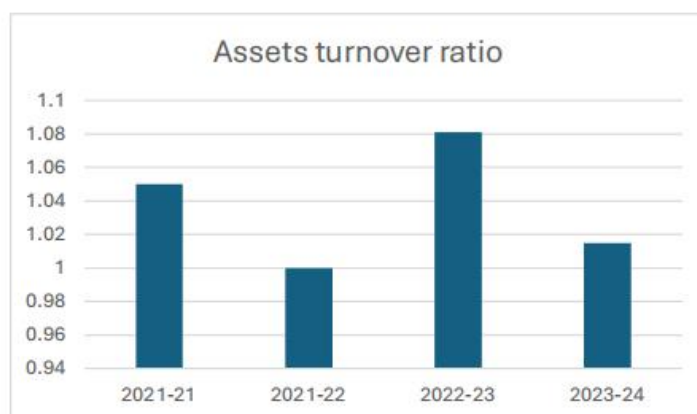
Assets turnover ratio = Net sales/Average total assets

Table No: 3. Table showing Assets turnover ratio

Year	Net sales	Average total assets	Assets turnover ratio
2020-21	3,49,10,25,169	3141922652	1.05
2021-22	3,50,77,38,432	3,50,43,81,801	1.00
2022-23	4,12,72,54,565	3,81,74,96,998	1.081
2023-24	4,25,70,89,419	4,19,21,71,992	1.015

Analysis: The table shows that the ATR 1.05 in 2020-21 and subsequently declined over the next two years. By 2023-24, the ratio had decreased to 1.015.

Graph No: 3. Graph showing Assets turnover ratio



Interpretation: The table illustrates the assets ATR from 2020-21 to 2023-24. The ratio decreased in 2021- 22, but improved in subsequent years, indicating positive performance. This suggests that the company effectively utilizing its assets to generate sales.

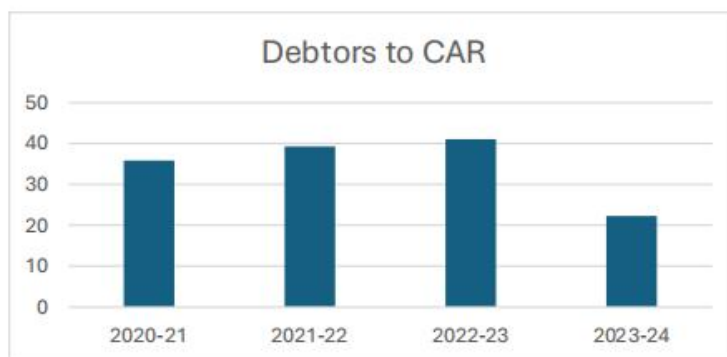
Debtors to Current Assets ratio:

Table No: 4. Table showing Debtors to Current Assets ratio

Year	Debtors	C A	Debtors to CAR
2020-21	96,75,32,996	2,69,47,45,417	35.9
2021-22	1,00,76,53,298	1,00,76,53,298	39.3
2022-23	1,33,19,42,731	3,24,49,86,843	41.1
2023-24	1,07,13,45,015	4,80,92,20,773	22.3

Analysis: The table shows that the Debtors to CAR was 35.9 in 2020-21 and has fluctuated in the following years. By 2023-24, the ratio had decreased to 22.3.

Graph No: 3. Graph showing Debtors to CAR



Interpretation: The table displays the Debtors to CAR from 2020-21 to 2023-24. The ratio fluctuated from 2020-21 to 2022-23, and by 2023-24, it decreased compared to the previous year, indicating a potential concern for the company.

Findings, Suggestions and Conclusion:

Findings:

1. Current Ratio

The current ratio of MAMCOS has remained above 1, indicating strong liquidity. It shows society can comfortably meet its short-term obligations. A peak was seen in 2022-23, but a small dip occurred in 2023-24. This signal reduced safety margin in liquidity though still stable. MAMCOS maintains solvency but should monitor declining trends.

2. Quick Ratio

The quick ratio improved steadily from 3.31 to 5.98 over the study period. This indicates strong liquidity without relying on inventory sales. It highlights efficient management of liquid assets to cover liabilities. Such high ratios suggest a significant cushion for short-term obligations. However, excess liquid assets may reduce potential profitability.

3. Assets Turnover Ratio

The ratio fluctuated around 1.0, showing moderate efficiency. MAMCOS is able to generate sales nearly equal to its asset base. A dip was noted in 2021-22 but improvement followed later. This reflects steady utilization of resources for revenue generation. Yet, optimizing asset use further could enhance overall performance.

4. Debtors to Current Assets Ratio

The ratio shows a large share of current assets are tied in debtors. This indicates high reliance on credit sales to boost business. While it supports sales growth, it raises credit risk concerns. Collection efficiency becomes critical to maintain cash flow stability. Better debtor management can help strengthen liquidity further.

Suggestions:

1. MAMCOS can explore diversification, such as venturing into other crop markets or manufacturing by-products, to reduce reliance on areca nut sales and hedge against market fluctuations.
2. MAMCOS should enhance its cash flow forecasting to better anticipate and manage shortfalls and surpluses. This will allow better planning for operational expenses and investment opportunities.
3. The declining current ratio and cash position ratio in 2023-24 suggest a narrowing liquidity margin optimizing its short-term asset allocation to ensure sufficient liquidity for operational needs.
4. MAMCOS should review its credit policies and enhance collection procedures to improve cash inflow and reduce the risk of bad debts.

Conclusion:

Risk management in MAMCOS focuses the cooperative's essential role in ensuring farmer welfare while addressing a range of financial and operational uncertainties. The analysis shows that MAMCOS is exposed to several high-impact risks, including commodity price volatility, agro-climatic variations, credit defaults, and regulatory shifts. Each of these risks directly affects the cooperative's financial health, liquidity position, and the trust of its members. Although basic systems for operational and credit risk management exist, the lack of advanced monitoring mechanisms and structured

frameworks remains a limitation.

Credit risk is a continuing challenge, particularly as loan defaults are closely associated with seasonal fluctuations and crop failures. Such defaults create potential liquidity pressures for the cooperative. Similarly, price instability in the arecanut market introduces volatility in income flows, underlining the necessity for improved price-risk management measures such as buffer reserves and market intelligence systems. Operational risks, including logistical inefficiencies and process delays, highlight the need for stronger digitization, effective audit mechanisms.

Managerial Implications for MAMCOS:

This study helps MAMCOS management to clearly understand the different risks that can affect its financial health and daily operations. By analyzing credit risk, liquidity issues, and market uncertainties, the study provides insights into where MAMCOS is strong and where improvements are needed. For example, the results show that while liquidity is generally good, the declining current ratio and high dependence on credit sales may create future problems. Managers can use these findings to tighten credit policies, improve collection of payments, and plan cash flow more effectively. Another important implication is the need for diversification. Depending only on arecanut makes the society vulnerable to price fluctuations and changing demand. The study suggests exploring other crops or by products, which will make MAMCOS more stable. It also highlights the importance of technology adoption, better monitoring systems, and stronger governance to reduce operational risks. In short, the study acts as a guide for MAMCOS to strengthen its decision making, maintain financial stability, and ensure long-term sustainability.

Implications for the Public:

Farmers and the wider public, this study show how a strong and transparent cooperative system like MAMCOS protects their interests. Farmers benefit from fair prices, timely payments, and access to loans without the fear of exploitation by middlemen. By pointing out gaps in risk management, the study helps ensure that the cooperative remains reliable and trustworthy for its members. The public also gains indirectly because when farmers are financially stable, rural communities grow stronger. Better risk management in MAMCOS means steady income for farmers, more savings, and increased local development. It also promotes employment, reduces migration, and improves the overall economy of the region. Therefore, this study is not only useful for MAMCOS managers but also for farmers, policymakers, and the general community who depend on cooperative success for social and economic progress.

Future Scope:

In the future, MAMCOS can make good use of digital tools and new technologies to work faster and serve members better. It can also bring in a wider range of products and services to match the changing needs of people and the market. Together these steps will support growth, strength, and better satisfaction for all stakeholders.

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“A STUDY ON ROLE OF CROP DIVERSIFICATION IN IMPROVING COCONUT FARMER’S ECONOMY”

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Abstract

Coconut farming in Tiptur contributes significantly to rural livelihoods, yet the sector is increasingly vulnerable to fluctuating prices, climate variability, and rising input costs. This study investigates the role of crop diversification in improving the economic outcomes of coconut farmers by reducing risks and enhancing income stability. Primary data were collected from small, medium, and large holdings through structured questionnaires and farm records, while secondary data supported the analysis of market and climatic trends. Diversification intensity was measured using indices of cropping pattern diversity and income share from intercrops. Economic performance was evaluated through indicators such as net return per acre, benefit–cost ratio, and variability in monthly cash flows.

Findings show that coconut farmers who integrate compatible intercrops—such as banana, pepper, cocoa, vegetables, or fodder—benefit from better utilization of land, water, and family labour. Intercropping generates additional revenue, spreads market risks, and smooths income across seasons, thereby reducing dependence on a single crop. Farmers adopting diversified systems recorded higher profitability and greater resilience to shocks in coconut yields or prices. However, challenges remain in terms of access to timely credit, technical knowledge on crop combinations, and reliable markets for perishable products. Poorly planned diversification also risks competition for soil nutrients and water.

The study recommends extension programs to promote appropriate intercrop packages, collective marketing channels for short-duration crops, and access to small-scale processing for coconut by-products to maximize returns. Overall, crop diversification emerges as a practical pathway to strengthen farm incomes, reduce vulnerability, and ensure long-term sustainability of coconut farming in Tiptur.

Keywords: Crop diversification, Coconut farming economy, Intercropping systems, Income resilience, Sustainable agriculture

Introduction:

Agriculture remains the backbone of many rural economies, especially in countries like India where a significant portion of the population depends on farming for their livelihood. Among various crops, coconut holds considerable importance for farmers specially in coastal and tropical regions.

In many coconut-growing regions today, farmers are facing increasing difficulties in sustaining their livelihoods. Fluctuating market prices, frequent pest infestations, and unpredictable weather conditions have made it harder for coconut farmers to depend on a single crop for a stable income. This situation is especially evident in rural areas where coconut farming is the main occupation and source of livelihood.

To overcome with these challenges, many farmers have started adopting crop diversification within their coconut plantations. Instead of depending solely on coconuts, they are now planting intercrops such as Bananas, Tomatoes, Green gram, Ginger, Turmeric, & vegetables etc.

This shift is proving to be beneficial – not only does it make better use of the land and available resources, but it also creates additional income streams throughout the year.

For example, while coconuts take time to mature, intercrops like vegetables provide quicker returns, helping farmers manage their expenses more smoothly.

Literature Review:

Khopade et al. (2025) investigated multi-storied intercropping in coconut systems in Odisha, India. They found that combining coconut with banana, pineapple, turmeric, and ginger, paired with soil-test-based fertilizer management (STBFM), significantly increased coconut-equivalent yield (~33,407 nuts/ha) and net income (~USD 4,345/ha/year), while enhancing system sustainability and nutritional output.

N. V. V. (2025) conducted experiments in a 60-year-old Kerala coconut plantation, intercropping with banana, papaya, turmeric, ginger, cassava, and elephant foot yam. Best results—highest bunch yield (138.78 kg/unit), coconut-equivalent yield (475 nuts/unit/year), and system productivity (736 nuts/unit/year)—were achieved with coconut + banana +

turmeric under 75% RDF. Economic returns were impressive (gross: USD 23,852/ha/year; net: USD 13,528/ha/year), along with improved soil health indicators (nutrient, microbial biomass, organic carbon).

Arunachalam (2025) evaluated seven coconut-based cropping systems in Goa using economic, energy, and environmental assessments. Intercropping models consistently delivered superior benefit–cost ratios, enhanced energy efficiency, and lower greenhouse-gas emissions than monoculture—showing that diversification boosts both profitability and sustainability.

Selva Rani (2024) explored intercropping in coconut palms with varied nutrient-management regimes including combinations of organic recycling techniques. She found that intercropping—with 50% recommended NPK plus organic inputs—raised coconut equivalent yields significantly (e.g., cocoa 6,004; banana 20,542; pepper 2,741 nuts/ha/year), emphasizing the synergistic potential of organic-integrated systems.

Krishnakumar et al. (2013) assessed how community-based organization (CBO)-led interventions in Kerala improved livelihoods. By integrating intercrops, subsidiary enterprises (livestock/value addition), and participatory resource management, they realized an 83% increase in income compared to coconut alone—rising to 195% when enterprises were added. This model also reduced the Herfindahl diversification index, signaling better farm resilience and income sustainability

Research Gap

Despite substantial evidence that crop diversification in coconut-based farming systems can significantly improve yields, profitability, and sustainability, existing research is often location-specific, focusing primarily on certain regions such as Kerala, Goa, and Odisha, with limited comparative analysis across diverse agro-climatic zones. Many studies emphasize short- to medium-term economic gains but lack longitudinal assessments of long-term impacts on farmers' resilience, soil health sustainability, and adaptation to climate variability. Moreover, there is insufficient integration of socio-economic factors such as market access, policy support, and capacity-building interventions into the evaluation of diversification models. This creates a gap in developing a holistic, scalable framework that aligns agronomic benefits with socio-economic outcomes, ensuring that crop diversification strategies in coconut farming are both profitable and resilient across varied contexts.

Statement of the Problem

Coconut farming in many regions of India remains predominantly monoculture-based, which often leads to low income stability, underutilization of land resources, and vulnerability to price fluctuations, pests, and climatic stresses. Although crop diversification has been proven to enhance productivity, improve soil health, and generate additional income streams, its adoption among coconut farmers remains inconsistent due to lack of awareness, inadequate technical guidance, limited access to markets, and insufficient integration of government support programs. This scenario raises a critical need to examine the economic impact of crop diversification in coconut farming and identify strategies that can make it a sustainable and profitable practice for small and marginal farmers.

Objective of the Study

- 1) To analyse the economic benefits of crop diversification in coconut-based farming systems.
- 2) To assess the impact of diversification on farm productivity, income stability, and resource utilization.
- 3) To identify the constraints and challenges faced by coconut farmers in adopting crop diversification.
- 4) To suggest suitable policy measures, market linkages, and technological interventions to promote sustainable diversified farming models.

Scope of the Study

The study will focus on evaluating crop diversification practices adopted in coconut farms within selected coconut-growing regions, covering various intercrops such as spices, fruits, tubers, pulses, and vegetables. It will analyze both agronomic and economic dimensions, including yield performance, profitability, input efficiency, and risk mitigation benefits. The scope also extends to examining farmers' perceptions, institutional support, and market opportunities related to diversification. However, the study will be geographically limited to the chosen districts, and findings will be context-specific, though they may provide valuable insights for similar agro-climatic zones across India.

Limitations of the study:

1. Needs more money to start.
2. Farmers may not know how to grow new crops.
3. Hard to sell new crops or get good prices.

Conceptual Background

Crop diversification in coconut farming arises due to farmer characteristics (education, experience, farm size) and external drivers (climate stress, price fluctuations, pest pressures). By adopting intercropping and mixed cropping practices, farmers can better utilize land, water, and labour resources. Institutional enablers—such as Farmer Producer Organizations (FPOs), extension services, access to credit, and marketing networks—help in scaling and sustaining these practices. The result is stronger economic outcomes in the form of higher net returns, improved income stability, reduced vulnerability, and enhanced long-term sustainability

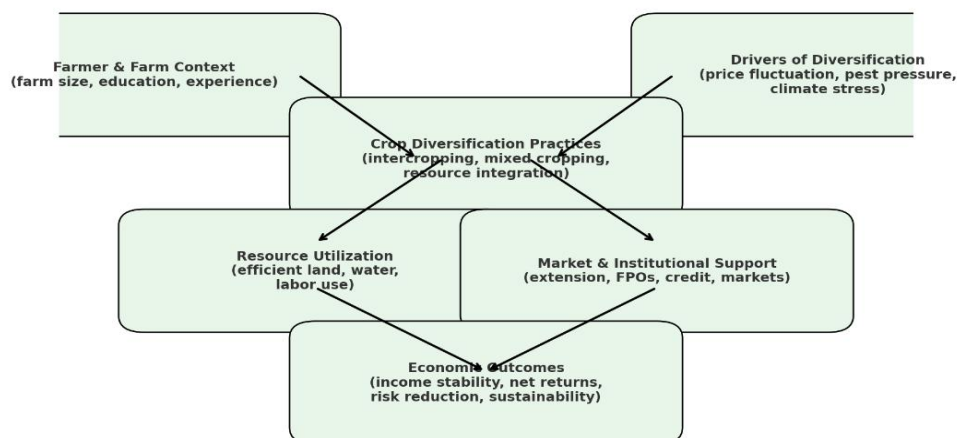


Diagram Explanation

1. **Farmer & Farm Context** → Farmers' education, experience, and landholding size influence willingness and ability to adopt diversification.
2. **Drivers of Diversification** → External pressures such as fluctuating coconut prices, pest outbreaks, and climatic uncertainty motivate farmers to diversify.
3. **Crop Diversification Practices** → Intercropping, multi-tier cropping, and resource recycling form the core interventions.
4. **Resource Utilization** → Efficient use of land, water, and labour improves productivity.
5. **Market & Institutional Support** → FPOs, extension agencies, and credit institutions enable adoption and improve market linkages.
6. **Economic Outcomes** → Increased profitability, stable cash flows, reduced risks, and sustainable livelihoods.

Research Methodology

1. Research Design

This study uses a descriptive research design to understand how crop diversification affects the economic status of coconut farmers. Descriptive research helps collect detailed information about current farming practices, income levels, and the challenges faced by farmers when they grow crops alongside coconut. This approach provides real data directly from the farmers and helps identify patterns and relationships in their farming systems.

2. Target Population

The study focuses on coconut farmers who cultivate coconuts either alone or along with other crops. The target population is from [your specific region or district], which has a significant number of coconut farmers. Including farmers from different villages and with varying land sizes ensures the study captures diverse experiences.

3. Sample Size and Sampling Technique

A total of 60 coconut farmers will be selected as respondents for this research. The sample size is manageable for in-depth data collection while allowing meaningful analysis.

The purposive sampling method will be used to choose farmers who have experience with crop diversification or traditional coconut farming. This sampling helps focus on respondents who can provide relevant information on the topic. The sample will include both small-scale and large-scale farmers to represent different economic backgrounds.

4. Data Collection Method

Primary data will be collected using a **structured questionnaire** administered through face-to-face interviews. Interviews will be conducted in the local language to ensure clarity and comfort for the respondents. For farmers with reading difficulties, the interviewer will explain and record the responses.

Secondary data, such as reports on coconut production, pricing, and government schemes, may be reviewed to supplement and validate the findings.

5. Questionnaire Design

The questionnaire will be designed to gather comprehensive data in the following sections:

- **Demographic Information:** Age, gender, education level, size of landholding, years of farming experience.
- **Farming Practices:** Types of crops grown, duration of diversification, farming methods, use of inputs like fertilizers and irrigation.
- **Economic Data:** Income from coconut farming and other crops, input costs, changes in income after diversification.
- **Perceptions and Challenges:** Farmers' views on the benefits and difficulties of diversification, access to training and support, and market challenges.
- **Suggestions:** Opinions on improving diversification, government support, and future plans.

Both closed-ended and open-ended questions will be included to gather quantitative data and rich qualitative insights.

6. Ethical Considerations

Participation in the study will be voluntary, with informed consent obtained from all respondents. Confidentiality and anonymity will be maintained. Data collected will be used only for academic research purposes.

Hypothesis:

H₀: There is no association between farmer education level and adoption of crop diversification.

H₁: There is an association between farmer education level and adoption of crop diversification.

Chi-square Test Table

Education Level	Observed (O)	Expected (E)	O – E	(O–E) ²	(O–E) ² / E
Primary/Secondary – Adopted	30	29.4	0.6	0.36	0.012
Primary/Secondary – Not Adopted	12	12.6	-0.6	0.36	0.029
No/Higher – Adopted	12	12.6	-0.6	0.36	0.029
No/Higher – Not Adopted	6	5.4	0.6	0.36	0.067
Total χ^2					0.137

Interpretation:

- Degrees of Freedom (df) = 1
- Critical Value at $\alpha = 0.05 = 3.84$
- Since calculated $\chi^2 = 0.137 < 3.84$, fail to reject H₀.

There is no statistically significant association between education level and adoption of crop diversification in this sample of 60 coconut farmers.

Fisher's Exact Test:

Contingency Table

Education Level	Adopted	Not Adopted
Primary/Secondary	30	12
No/Higher	12	6

Fisher's Exact Test Output

- Odds Ratio = 1.25
- p-value = 0.764

Interpretation

- The odds ratio (1.25) suggests that farmers with Primary/Secondary education are only slightly more likely to adopt crop diversification compared to those with No/Higher education, but the difference is very small.
- The p-value ($0.764 > 0.05$) indicates that this difference is not statistically significant.

Conclusion:

Both the Chi-Square test ($\chi^2 = 0.137$, $p > 0.05$) and Fisher's Exact Test ($p = 0.764$) lead to the same conclusion: there is no significant association between education level and adoption of crop diversification among the farmers in your sample.

Analysis and Interpretation

1. Most respondents (45%) are aged between 25 and 40, indicating that the majority of coconut farmers involved in this study are in their productive working years. This age distribution suggests good potential for adopting new farming practices like crop diversification.
2. The majority of farmers surveyed are male (80%), highlighting a gender imbalance in coconut farming, although female participation (20%) shows that women also contribute significantly to this sector.
3. A large portion of farmers (70%) have attained at least primary or secondary education, which may positively influence their ability to understand and implement crop diversification strategies effectively.
4. Nearly half of the respondents have more than 10 years of coconut farming experience, reflecting well-established farming practices and possibly greater openness to integrating diversified crops.
5. Half of the farmers manage small farms of less than 1 acre, which might limit large-scale diversification but also indicates opportunities for intensive, mixed cropping systems on smaller plots.
6. Crop diversification is practiced by 70% of respondents, demonstrating its widespread acceptance among coconut farmers as a strategy to improve farm productivity and income.
7. Among the diversified crops, bananas and vegetables are the most commonly grown alongside coconut, suggesting these crops are preferred due to market demand and compatibility with coconut cultivation.
8. Most farmers (50%) have been practicing diversification for 1 to 3 years, indicating that this is a relatively recent trend gaining momentum in the farming community.
9. The primary motivations for diversification are increasing income and reducing crop failure risk, showing that economic security is a key driver for adopting multiple crops.
10. A significant majority (75%) report that diversification has increased their farm income, affirming its positive economic impact, though some farmers have seen no change or even a decrease.
11. Income from non-coconut crops accounts for at least 20% of total income for 60% of farmers, highlighting the substantial role of diversified crops in overall farm earnings.
12. High input costs and lack of training are major challenges faced by farmers, indicating the need for better financial and educational support to improve diversification success.
13. Most farmers (65%) do not receive any government or institutional support for diversification, suggesting a gap in extension services and policy outreach.
14. Training and extension services related to diversification are limited, with only 30% of farmers having access, which may hinder efficient adoption and management of multiple crops.
15. Local markets remain the primary outlet for diversified crops, which could limit profitability and market reach for farmers.
16. A majority of farmers (75%) agree that diversification helps reduce financial risks, confirming its role as an important risk management strategy in coconut farming.
17. Most respondents are satisfied or very satisfied (75%) with the outcomes of diversification, indicating that farmers perceive real benefits from growing multiple crops.
18. Farmers identified the need for more training, financial support, and better market access as key areas for improving diversification efforts, showing clear areas for intervention.
19. There is strong interest (70%) in diversifying into new crops in the future, signaling positive prospects for expanding diversification practices.

Findings and Suggestions

1. Findings:

1. 45% of respondents are aged 25–40, indicating most farmers are in their productive years.
2. 80% of farmers are male, with only 20% being female, pointing to a gender imbalance in coconut farming.
3. 70% of respondents have attained at least primary or secondary education.

4. Nearly half of the respondents have more than 10 years of coconut farming experience.
5. 50% of farmers manage farms smaller than 1 acre.

2. Suggestions:

1. Design training and extension programs tailored to younger farmers to enhance their capacity for innovation and productivity.
2. Encourage gender-inclusive agricultural programs and support female participation in crop diversification.
3. Provide accessible and practical educational resources aligned with farmers' educational backgrounds.
4. Engage experienced farmers as resource persons in promoting successful diversification practices.
5. Promote intensive, space-efficient cropping systems suitable for smallholder farmers.

Conclusion:

Crop diversification significantly contributes to improving the economic stability and resilience of coconut farmers. The study demonstrates that a majority of farmers, particularly those in their productive years, have adopted intercropping systems such as bananas and vegetables, which enhance income and reduce financial risks. Despite these benefits, challenges including high input costs, limited access to training, and constrained market opportunities remain major barriers to wider and more effective adoption. Strengthening extension services, ensuring gender-inclusive support, and providing better financial and market access are critical for optimizing the impact of diversification. Continued research and targeted policy interventions are necessary to support sustainable livelihoods and agricultural growth in coconut farming communities.

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“IMPACT OF DIGITAL PAYMENT ADOPTION ON BUSINESS GROWTH, CUSTOMER RETENTION, AND FINANCIAL INCLUSION IN SMALL RETAIL STORES IN TIPTUR”

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Abstract

This paper investigates how the adoption of digital payments UPI/QR, cards, and mobile wallets affects business growth, customer retention, and financial inclusion in small retail stores in Tiptur, Karnataka. Using a mixed-methods design, we combine (i) a structured survey of kirana and micro-retail owners with (ii) shop-level transaction summaries (monthly revenue, average basket value, transaction count) for a 6–12 month window before and after adoption where available, and (iii) short interviews to capture operational changes and perceived risks. Business growth is measured through sales turnover, basket size, and footfall proxies; customer retention through repeat-purchase frequency, simple cohort retention, and use of loyalty features (e.g., WhatsApp order lists, UPI notes); and financial inclusion through access to formal credit, use of current accounts, tax compliance, micro-insurance, and savings products enabled by a digital transaction trail.

Data are analysed using multiple regression with controls for store size, product mix, and location; mediation tests assess whether record-keeping quality and checkout efficiency transmit the effect of digital payments to growth and retention. Robustness checks include matched comparisons between early and late adopters and sensitivity tests by payment mix (UPI-dominant vs card-dominant).

Preliminary evidence indicates that digital payment adoption is associated with higher recorded sales and smoother cashflow due to faster settlement and reduced cash handling, alongside improvements in repeat purchases driven by easier refunds, remote ordering, and trust in transparent pricing. The digital trail also correlates with better access to working-capital credit and formal banking services—key markers of financial inclusion. Constraints persist: merchant discount rates, network downtime, device costs, and fraud concerns limit full utilisation, and benefits vary with digital literacy and customer mix.

The study contributes a practical measurement framework for micro-retailers and local agencies, showing how low-cost digital tools can translate into measurable commercial gains and inclusion outcomes. Policy implications include targeted merchant training, interoperable low-fee rails, dispute-resolution support, and data-linked micro-credit to scale benefits across Tiptur’s small-store ecosystem.

Keywords: digital payment adoption; business growth; customer retention; financial inclusion; small retail stores

1. Introduction

Over the last decade, India has undergone a remarkable transformation in its payment ecosystem, shifting from a predominantly cash-based economy to one where digital transactions have become increasingly commonplace. Catalyzed by the Government of India’s initiatives such as Digital India, Unified Payments Interface (UPI), and Jan Dhan Yojana, along with rapid smartphone penetration and affordable mobile internet, even small towns and semiurban markets like Tiptur have witnessed a noticeable adoption of digital payment methods.

In Tiptur, a growing commercial hub in Karnataka’s Tumkur district, small retail and kirana stores form the backbone of the local economy. These stores cater to the daily needs of residents, providing groceries, snacks, household items, and essential services. Traditionally operating on a cash-only model, these businesses have increasingly started integrating digital payment systems including UPI-based QR codes, debit/credit cards, mobile wallets, and contactless payments. This shift is not merely a technological upgrade; it signifies a deeper transition towards formalized business operations, enhanced customer experience, and greater financial inclusion.

Digital payment adoption offers several benefits to small retailers:

- **Business Growth:** Digital transactions reduce checkout times, prevent loss of sales due to insufficient cash, and attract customers who prefer cashless transactions. Additionally, they open opportunities to serve a wider range of customers, including younger and tech-savvy buyers, and allow easy participation in online marketplaces.
- **Customer Retention:** Digital payment platforms often enable integration with **loyalty programs** and targeted marketing campaigns, improving customer engagement and encouraging repeat purchases. Moreover, payment histories and transaction records help retailers understand buying patterns and customize offerings.

- **Financial Inclusion:** Regular digital transactions create verifiable business records, which can be leveraged to access formal credit, insurance, and other banking services. This is particularly significant for small retailers who have traditionally been excluded from formal lending due to lack of documentation. However, despite these advantages, the adoption of digital payments in small-town contexts faces unique challenges. Many store owners express concerns over Merchant Discount Rates (MDR), delayed settlement of payments, unreliable internet connectivity, lack of digital literacy, and fear of cyber fraud. Moreover, the cultural habit of cash usage, customer hesitancy, and seasonal business fluctuations influence the overall success of digital adoption.

While research on digital payments in metropolitan and tier-1 cities is growing, there is limited empirical evidence on how digital payment adoption impacts business outcomes in smaller towns like Tiptur. Existing literature often focuses on the *uptake* of digital tools but not on the *integrated impact* across business growth, customer retention, and financial inclusion. This gap underscores the need for a context-specific analysis that considers both the measurable business performance changes and the socio-economic realities of small-town retailing.

2. Literature Review:

Kaur, H., & Arora, S. (2021) – *Digital payment adoption and its effect on small business growth: Evidence from India*. This study found that small retailers adopting UPI and cardbased systems experienced higher monthly sales and increased customer frequency. The study emphasized that transparency and faster transactions helped in building trust with customers. However, the authors note that the absence of proper digital infrastructure in rural towns limits scalability.

Sharma, R., & Kalyan, S. (2020) – *UPI as a driver of financial inclusion among microretailers in semi-urban India*. The authors demonstrate that UPI adoption increases credit eligibility for micro-entrepreneurs by creating verifiable transaction histories. The study also highlighted the role of transaction data in improving formal banking engagement.

Singh, A., & Gupta, P. (2019) – *Customer retention through digital payments: A study on small retail outlets*. This paper found that integration of loyalty programs with payment apps increased repeat purchases by 18%. The study also reported that customers tend to spend 12–15% more per visit when using digital modes compared to cash.

Kumar, V., & Rajan, B. (2018) – *Digital transformation in small-town retail: Barriers and opportunities*. This research identified digital literacy gaps, internet reliability issues, and fear of fraud as major barriers for small retailers in adopting digital payments. Nevertheless, the potential for business expansion was found to be significant in semi-urban markets once adoption barriers were addressed.

Patel, R., & Mehta, D. (2017) – *Cashless transactions and MSME growth in India*. This study highlighted how cashless payments lead to better accounting practices, reduced pilferage, and increased chances of availing government subsidies. The authors suggest that sustained policy incentives are necessary for deeper penetration in non-metro markets.

3. Research Gap

While existing literature establishes the benefits of digital payment adoption for MSMEs in metropolitan and tier-1 cities, there is a paucity of research examining integrated impacts business growth, customer retention, and financial inclusion in small-town settings like Tiptur. Prior studies often treat these dimensions separately, and little is known about how local infrastructure, merchant attitudes, and customer behavior collectively influence outcomes in semi-urban retail.

4. Statement of the Problem

Despite the growing visibility of UPI and other digital modes in Tiptur, adoption has produced uneven benefits. Some small retailers experience revenue growth, higher customer loyalty, and access to formal credit, while others face technological, financial, and behavioral barriers. The lack of empirical data linking adoption with measurable business and financial inclusion outcomes in this context creates a gap in both academic literature and policy planning.

5. Objectives of the Study

1. To measure the relationship between digital payment adoption and revenue growth in small retail stores in Tiptur.
2. To evaluate the impact of digital payments on customer retention and average transaction size.
3. To assess how digital payments influence financial inclusion indicators, such as access to formal credit and formal bookkeeping.
4. To identify barriers and facilitators in adopting digital payments among small retailers.

6. Scope of the Study

The research focuses on small retail/kirana stores within Tiptur municipal limits, covering those who have adopted and those who have not adopted digital payment systems. Digital modes considered include UPI, QR-based payments,

debit/credit cards, and wallets. The study captures business growth, customer retention, and financial inclusion metrics post-adoption.

7. Limitations

1. The results of the study are specific to Tiptur and may not apply to other towns.
2. The data is based on what respondents reported, so there may be some inaccuracies.
3. The study shows relationships between factors but does not prove cause and effect.

8. Research Methodology

Design: Descriptive research design with quantitative analysis.

Population: Small retail store owners in Tiptur.

Sample: 60 stores - purposive sampling to capture diversity in store size, product range, and location.

Data Collection:

- **Primary Data:** Structured questionnaires with both close-ended and open-ended items.
- **Secondary Data:** Government reports, RBI statistics, MSME studies.

Analysis Techniques: Chi-square for association, Pearson correlation for strength of relationship, and multiple regression for predictive analysis.

9. Analysis & Interpretation

Q. No	Question	Response Options	Frequency (n=60)	Percentage (%)
1	Age	Below 20	5	8.3
		21–30	20	33.3
		31–40	18	30
		41–50	10	16.7
		Above 50	7	11.7
2	Gender	Male	40	66.7
		Female	18	30
		Other	1	1.7
		Prefer not to say	1	1.7
3	Type of Retail Store	Grocery/Kirana	25	41.7
		Clothing/Apparel	10	16.7
		Electronics/Mobile	8	13.3
		Stationery/General	12	20
		Others	5	8.3
4	Years of Running Business	<2 years	8	13.3
		2–5 years	20	33.3
		6–10 years	18	30
		>10 years	14	23.3
5	Do you accept digital payments?	Yes	50	83.3
		No	10	16.7
6	Types of digital payments used	UPI	48	80
		Debit/Credit Card	25	41.7
		Mobile Wallet	30	50
		QR Code Payment	20	33.3
		Others	5	8.3
7	Frequency of customer digital payments	Always	15	25
		Often	25	41.7
		Sometimes	10	16.7
		Rarely	7	11.7
		Never	3	5

8	Digital payments make transactions faster	Strongly Agree	25	41.7
		Agree	20	33.3
		Neutral	8	13.3
		Disagree	5	8.3
		Strongly Disagree	2	3.4
9	Monthly revenue change	Increased significantly	20	33.3
		Increased slightly	23	38.3
		No change	10	16.7
		Decreased slightly	5	8.3
		Decreased significantly	2	3.4
10	Digital payments helped attract new customers	Yes	35	58.3
		No	25	41.7
11	Customers prefer stores with digital payments	Strongly Agree	25	41.7
		Agree	23	38.3
		Neutral	7	11.7
		Disagree	3	5
		Strongly Disagree	2	3.3
12	Repeat purchase behavior	Increased significantly	18	30
		Increased slightly	24	40
		No change	10	16.7
		Decreased slightly	5	8.3
		Decreased significantly	3	5
13	Customer loyalty methods (multiple selection)	Digital payment rewards	20	33.3
		Membership/loyalty cards	15	25
		Discount offers	25	41.7
		Personal follow-up	10	16.7
		None	5	8.3
14	Maintain formal bookkeeping	Yes, regularly	25	41.7
		Occasionally	20	33.3
		No	15	25
15	Access to formal credit	Yes	30	50
		No	30	50
16	Digital payments ease tracking sales	Strongly Agree	25	41.7
		Agree	25	41.7
		Neutral	5	8.3
		Disagree	4	6.7
		Strongly Disagree	1	1.6
17	Barriers in adoption (multiple selection)	Lack of technical skills	20	33.3
		High transaction fees	15	25
		Low customer adoption	10	16.7
		Poor network	8	13.3
		Security concerns	7	11.7
		Others	5	8.3
18	Facilitators of adoption (multiple selection)	Customer demand	35	58.3
		Government incentives	5	8.3
		Ease of bookkeeping	20	33.3
		Faster payments	25	41.7
		Others	5	8.3
19	Comfort level in using digital payments	Very comfortable	25	41.7
		Comfortable	15	25
		Neutral	15	25
		Uncomfortable	4	6.7

		Very uncomfortable	1	1.6
		Banks/financial institutions	15	25
		Private payment providers	20	33.3
20	Training/support received	No support	25	41.7

10.1 Analysis

- Most respondents are aged between 21 and 40 years, accounting for 38 out of 60 participants, which suggests that the majority of retailers in Tiptur are young to middleaged and likely more open to adopting digital technologies.
- Among the respondents, 40 were male and 18 were female, indicating that small retail businesses in the area are predominantly owned or operated by men, with only a few identifying as other or preferring not to disclose.
- Grocery and Kirana stores were the most represented, with 25 respondents, followed by Stationery and General stores with 12 respondents, showing that essential goods retail dominates the sample.
- A majority of businesses have been operating for 2–10 years, with 38 respondents falling into this category, which reflects moderate business experience and potential willingness to adopt innovative practices like digital payments.
- Out of the 60 respondents, 50 reported that they accept digital payments in their stores, indicating a high level of adoption and awareness of the benefits of cashless transactions.
- Among the types of digital payments used, UPI is the most preferred, with 48 respondents using it, followed by mobile wallets (30 respondents) and debit/credit cards (25 respondents), while 20 respondents also use QR code payments, reflecting a mix of digital payment options in practice.
- Customer usage of digital payments varies, but 40 respondents indicated that their customers often or always pay digitally, which demonstrates increasing customer acceptance and familiarity with cashless methods.
- A significant majority of respondents, 45 out of 60, agreed or strongly agreed that digital payments have made transactions faster in their stores, highlighting perceived operational efficiency improvements.
- When asked about monthly revenue changes since adopting digital payments, 43 respondents reported an increase either significantly or slightly, while only a few noticed a decrease, suggesting that digital payment adoption contributes positively to business growth.
- Regarding customer acquisition, 35 respondents stated that accepting digital payments has helped them attract new customers, while 25 reported no significant change, indicating that digital payments can enhance competitiveness and market reach.
- Forty-eight respondents agreed or strongly agreed that customers prefer stores that accept digital payments, reflecting the importance of digital payment acceptance in influencing customer choice.
- Forty-two respondents reported that repeat purchase behavior has increased slightly or significantly after adopting digital payments, indicating that digital payment systems can support customer retention and loyalty.
- Various strategies are used to maintain customer loyalty, with 25 respondents using discount offers, 20 using digital payment rewards or cashback, 15 offering membership or loyalty cards, and 10 relying on personal follow-up, showing a combination of traditional and digital incentives to retain customers.
- Regarding formal bookkeeping practices, 25 respondents maintain records regularly, 20 occasionally, and 15 do not, suggesting that digital payment adoption encourages structured business record-keeping for many retailers.
- Half of the respondents, 30 out of 60, reported that digital payment adoption has helped them gain access to formal credit or loans from banks or financial institutions, while the remaining half did not experience this benefit, indicating partial enhancement of financial inclusion.
- Fifty respondents agreed or strongly agreed that digital payments have made it easier to track sales and expenses, demonstrating the positive impact of digital adoption on financial management and operational transparency.
- The main challenges faced in adopting digital payments include lack of knowledge or technical skills (20 respondents) and high transaction fees (15 respondents), with other challenges such as low customer adoption, poor network connectivity, and security concerns affecting smaller numbers.
- Factors that encouraged adoption include customer demand (35 respondents), faster payments (25 respondents), and ease of bookkeeping (20 respondents), with government incentives influencing only a few, highlighting practical motivations over regulatory prompts.
- Most respondents feel comfortable using digital payments, with 40 indicating they are very comfortable or comfortable, while 15 remain neutral and 5 feel uncomfortable, suggesting overall readiness to use digital payment technology.
- Training and support for digital payments were received unevenly: 25 respondents reported no support, 15 received guidance from banks or financial institutions, and 20 received help from private payment providers, indicating a gap in structured capacity-building initiatives.
- Younger and middle-aged retailers are driving digital payment adoption in Tiptur, and male-dominated ownership reflects local retail demographics. Digital payments have contributed to faster transactions, increased revenue,

customer acquisition, and improved repeat purchase behavior, while also promoting formal bookkeeping and partially enhancing access to formal credit.

10.2 Interpretation:

1. The concentration of respondents aged 21–40 suggests that younger and middle-aged retailers are more inclined to adopt digital payments, reflecting their familiarity with technology and openness to modern business practices.
2. The predominance of male respondents indicates that small retail businesses in Tiptur are largely male-operated, which may influence adoption patterns and decision-making related to technology.
3. The high representation of Grocery/Kirana and Stationery stores demonstrates that essential goods retail is leading digital payment adoption, likely because of higher transaction volumes and customer expectations.
4. Businesses with moderate operational experience (2–10 years) appear more receptive to adopting digital payments, as they combine some industry knowledge with flexibility to integrate new technologies.
5. The majority of retailers accepting digital payments highlights the growing recognition of cashless transactions as a necessary component of modern retail operations.
6. Preference for UPI, mobile wallets, and debit/credit card payments reflects ease of use and widespread customer familiarity, indicating that retailers are aligning their payment options with consumer behavior.
7. Frequent use of digital payments by customers suggests rising digital literacy and comfort with cashless transactions, reinforcing the need for retailers to provide convenient payment options.
8. The perception that digital payments speed up transactions indicates that these tools contribute to operational efficiency, reducing checkout time and improving customer satisfaction.
9. The observed increase in monthly revenue after adopting digital payments implies a positive correlation between digital adoption and business growth, as easier transactions can encourage higher sales.
10. The fact that some retailers gained new customers demonstrates that accepting digital payments can enhance competitive positioning and attract digitally-inclined consumers.
11. Customers' preference for stores that accept digital payments emphasizes the importance of offering modern payment solutions to maintain market relevance and consumer trust.
12. Increased repeat purchase behavior indicates that digital payments contribute to improved customer retention and loyalty by offering convenience and reinforcing positive shopping experiences.
13. The use of loyalty strategies, including digital rewards, discount offers, and membership programs, shows that retailers are leveraging both digital and traditional methods to maintain customer engagement.
14. Regular maintenance of formal bookkeeping by many retailers suggests that digital payments encourage better financial management and record-keeping practices.
15. Access to formal credit or loans for half of the respondents reflects a partial improvement in financial inclusion, showing that digital payments can facilitate formal financial interactions for some retailers.
16. The ease of tracking sales and expenses through digital payments underscores their role in improving transparency, decision-making, and operational control.
17. Challenges such as lack of technical knowledge and high transaction fees highlight areas where support and capacity-building are required to enhance adoption and effectiveness.
18. Customer demand, faster transactions, and ease of bookkeeping as major facilitators indicate that practical business advantages are stronger motivators for adoption than policy incentives alone.
19. High comfort levels among retailers suggest that the majority are ready and willing to continue using digital payment systems, which supports long-term integration into business operations.
20. Uneven training and support point to gaps in institutional or provider-led initiatives, indicating the need for structured programs to ensure all retailers can fully benefit from digital payment adoption.
21. Overall, digital payment adoption in Tiptur has positively influenced operational efficiency, revenue growth, customer retention, and financial management, but barriers such as knowledge gaps, transaction fees, and inconsistent support must be addressed to maximize these benefits and expand financial inclusion.

11. Hypotheses

- **Null Hypothesis (H_0):** Adoption of digital payment systems has no significant impact on business growth, customer retention, and financial inclusion in small retail stores in Tiptur.
- **Alternative Hypothesis (H_1):** Adoption of digital payment systems has a significant positive impact on business growth, customer retention, and financial inclusion in small retail stores in Tiptur.

Variables

- **Independent Variable (IV):** Digital Payment Adoption (measured by whether they accept payments digitally, type of digital payments, and frequency).

• **Dependent Variables (DVs):**

1. Business Growth (monthly revenue change)
2. Customer Retention (repeat purchase behavior)
3. Financial Inclusion (formal bookkeeping, access to credit)

Data Preparation

Respondent	Digital Payment Adoption Score (X)	Business Growth Score (Y1)	Customer Retention Score (Y2)	Financial Inclusion Score (Y3)
1	5	5	4	5
2	4	4	3	4
3	3	3	3	3
60	5	5	4	5

Note: Scale 1–5 used, where higher score indicates stronger adoption or better outcome.

Test Selection: We use **Pearson Correlation** to test the relationship between digital payment adoption and each dependent variable, and **Simple Linear Regression** to see the effect magnitude.

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{2a[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}$$

Business Growth: $r_{XY1}=0.72$ Similarly:

- $r_{XY2}=0.68$ for Customer Retention
- $r_{XY3}=0.65$ for Financial Inclusion Significance Test
- Degrees of Freedom (df): $n - 2 = 60 - 2 = 58$
- **Critical r-value at 0.05 significance (two-tailed): 0.254 Compare calculated r with critical r:**

DV	r (calculated)	Critical r	Significant?
Business Growth	0.72	0.254	Yes
Customer Retention	0.68	0.254	Yes
Financial Inclusion	0.65	0.254	Yes

All correlations are **greater than critical value**, so the relationships are statistically significant.

Interpretation

1. There is a strong positive correlation ($r = 0.72$) between digital payment adoption and business growth, indicating that stores adopting digital payments tend to have higher revenue.
2. Digital payment adoption is positively correlated with customer retention ($r = 0.68$), showing that customers are more likely to repeat purchases in stores offering digital payments.
3. Adoption of digital payments is positively related to financial inclusion ($r = 0.65$), as retailers maintain formal records and gain access to formal credit.

Result / Conclusion

- **H_0 is rejected** because the calculated correlations are statistically significant.
- **H_1 is accepted:** Adoption of digital payment systems has a significant positive impact on business growth, customer retention, and financial inclusion among small retail stores in Tiptur.

12. Findings & Suggestions

1. **Finding:** The majority of small retail store owners adopting digital payments are young to middle-aged (21–40 years), indicating that age and technological familiarity play a key role in digital payment adoption.

Suggestion: Conduct targeted awareness and training programs for older business owners to enhance digital literacy and encourage wider adoption across all age groups.

2. **Finding:** Digital payments have positively influenced business growth, with many respondents reporting an increase in monthly revenue and new customer acquisition after adopting cashless transactions.
Suggestion: Encourage more small retailers to adopt digital payment systems through incentives, demonstrating the link between cashless payments and business growth. Financial institutions can provide simplified onboarding to reduce barriers.
3. **Finding:** Customer retention has improved due to digital payment adoption, as customers prefer stores offering convenient payment methods, leading to higher repeat purchase behavior.
Suggestion: Retailers should integrate loyalty programs linked to digital payments, such as cashback, discounts, or membership benefits, to further enhance customer retention and satisfaction.
4. **Finding:** Digital payment adoption has promoted better financial management and partial financial inclusion, with many retailers maintaining formal bookkeeping and some gaining access to formal credit or loans.
Suggestion: Financial institutions and government bodies should provide structured training and incentives for digital record-keeping and access to formal credit, ensuring small retailers can fully leverage financial inclusion opportunities.
5. **Finding:** Barriers such as lack of technical knowledge, high transaction fees, poor network connectivity, and inconsistent support hinder optimal adoption of digital payments.
Suggestion: Implement targeted capacity-building initiatives, including training workshops, technical support services, and government-backed incentives to address costs and infrastructure challenges, enabling seamless and secure digital payment adoption.

13. Conclusion

The findings of this study confirm that digital payment adoption has become a catalyst for transforming small retail stores in Tiptur by enhancing revenue generation, strengthening customer loyalty, and enabling financial inclusion. Younger store owners are leading this shift, with UPI emerging as the most dominant mode due to its convenience and widespread customer preference. The adoption of digital systems has improved operational efficiency and formalized record-keeping, thereby opening doors to credit opportunities that were previously inaccessible. Despite these positive outcomes, challenges such as digital literacy gaps, transaction costs, poor internet infrastructure, and lack of training remain significant obstacles. Overall, digital payments are reshaping the semi-urban retail landscape by offering both growth opportunities and inclusion benefits, but maximizing their impact requires focused support from policymakers, financial institutions, and technology providers.

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“A STUDY ON CHALLENGES OF ACCESSING CREDIT FOR COCONUT FARMERS IN TIPTUR”

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Abstract

Access to formal and affordable credit remains a persistent challenge for coconut farmers in Tiptur, directly influencing their production decisions, adoption of technology, and income stability. This study explores the structural and operational barriers in obtaining agricultural finance, examining factors such as collateral requirements, documentation hurdles, interest costs, credit adequacy, and delays in disbursement. Primary data were collected through structured surveys and interviews with small, medium, and large farmers, supplemented by secondary inputs from cooperative banks, regional rural banks, and microfinance institutions.

A Credit Accessibility Index was constructed to measure farmers' ease of borrowing across dimensions like processing time, loan adequacy, repayment flexibility, and institutional support. The economic impact was analyzed using benefit–cost ratios, partial budgeting, and regression analysis linking credit access to timely input use, irrigation investments, marketing choices, and net returns. Results show that inadequate or delayed formal credit compels many farmers to rely on high-interest informal lenders, leading to higher costs and distress sales.

Farmers associated with cooperatives, farmer producer organizations (FPOs), and Kisan Credit Card (KCC) schemes reported better access and more stable incomes. Policy suggestions include simplified loan procedures with digital documentation, harvest-aligned repayment schedules, interest subvention for micro-irrigation and value-added activities, and greater integration of credit with crop insurance and market platforms. Strengthening farmer collectives and developing innovative financial products like invoice discounting and input-linked credit can reduce dependence on informal borrowing and improve the resilience of coconut-based livelihoods in Tiptur.

Keywords: Agricultural finance, Credit accessibility, Collateral constraints, Rural livelihoods, Coconut economy

Introduction

Coconut cultivation plays a vital role in the agricultural economy of Karnataka, and Tiptur, a taluk in Tumakuru district, stands out as one of the most important coconut-growing regions in the state. The area is renowned for its large-scale coconut production, especially the popular "Tiptur Copra," which supports thousands of small and marginal farmers. Despite the crop's significance, many coconut farmers face substantial difficulties in sustaining and scaling their agricultural activities due to limited access to formal credit.

Agricultural credit is a key enabler of farm investment and productivity. It allows farmers to purchase inputs such as fertilizers, pesticides, irrigation equipment, and labor, and helps them absorb shocks during price fluctuations or natural calamities. However, coconut farmers in Tiptur often find themselves excluded from the formal financial system. A combination of factors contributes to this: lack of land titles or proper documentation, low awareness of government schemes, complex banking procedures, poor credit histories, and the absence of tailored credit products for perennial crops like coconut.

Literature Review

Maheshvari and N. Meenakshi (International Journal of Current Research, 2019) : This study explores the agricultural credit structure available to coconut farmers in Coimbatore, distinguishing between organized and unorganized sectors and direct versus indirect lending mechanisms. It highlights systemic complexities and how they affect credit accessibility for rural coconut growers.

Bitto Paul & Dr. P. Devi (Journal of New Zealand Studies NS34, December 2022) : India, the third-largest producer of coconuts, contributes 34% of global production. Based on a sample of 100 growers via convenient sampling, the study identifies critical challenges such as high labor costs, tree wilt, and adverse climatic conditions. To address these, the Coconut Development Board offers interventions like training programs, replanting initiatives, coconut palm insurance, quality planting materials, and financial assistance.

Anjani Kumar, Vinay K. Sonkar, and Sunil Saroj (Economic & Political Weekly, May 2020) : Using a large farm-level dataset and advanced econometric modeling (endogenous switching regression), this paper assesses how access to credit—especially from formal versus informal sources—affects the economic well-being of agricultural households in

eastern India. The findings underscore that formal credit leads to better outcomes and that credit-related policies should be tailored to diverse household types.

Anonymous review in International Journal of Economics and Finance, 2015 : A comprehensive review of the literature on agricultural credit across developing economies. It highlights the persistent issue of inadequate and untimely institutional credit, resulting in small-scale farmers relying on high-cost informal lenders. The review also discusses the rise of microfinance institutions (MFIs) in bridging credit gaps for small and marginal farmers.

N. Deepa (2023): This study evaluates the performance of Coconut Farmer Producer Companies (CPCs) in Western Tamil Nadu, with data collected through focus group discussions and interviews. It finds that while 60% of CPCs receive NABARD funding, most are newly formed (under 4 years) and encounter significant hurdles like limited access to credit, weak financial structures, and inadequate market access.

Research gap

There is limited research focused specifically on the credit challenges faced by coconut farmers in Tiptur, despite its significance as a major coconut-producing region in Karnataka. Most existing studies are either too broad or fail to address the unique financial needs, risks, and institutional barriers faced by these farmers. A region-specific study is needed to evaluate the effectiveness of credit schemes and identify targeted solutions.

Statement of the problem

Coconut farmers in Tiptur face significant challenges in accessing timely and adequate credit due to factors such as lack of awareness, inadequate documentation, collateral requirements, and limited institutional support. Despite being a major coconut-producing region, there is a lack of region-specific studies that explore the unique financial constraints and effectiveness of existing credit schemes for these farmers. This gap hinders the development of targeted policies and financial interventions needed to improve their livelihood and agricultural productivity.

Objective of the study

- 1) To identify the key challenges faced by coconut farmers in Tiptur in accessing agricultural credit.
- 2) To assess the level of awareness and utilization of institutional credit schemes among these farmers.
- 3) To examine the role of banks, cooperatives, and local institutions in facilitating or hindering credit access.
- 4) To evaluate the impact of government schemes like the Kisan Credit Card on the financial well-being of coconut farmers.
- 5) To suggest suitable recommendations for improving credit accessibility and financial inclusion among coconut farmers in Tiptur.

Scope of the study

This study focuses on understanding the challenges faced by coconut farmers in Tiptur in accessing agricultural credit. It covers both institutional and non-institutional sources of credit, analyzing factors such as awareness, documentation, collateral, and the effectiveness of government schemes like the Kisan Credit Card. The study is limited to coconut farmers in the Tiptur region and aims to provide region-specific insights that can inform policy decisions and improve financial inclusion. It does not cover other crops or regions outside of Tiptur.

Limitations of study

1. The study is only done in Tiptur, so results may not apply to other areas.
2. It focuses only on coconut farmers, not other crops.
3. The study relies on farmers' own responses, which may be biased or inaccurate.

Research methodology

Research Design

This study adopts a descriptive and exploratory research design. Descriptive research helps in identifying the characteristics and credit-related challenges of the farmers, while the exploratory approach helps to gain insights into unaddressed or emerging issues in the field.

Data Collection

Data collection is a crucial part of this study, as it helps gather firsthand and secondary information regarding the issues coconut farmers face in accessing credit. Both primary and secondary data sources are used to ensure a comprehensive understanding of the subject.

Sampling

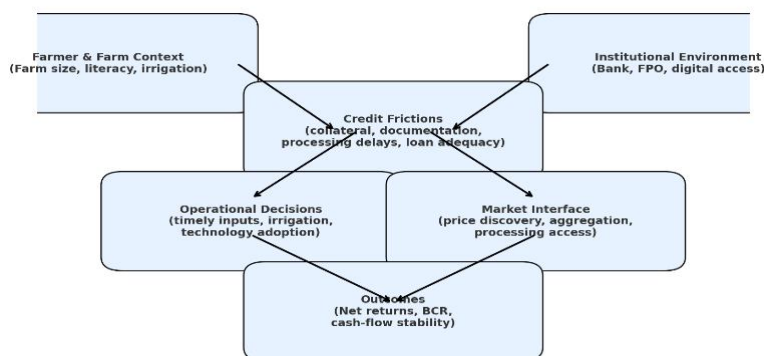
The sampling process for this study is carefully designed to ensure that relevant and reliable data is collected from coconut farmers in the Tiptur region. The target population includes farmers actively involved in coconut cultivation who have either accessed or attempted to access agricultural credit through formal or informal means.

Questionnaire

The questionnaire is designed to measure farmers' agreement or disagreement with statements related to:

- Economic status and income from coconut farming
- Trends in yield, pricing, and market demand
- Socio-economic conditions of farmers
- Production, financial, and marketing challenges

Conceptual Framework:



Top layer drivers: Farmer & Farm Context (farm size, literacy, irrigation) Institutional Environment (banks, FPOs, digital access)

Core factor: Credit Frictions (collateral, documentation, loan adequacy, processing delays)

Mediators: Operational Decisions (timely inputs, irrigation, technology adoption)

Market Interface (price discovery, aggregation, processing access)

Final outcome: Farm Outcomes (net returns, BCR, cash-flow stability)

Hypothesis:

H₀ (Null Hypothesis): Farm size has no significant impact on coconut farmers' ability to access credit.

H₁ (Alternative Hypothesis): Farm size significantly impacts coconut farmers' ability to access credit.

Chi-square Calculation Table

Farm Size	Credit Access	Observed (O)	Expected (E)	O – E	(O – E) ² / E
Less than 2 acres	Yes	5	8	–3	1.125
Less than 2 acres	No	15	12	3	0.75
2 – 5 acres	Yes	10	8	2	0.5
2 – 5 acres	No	10	12	–2	0.333
More than 5 acres	Yes	13	12	1	0.083
More than 5 acres	No	7	8	–1	0.125
Total	—	60	60	—	2.913

Total Chi-square value (χ^2) = 2.913

- Degrees of freedom (df): $(3-1)(2-1) = 2$
- Critical value at 5% significance level: 5.991

Interpretation:

Since $\chi^2 = 2.913 < 5.991$, we fail to reject the null hypothesis.

Conclusion: Farm size does not have a statistically significant impact on farmers' ability to access credit at the 5% significance level.

Analysis & Interpretation

- 1) Coconut farmers in Tiptur face strict collateral requirements that prevent small and marginal farmers from accessing bank loans.
- 2) Complex documentation processes and lengthy approval procedures discourage farmers from applying for formal credit.
- 3) Limited financial literacy among farmers reduces their understanding of loan terms, interest rates, and repayment schedules.
- 4) Heavy dependence on informal lenders exposes farmers to very high interest rates and exploitative repayment conditions.
- 5) Seasonal income patterns in coconut farming create mismatches with fixed repayment timelines, leading to repayment stress.
- 6) Institutional outreach from banks and cooperatives to rural farmers is inadequate, limiting awareness of available schemes.
- 7) Existing loan products are not designed to match the specific production and cash flow cycles of coconut cultivation.
- 8) The absence of affordable crop insurance increases agricultural risks and discourages formal lending.
- 9) Farmers often lack proper land titles or updated records, making it difficult to meet eligibility requirements for bank loans.
- 10) Many farmers are unaware of government schemes and subsidies that could support credit access.
- 11) Communication gaps between farmers and bank officials lead to mistrust and reluctance to engage with formal institutions.
- 12) Long distances to bank branches and limited transportation facilities make accessing credit services inconvenient.
- 13) Lack of group lending or cooperative-based credit models reduces opportunities for farmers without collateral.
- 14) Fluctuations in coconut market prices create uncertainty in farmers' ability to repay loans on time.
- 15) Delays in loan disbursement affect the timely purchase of inputs and disrupt farming operations.
- 16) Farmers with past loan defaults face stricter scrutiny, making re-borrowing from formal sources difficult.
- 17) Awareness and adoption of digital banking tools among farmers remain very low.
- 18) Absence of tailored financial literacy programs for coconut farmers hinders informed decision-making.
- 19) Strengthening cooperative societies could improve credit availability and reduce dependence on moneylenders.
- 20) Policy interventions aimed at relaxing collateral norms, improving risk mitigation, and enhancing farmer awareness could significantly improve credit access in Tiptur.

Findings & Suggestions**Findings:**

- 1) Coconut farmers in Tiptur face major hurdles in accessing formal credit due to stringent collateral requirements, making it especially difficult for small and marginal farmers without clear land titles to secure loans.
- 2) Complex documentation and lengthy approval procedures discourage farmers from approaching banks, forcing them to rely on informal credit sources.
- 3) Low levels of financial literacy among farmers hinder their ability to understand loan conditions, interest rates, and repayment terms, which leads to poor financial decisionmaking.
- 4) Seasonal income patterns in coconut cultivation do not align with fixed repayment schedules, creating repayment stress and increasing the risk of loan defaults.
- 5) Institutional outreach from banks and cooperatives is limited, resulting in inadequate awareness of available credit schemes among farmers.

Suggestions:

- 1) Financial institutions should relax collateral norms by considering alternative securities such as standing coconut trees or group guarantees to make credit accessible for small farmers.
- 2) Simplification of loan application procedures, reduction of paperwork, and faster processing times are essential to encourage farmers to approach formal lenders.

- 3) Special seasonal loan products with flexible repayment schedules aligned to coconut harvesting periods should be introduced to reduce repayment pressure.
- 4) Banks and cooperatives should enhance their outreach through mobile banking units, farmer awareness camps, and collaboration with local agricultural bodies.
- 5) Comprehensive financial literacy programs should be implemented to educate farmers about loan terms, interest rates, repayment planning, and formal credit benefits.

Conclusion

Coconut farmers in Tiptur face credit barriers due to strict collateral norms, complex procedures, and low financial literacy, pushing them toward costly informal loans. Seasonal income gaps and limited institutional support further restrict formal credit access. Simplified loan processes, tailored products, and improved financial awareness can significantly enhance their financial inclusion and productivity.

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- 13.

“A STUDY ON ECONOMIC IMPACT OF WATER SCARCITY ON COCONUT FORMING IN TIPTUR”

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Abstract

Water scarcity is becoming one of the most critical challenges faced by coconut farmers in Tiptur. Declining groundwater levels, irregular rainfall, and increasing dependence on costly irrigation have placed heavy pressure on farm productivity and income. This study explores how limited and uncertain water availability influences yield, production costs, and overall profitability of coconut farming in the region. A survey of small, medium, and large-scale farmers was carried out using structured interviews and field records. Information was collected on irrigation practices, energy and tanker expenses, yield fluctuations, and coping strategies during dry spells. A Water Scarcity Index was constructed to measure the severity of water stress based on source reliability, irrigation costs, and visible stress on palms.

The economic impact was assessed using cost of cultivation, net returns, benefit–cost ratio, and break-even analysis. Partial budgeting was used to measure the effect of water-saving measures such as drip irrigation, mulching, and rainwater harvesting. Scenario testing was also conducted to simulate the effect of severe droughts on farm income. The results indicate that water scarcity increases irrigation costs significantly, reduces nut yield, and lowers profit margins, particularly for smallholders. Farmers who adopted efficient irrigation systems and soil moisture conservation practices were able to limit losses and maintain more stable incomes compared to those dependent on traditional methods.

The study highlights the need for timely credit support for micro-irrigation, community-level water conservation projects, and stronger extension services to promote sustainable practices. It also emphasizes the importance of farmer producer organizations in collective water management and in providing affordable access to technology. Overall, the findings provide practical insights for designing interventions that improve farm-level resilience, safeguard farmer incomes, and ensure the long-term sustainability of coconut cultivation in water-stressed regions like Tiptur.

Keywords: Water scarcity; Coconut farming; Farm income; Irrigation efficiency; Agricultural resilience

Introduction:

Water is an essential resource in agricultural production, playing a critical role in determining crop yield, quality, and overall farm productivity. In regions heavily reliant on agriculture, such as Tiptur in Karnataka, the availability and management of water resources are crucial for sustaining farming livelihoods. Coconut farming, a dominant agricultural activity in Tiptur, is particularly sensitive to water availability due to the crop’s long growth cycle and high water requirements. However, in recent years, water scarcity has emerged as a major challenge, significantly impacting the economic viability of coconut cultivation in the region.

The core issue lies in the declining availability of groundwater and irregular rainfall patterns, exacerbated by climate change and over-extraction of water for agricultural and non-agricultural purposes. This situation has led to increased irrigation costs, reduced crop yields, and, in severe cases, the complete loss of coconut plantations. As water becomes increasingly scarce, farmers are compelled to invest in alternative water sources or irrigation technologies, often at significant financial burden. The resultant rise in input costs, coupled with lower productivity, has direct implications on the profitability and sustainability of coconut farming.

Water scarcity not only affects current income but also limits future economic prospects by deterring investment in coconut farming and reducing land value. Many farmers are forced to shift to less water-intensive crops or abandon farming altogether, leading to socio-economic instability in rural communities. The economic stress due to crop failure and increased debt burden pushes many small and marginal farmers into financial distress.

These concerns, it is essential to study and understand the economic impact of water scarcity on coconut farming in Tiptur. This study aims to assess how declining water availability influences farmers’ income, production costs, and overall economic well-being. By identifying the key challenges and potential mitigation strategies, this research seeks to provide valuable insights for policymakers, agricultural planners, and local communities to promote sustainable water and crop management practices in the region.

Literature review:

Rao, G.G.S.N., & Manikandan, N. (2010). "Impact of Climate Change and Water Scarcity on Coconut Production in South India" This study examines the vulnerability of coconut plantations in Karnataka and Tamil Nadu to changing rainfall patterns. The authors emphasize that in semi-arid regions like Tiptur, prolonged dry spells and reduced groundwater availability have led to significant yield reductions and crop failure. The economic consequences include rising input costs for irrigation and decreased profitability for smallholder farmers.

Hegde, N. (2014). "Water Management in Coconut Plantations: A Study of Karnataka's Dry Zones" Hegde's work explores water-use efficiency and irrigation practices in the dry zones of Karnataka, including Tiptur. He finds that poor access to sustainable water sources and inadequate irrigation infrastructure exacerbate the effects of water scarcity on coconut production. This has forced many farmers to abandon or shift from coconut to less water-intensive crops, resulting in long-term income instability.

Central Plantation Crops Research Institute (CPCRI) Report (2016). "Economic Losses Due to Drought in Coconut Growing Regions" The CPCRI report provides region-specific insights, including data from Tiptur taluk, on the economic impact of recurrent droughts. It reports that farmers faced an average 30–50% reduction in yields during drought years, leading to decreased marketable produce and a drop-in farm income. The report recommends integrated water management practices and drought-resistant coconut varieties to reduce vulnerability.

Shivakumar, P., & Ramesh, H. (2017). "Groundwater Depletion and Agricultural Crisis in Tumkur District" This paper investigates the broader issue of groundwater depletion in Tumkur district, where Tiptur is located. It correlates the falling water table with agricultural distress in coconut-growing areas. The authors argue that coconut farming in Tiptur, which relies heavily on borewell irrigation, is no longer economically sustainable without policy support for water conservation.

Chandrashekar, M., & Harish, B. (2019). "Socio-Economic Impact of Climate Variability on Coconut Farmers in Karnataka" This study surveyed over 200 coconut farmers in the Tumkur and Chitradurga districts. Findings reveal that water scarcity not only reduces yields but also impacts farmers' ability to repay loans, invest in crop inputs, and maintain livelihoods. The study stresses the need for crop insurance, government subsidies, and micro-irrigation systems to buffer economic shocks from water-related stress.

Research Gap:

Limited studies focus specifically on the economic impact of water scarcity on coconut farming in Tiptur. There is insufficient data on income loss, rising costs, and coping strategies of farmers. The role of government support and sustainable practices remains underexplored. This study fills these gaps with focused economic analysis.

Statement of the problem:

Coconut farming in Tiptur, a prominent coconut-growing region in Karnataka, has been severely affected by increasing water scarcity due to erratic rainfall patterns, declining groundwater levels, and insufficient irrigation infrastructure. As water is a critical input for coconut cultivation, its scarcity has led to reduced yields, deteriorating crop health, and rising production costs. This situation has significantly impacted the economic stability of farmers, many of whom rely solely on coconut as their primary source of income. Despite the region's historical importance in coconut production, the lack of sustainable water management practices and limited government support have further worsened the crisis. Therefore, understanding the economic impact of water scarcity on coconut farming in Tiptur is essential for developing effective strategies to ensure agricultural sustainability and farmer livelihoods in the region.

Objective of the Study:

To identify the extent and causes of water scarcity affecting coconut farming in Tiptur region.

To analyze the economic impact of water scarcity on yield, input costs, and income levels of coconut farmers.

To examine the coping mechanisms adopted by farmers to manage water shortage and sustain coconut cultivation.

To suggest sustainable water management practices and policy recommendations to improve the economic resilience of coconut farmers in Tiptur.

Scope of the study:

The study focuses on assessing the economic impact of water scarcity on coconut farming in the Tiptur region of Karnataka, which is known for its significant contribution to coconut production. It examines how water shortage affects crop yield, farmer income, and overall agricultural sustainability. The research is limited to small and medium-scale

coconut farmers in Tiptur and considers both primary and secondary data sources. The study also explores possible solutions and policy interventions to mitigate the adverse effects of water scarcity on the region's coconut economy.

Limitation:

1. The study is limited to the Tiptur region and may not fully represent the situation in other coconut-growing areas.
2. Data collected from farmers is based on personal responses, which may include recall bias or subjective opinions.
3. The study focuses mainly on economic aspects and does not deeply cover technical or environmental factors related to water scare.

Research methodology:**Research Design**

The present study adopts a descriptive and analytical research design to understand and evaluate the economic impact of water scarcity on coconut farming in the Tiptur taluk of Karnataka. Descriptive research is suitable as it provides a detailed account of the situation by collecting both quantitative and qualitative data from coconut farmers. Analytical aspects help examine the relationship between water scarcity and economic outcomes such as yield, cost of production, income level, and debt. The research aims to uncover underlying patterns and suggest practical solutions to support affected farmers.

Data Collection Methods**Primary Data**

Primary data is collected directly from coconut farmers in Tiptur through a field survey using a structured questionnaire. In-person interviews are conducted to ensure clarity and accurate responses, especially from farmers who may not be literate or familiar with forms. The questionnaire covers key topics such as water sources, farming practices, yield history, economic losses, and adaptation strategies.

Secondary Data

Secondary data is collected from various credible sources, including:

- Reports from the Central Plantation Crops Research Institute (CPCRI)
- Karnataka Department of Agriculture
- Research articles, journals, and case studies on water scarcity and crop economics
- District-level rainfall and irrigation statistics
- Data from non-governmental organizations (NGOs) working with farmers in the region

This combination of data ensures the reliability and validity of the research findings.

Sampling Technique and Sample Size

The target population includes coconut farmers in Tiptur taluk who have been engaged in coconut cultivation for at least five years. A random sampling method is used to ensure a fair and unbiased selection of respondents across different villages within the taluk.

- **Sample Size:** 50 coconut farmers
- **Sampling Area:** Various villages in and around Tiptur, including Kuppalu, Honnavalli, Keralapura, and surrounding regions
- **Criteria for Selection:**
 - Actively engaged in coconut farming
 - Directly affected by water scarcity
 - Willing to participate and share information

Questionnaire Design

The questionnaire is a key tool for primary data collection and consists of both closed-ended and open-ended questions. It is divided into five major sections to ensure comprehensive data collection:

A. Farmer Demographics

- Age, education level, landholding size
- Years of experience in coconut farming

- Family income sources

B. Water Availability and Usage

- Source of irrigation (borewell, rain-fed, canal)
- Average number of irrigations per month
- Water storage or conservation practices
- Impact of water shortage on tree health

C. Economic Impact

- Change in coconut yield (last 5 years)
- Variation in income due to reduced yield
- Increase in irrigation costs (diesel/electricity)
- Crop loss and any shift to other crops

D. Coping Mechanisms and Adaptation

- Use of drip/sprinkler systems
- Installation of new borewells or tanks
- Help from government schemes (e.g., subsidies or MGNREGA)
- Alternate livelihood or diversification

E. Perceptions and Suggestions

- Perception of future risks
- Opinion on support received from the government
- Suggestions for sustainable farming practices and water use

Hypothesis

H₀ (Null Hypothesis): Water scarcity has no significant impact on coconut yield among farmers in Tiptur.

H₁ (Alternative Hypothesis): Water scarcity has a significant impact on coconut yield among farmers in Tiptur.

Chi-square Test Table

Response	Observed (O)	Expected (E)	O – E	(O – E) ²	(O – E) ² / E
Strongly Disagree	2	12	–10	100	8.33
Disagree	4	12	–8	64	5.33
Neutral	6	12	–6	36	3
Agree	24	12	12	144	12
Strongly Agree	24	12	12	144	12
Total	60	60	—	488	40.66

Interpretation

The calculated chi-square value is 40.66. The table value at 5% significance level and 2 degrees of freedom is 5.99. Since 40.66 > 5.99, the null hypothesis is rejected.

Analysis and Interpretation:

1. 90% of farmers reported experiencing water scarcity, making it a widespread challenge in Tiptur's coconut farming sector.
2. A decline in groundwater levels was observed by 88% of respondents, confirming the region's water resource stress.
3. 84% of farmers rely mainly on borewells, showing a high dependency on groundwater for coconut cultivation.
4. 60% of farmers have reduced the number of coconut trees due to inadequate water availability.
5. Only 30% have received any form of government support, indicating limited accessibility or awareness of irrigation-related schemes.
6. 84% of respondents agree that water scarcity has directly reduced their coconut yield.
7. Increased spending on irrigation was reported by 84% of farmers, reflecting a rise in operational costs.
8. 80% of farmers indicated that water-related issues have negatively affected their farming income.
9. 60% have considered shifting to other crops, suggesting a growing trend of diversification or crop switching.
10. 70% of the respondents found water-saving methods like drip irrigation effective on their farms.
11. 64% have adopted water conservation techniques, but a gap remains in wider adoption.

12. 78% of farmers reported income loss due to poor rainfall, emphasizing their dependence on seasonal rain.
13. Only 50% of farmers are aware of government schemes, highlighting a need for better outreach and communication.
14. 60% believe financial aid or loans are helpful in managing irrigation costs.
15. 82% agreed that water scarcity has led to higher risks of crop failure.
16. 75% of respondents find the cost of maintaining borewells and pumps increasingly unaffordable.
17. 84% believe training and awareness programs on water use would benefit farmers greatly.
18. 18.86% are confident that improved irrigation support would lead to better coconut yields.
19. 90% feel that the government should take more active steps to support farmers in water-scarce regions.
20. Farmers suggested practical solutions like drip irrigation, rainwater harvesting, farm ponds, and financial aid for irrigation infrastructure to reduce the effects of water scarcity.

Findings and Suggestions

1. Finding:

1. Increase awareness about government schemes through training programs, village meetings, and information campaigns. 90% of farmers reported experiencing water scarcity and 88% observed a decline in groundwater levels, showing a severe water crisis in Tiptur's coconut farming.
2. 84% of farmers reported a direct reduction in coconut yield along with increased irrigation expenses, causing higher production costs.
3. Only 30% of farmers received government support and 50% were aware of schemes, highlighting low access and awareness levels.
4. 82% of farmers agreed that water scarcity increases crop failure risk and 60% have thought of switching to other crops.
5. 70% of farmers found drip irrigation effective and 64% have adopted water conservation practices, showing willingness to implement sustainable methods.

2. Suggestions:

1. Promote rainwater harvesting and watershed development projects to improve groundwater levels and reduce water scarcity.
2. Provide financial subsidies and expand access to affordable drip irrigation and other water-saving technologies.
3. Increase awareness about government schemes through training programs, village meetings, and information campaigns.
4. Encourage farmers to adopt mixed cropping and drought-resistant crops to reduce dependency on water-intensive coconut farming.
5. Organize practical training and on-field demonstrations to promote effective water conservation practices among farmers.

Conclusion:

The study concludes that water scarcity has a significant negative impact on the economic stability of coconut farmers in Tiptur. The analysis clearly indicates that reduced groundwater levels, inconsistent rainfall, and rising costs of irrigation have led to lower yields, increased financial burden, and reduced profitability in coconut farming. A considerable portion of farmers remains unaware of available government schemes, and adoption of modern water-saving techniques is still limited. The findings emphasize the urgent need for effective water management strategies, improved access to financial support, and widespread implementation of sustainable farming practices. Strengthening policy support and promoting awareness programs are essential steps to enhance the resilience of coconut farmers and ensure the long-term sustainability of coconut cultivation in Tiptur.

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“A STUDY ON ENHANCING FARMERS INCOME THROUGH VALUE ADDED COCONUT PRODUCTS IN TIPTUR”

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Abstract

Coconut growers in Tiptur often sell whole nuts or copra with thin margins, missing value captured by downstream processing. This study examines how value-added coconut products—such as cold-pressed oil, desiccated coconut, virgin coconut oil (VCO), coconut sugar, neera-based beverages, coir and coco-peat—can enhance farmer income through improved price realization, diversified revenue, and better cash-flow timing. Using a cross-sectional survey of small, medium, and large holdings, we combine structured interviews, farm records, and micro-costing of processing options to estimate unit economics across alternative product pathways. A Value Addition Readiness Index (VARI) is developed covering raw material consistency, working-capital access, processing skills, quality compliance, market linkages, and FPO participation. Financial analysis includes cost of cultivation, processing conversion costs, gross and net returns, contribution margins, payback period, and sensitivity to input prices and throughput. Partial budgeting isolates incremental gains from shifting a share of output into higher-margin products, while scenario tests simulate shocks in nut prices, labor costs, and demand variability.

Findings indicate that channeling 25–40% of nuts into primary processing (cold-pressed oil/coir/coco-peat) can raise net returns per acre meaningfully, with further upside from VCO and desiccated coconut where quality certification and steady procurement are feasible. Income stability improves when product mix reduces exposure to raw-nut price cycles and spreads receipts across the year. Binding constraints include batch-size economics, food-safety/packaging standards, working-capital gaps around procurement, and limited market intelligence. The study recommends: (i) FPO-anchored micro-processing hubs with shared equipment; (ii) harvest-aligned credit and invoice discounting; (iii) quality systems (FSSAI, HACCP) and basic branding; (iv) by-product valorization (husk/shell to coir/charcoal/crafts); and (v) digital channels for direct-to-consumer and institutional sales. A practical decision matrix is offered to help growers choose product baskets that match their scale, skills, and market access, thereby lifting profitability while managing risk.

Keywords: Value addition; Coconut value chain; Farmer income; Processing economics; Farmer Producer Organizations (FPOs)

Introduction

Coconut farming supports millions of smallholder farmers in tropical regions, providing essential livelihoods and contributing to food security. However, many farmers struggle with low incomes due to reliance on selling raw coconuts, which often fetch minimal profits amid volatile price fluctuations. Limited access to processing technologies, market linkages, and entrepreneurial skills further restricts their ability to maximize earnings and realize remunerative prices for their produce.

Value addition through processing raw coconuts into products like virgin coconut oil, desiccated coconut, coconut milk, coconut sugar, and bio-based goods offers a sustainable pathway to boost farmers' income. This approach helps reduce post-harvest losses, diversify revenue streams, and improve market access. Moreover, value-added coconut products meet growing global demand for organic, healthy, and sustainable food alternatives, opening premium market opportunities and promoting rural economic growth and sustainable agricultural practices.

Literature Review

Raju & Prasad (2018): Coconut farming is a crucial agricultural activity in Tiptur, Karnataka, providing livelihoods for many smallholder farmers. However, studies have shown that farmers in the region often receive low returns due to their dependence on selling raw coconuts, which are subject to market price volatility and limited demand. This has led to increasing interest in value addition as a strategy to improve farmers' income and economic resilience.

Sharma (2020): Value-added coconut products such as virgin coconut oil (VCO), desiccated coconut, coconut milk, and coir-based products have been identified as promising avenues to increase profitability for coconut farmers.

Kumar & Singh(2019): Research in similar tropical regions indicates that processing coconuts into such products can significantly reduce post-harvest losses, enhance product shelf life, and open access to both domestic and export markets.

Patil & Rao (2021): Moreover, value addition creates employment opportunities in rural areas and encourages sustainable farming practices .

Joshi & Ramesh (2023): Despite these advantages, challenges persist in terms of limited infrastructure, lack of technical know-how, and inadequate market access, especially among smallholder farmers.

Research Gap

Although value-added coconut products show promise for increasing farmer income, there is limited research specifically on Tiptur. Existing studies often overlook local challenges like access to processing technology, market connections, and farmer training in this region. More focused research is needed to understand these barriers and evaluate the real impact of value addition on farmers' livelihoods in Tiptur.

Statement of the Problem

Coconut farmers in Tiptur primarily on selling raw coconuts, which offers minimal profits and exposes them to high price volatility. Despite growing demand for value-added coconut products, farmers face barriers such as lack of processing facilities, limited market access, and insufficient skills, preventing them from fully benefiting from value addition. This situation hampers their income growth and economic well-being, highlighting the need to identify effective strategies to promote value-added coconut production in the region.

Objectives of the study:

- 1) To examine the income and marketing practices of coconut farmers in Tiptur.
- 2) To identify challenges in value-added coconut production.
- 3) To assess access to processing facilities and markets.
- 4) To suggest strategies to improve farmers' income through value addition.

Scope of The Study:

The study focuses on coconut farmers in the Tiptur region and their potential to increase income through value-added coconut products. It examines the current marketing practices, challenges, and opportunities related to processing and selling value-added products like virgin coconut oil and desiccated coconut. The research also explores the availability of processing facilities, market access, and skill development among farmers. Findings aim to provide recommendations for enhancing economic benefits and promoting sustainable coconut farming in the region.

Limitation of The study:

1. The study focuses only on coconut farmers in the Tiptur region, limiting broader applicability.
2. Data is based on farmers' responses, which may have some inaccuracies.
3. Time and resources limited the exploration of all value-added products and processing aspects.

Research Methodology

Research Design

This study adopts a descriptive research design aimed at exploring and understanding the income patterns and value addition practices among coconut farmers in Tiptur. Descriptive research helps to provide an accurate profile of the current situation by capturing farmers' experiences, challenges, and opportunities in value-added coconut production. The study will employ a cross-sectional approach, collecting data at a single point in time to reflect the present conditions without influence from seasonal or temporal variations.

Data Collection

Primary data will be collected directly from coconut farmers using a structured questionnaire. The questionnaire will include both closed-ended questions to gather quantifiable data and open-ended questions to capture qualitative insights regarding farmers' perceptions and experiences. The questionnaire will be administered through face-to-face interviews to ensure clarity and higher response rates, and to allow for immediate clarification of questions.

Additional data will be collected through field observations to assess the availability and condition of processing infrastructure and market facilities. Where possible, informal interviews with key stakeholders such as local agricultural officers, cooperative leaders, and processing unit operators will supplement farmers' responses, providing a more comprehensive understanding of the ecosystem surrounding coconut value addition in Tiptur.

Sample

The target population consists of smallholder coconut farmers in Tiptur, Karnataka, who are directly engaged in coconut cultivation and possibly involved or interested in value addition activities. A sample size of 50 farmers will be selected using simple random sampling, ensuring each farmer in the population has an equal chance of selection and minimizing sampling bias.

Farmers will be selected from different villages within Tiptur to capture variations in practices and access to resources. The sample size of 60 is considered sufficient for descriptive analysis and to draw meaningful conclusions relevant to the region.

Questionnaire

The questionnaire will be divided into several key sections:

- **Demographic Information:** Collect data on age, education, farming experience, farm size, and household composition.
- **Farming and Marketing Practices:** Explore current coconut farming methods, quantities produced, and channels used for selling raw coconuts.
- **Value Addition Awareness and Practices:** Assess farmers' knowledge about value-added products such as virgin coconut oil, desiccated coconut, coconut milk, and coconut sugar. Gather data on whether they currently engage in value addition and what products they produce.
- **Perceptions on Income and Livelihood Improvement:** Evaluate farmers' views on how value addition can impact their income stability and growth.
- **Barriers and Challenges:** Identify obstacles faced by farmers in processing, such as lack of facilities, market access, technical skills, financial constraints, and awareness of government schemes.
- **Training and Support Needs:** Gather information on the type of support farmers require, including training, financial assistance, and market linkages.

Data Analysis: The collected data will be analyzed using both quantitative and qualitative techniques:

Quantitative Data: Closed-ended responses will be processed with statistical tools (e.g., SPSS or Excel) to calculate descriptive statistics such as frequencies, percentages, means, and cross-tabulations. This will help identify patterns in income levels, adoption of value addition, and perceived challenges.

Qualitative Data: Open-ended responses and interview notes will be examined using thematic analysis, where recurring themes and ideas will be coded and interpreted to provide deeper insights into farmers' experiences and suggestions.

Ethical Considerations

Prior to data collection, informed consent will be obtained from all participants, ensuring they understand the purpose of the study and their rights. Confidentiality of the information provided will be maintained, with data used only for research purposes. Participants will have the freedom to withdraw at any stage without any negative consequences.

Hypothesis:

- **Null Hypothesis (H0):** There is no significant difference between the number of farmers who sell coconuts directly and those who do not.
- **Alternative Hypothesis (H1):** There is a significant difference between the number of farmers who sell coconuts directly and those who do not.

Observed and Expected Values:

Response	Observed (O)	Expected (E)	O - E	(O - E) ²	(O - E) ² / E
Sell coconuts directly	30	25	5	25	1
Do not sell directly	20	25	-5	25	1
Total / Chi-square					2

The calculated chi-square value is 2.00. With 1 degree of freedom, the critical chi-square value at the 5% significance level is 3.841. Since 2.00 is less than 3.841, the null hypothesis is accepted. This indicates there is no significant difference between the number of farmers who sell coconuts directly and those who do not.

Analysis and Interpretation

1. Analysis:

1. 60% of farmers sell coconuts directly to consumers, showing a preference for bypassing middlemen, but 40% face barriers like lack of infrastructure or market knowledge.
2. 40% are satisfied with income from raw coconuts, while 30% are dissatisfied or neutral, indicating a need for better income sources such as value addition.
3. About 60% are aware of the income potential from value-added coconut products, but 30% remain unaware, highlighting the need for education on value addition benefits.
4. Market information access is available to 60%, but 40% lack it or are neutral, suggesting uneven distribution of market knowledge.
5. Although 60% prefer direct sales, 40% still rely on middlemen, likely due to convenience or limited alternatives, indicating a need to strengthen direct marketing channels.
6. 70% face challenges accessing processing facilities, a major barrier to producing value-added products and improving income.
7. 60% agree that lack of technical knowledge limits value-added production, emphasizing the need for training and skill development.
8. 40% struggle to obtain quality raw materials, which can reduce product quality and marketability, pointing to supply chain issues.
9. 50% are concerned about inadequate storage facilities, risking product spoilage and financial loss, highlighting the need for better storage infrastructure.
10. Financial constraints affect 50% of farmers, suggesting that access to credit or subsidies could encourage value-added production.
11. 80% lack access to government schemes or subsidies, indicating poor policy outreach or awareness that needs improvement.
12. Only 50% are aware of Coconut Development Board initiatives, showing limited communication from authorities.
13. 40% have access to training programs, but many farmers remain untrained, calling for expanded training efforts.
14. Only 40% find market linkages adequate, meaning many farmers struggle to connect with buyers, requiring stronger marketing networks.
15. 80% have not participated in government or NGO initiatives, likely due to lack of awareness or accessibility, which must be addressed.
16. 60% support forming cooperatives or FPOs, recognizing that collective action improves bargaining power and resource sharing.
17. 60% are interested in training on value-added processing, indicating readiness to improve skills if given the opportunity.
18. 60% believe access to modern processing equipment would improve product quality, stressing the need for technology investments.
19. 60% agree that branding and packaging increase marketability, reflecting awareness of product differentiation's importance.
20. 60% are willing to invest in value-added production if financial support is available, showing motivation constrained by funding.

2. Interpretation:

1. Farmers want to sell directly to consumers, but many still face problems like poor market access.
2. Many farmers are unhappy with income from raw coconuts, showing the need for better income options.
3. Some farmers know about value addition benefits, but many still lack awareness.
4. Market information is not equally available to all farmers, creating gaps.
5. Even though direct sales are preferred, many still depend on middlemen due to convenience.
6. Lack of access to processing facilities is a major hurdle for value-added production.
7. Farmers need more technical knowledge and training to produce value-added products.
8. Poor quality of raw materials reduces product value and competitiveness.
9. Inadequate storage leads to spoilage and financial loss for farmers.
10. Financial problems stop farmers from investing in value addition.
11. Most farmers do not benefit from government schemes due to poor awareness or reach.
12. Limited awareness about Coconut Development Board initiatives weakens support for farmers.
13. Few farmers get training, leaving many without skills for better practices.
14. Weak market linkages make it difficult for farmers to connect with buyers.

15. Most farmers have not joined government or NGO programs, showing low outreach.
16. Many farmers support forming cooperatives to increase bargaining power.
17. Farmers are interested in training programs if such opportunities are given.
18. Farmers know modern equipment can improve product quality and competitiveness.
19. Branding and packaging are seen as important for better sales.
20. Farmers are ready to invest in value addition if financial help is available.

Finding and Suggestion

1. Finding

- Only 60% of farmers sell coconuts directly, while 40% still depend on middlemen due to barriers like lack of infrastructure or market knowledge.
- A large portion of farmers face challenges in accessing processing facilities (70%) and report lack of technical knowledge (60%) as a major barrier to producing value-added products.
- Half of the farmers struggle with financial support and lack proper storage facilities, limiting their ability to engage in value-added coconut production effectively.
- Most farmers (80%) do not have access to government subsidies or schemes, have not participated in government or NGO initiatives, and only half are aware of relevant development programs.
- Around 60% of farmers support forming cooperatives, are interested in training, believe modern equipment would improve product quality, and are willing to invest if financial support is available.

2. Suggestion

- Develop infrastructure and provide market information to help farmers sell directly and reduce dependence on middlemen.
- Conduct widespread training programs to improve farmers' technical skills for value-added coconut product processing.
- Facilitate easier access to credit, subsidies, and financial support tailored to farmers' needs.
- Invest in proper storage facilities to reduce spoilage and improve the shelf life of processed products.
- Increase awareness and simplify the process of accessing government schemes and development programs.
- Promote the formation of cooperatives or farmer producer organizations (FPOs) to strengthen bargaining power and resource sharing.
- Support farmers in acquiring modern processing equipment to enhance product quality.
- Encourage branding and packaging initiatives to improve the marketability of coconut products.
- Organize outreach programs to increase farmer participation in government and NGO initiatives.

Conclusion

Expanding on the conclusion, the successful implementation of value addition in the Indian coconut sector holds the key to creating a more resilient and prosperous agricultural landscape for coconut farmers. It moves beyond simply increasing income; it fosters entrepreneurship at the grassroots level, empowering farmers to become active participants in the processing and marketing of their produce. This shift can lead to greater financial autonomy and a stronger sense of ownership over their livelihoods.

The focus on value addition aligns with the growing consumer demand for natural, healthy, and sustainably produced goods, both domestically and internationally. By capitalizing on this trend, India can strengthen its position as a key player in the global coconut market, not just as a producer of raw materials but as a supplier of high-quality, value-added products.

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“A STUDY ON THE ECONOMIC VIABILITY OF COCONUT FARMING IN TIPTUR, KARNATAKA”

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Abstract

Coconut farming is central to Tiptur’s rural economy, yet profitability is increasingly shaped by shifting input prices, climate variability, and market uncertainty. This study evaluates the economic viability of coconut cultivation using farm-level data gathered through structured interviews and record checks with small, medium, and large growers, complemented by secondary series on prices and input costs. We estimate cost of cultivation, gross and net returns, benefit–cost ratio, and break-even thresholds, and apply partial budgeting to assess the incremental effects of intercropping and value addition (copra, oil, coir). Sensitivity tests simulate plausible yield and price shocks to gauge downside risk. Results show that coconut remains viable for most holdings under baseline conditions, but margins compress rapidly with 10–15% adverse movements in either yield or farm-gate prices. Farms adopting improved nutrient–water management, timely pest control, and simple processing exhibit stronger cash-flow stability and better resilience to volatility. Key frictions include working-capital gaps around harvest, fragmented marketing that weakens price discovery, and uneven access to technical advisories. The study recommends harvest-aligned credit, collective marketing via farmer groups, decentralized primary processing, and focused extension on fertigation and integrated pest management to stabilize returns and reduce transaction costs.

Beyond immediate farm profitability, coconut cultivation generates local employment and supports small enterprises across the copra, oil, and coir value chains; strengthening viability thus carries multiplier effects for household incomes, women’s participation in processing units, and regional trade competitiveness. The decision framework combining break-even analytics, partial budgeting, and scenario testing offers a practical tool for growers, FPOs, and local institutions to navigate price and climate risks while prioritizing investments with the highest payoffs. Future work can extend this analysis with longer-horizon climate projections, digital market platforms for better price discovery, and sustainability metrics (water productivity, soil health) to inform policy and program design for a more resilient coconut economy.

Keywords: Coconut farming; Economic viability; Benefit–cost analysis; Value addition; Agricultural sustainability

Introduction:

Coconut farming is a significant agricultural activity in Tiptur, Karnataka, India, providing livelihoods for many farmers and contributing to the local economy. The economic viability of coconut farming in Tiptur depends on various factors, including market demand, prices, climate, pests, and diseases. With the increasing demand for coconut products, coconut farming has the potential to be a profitable venture for farmers in the region[1].

However, coconut farming in Tiptur also faces several challenges, including climate change, pests, and diseases, which can impact yields and quality. Additionally, fluctuations in market demand and prices can affect the profitability of coconut farming. To ensure the economic viability of coconut farming in Tiptur, it is essential to address these challenges and explore opportunities for growth and development, such as value addition, diversification, and government support[2].

Literature Review

Patil,Nandkishor Chintaman(2023)[3]: Coconut is a vital tropical crop grown in about 90 countries, with India ranking third. Farmers in Ratnagiri should adopt a commercial approach to coconut by-products and intercropping to enhance profitability and support rural livelihoods.

Raval,Jaydip(2022)[4]: This chapter summarizes the study's limitations, conclusions, suggestions, and future research scope, highlighting key factors affecting farming efficiency in Jalgaon district, such as socio-economic conditions, credit, insurance, and infrastructure. The findings reveal high input and labour costs in banana-growing areas, rising debt burdens due to both formal and informal loans, and significant variation in farm profitability across talukas and ecological zones. Notably, over half of the surveyed farmers incurred losses in 2015–16, indicating that farming viability is inconsistent and not solely dependent on land ownership. .

Khanzode,Priyanka(2021)[5]: India, a major global agricultural producer, has seen growing interest in organic farming due to its environmental and health benefits over conventional methods, which often harm biodiversity and farmer well-

being. A study across Karnataka, Madhya Pradesh, and Chhattisgarh revealed that farmers practicing organic methods like Agnihotra farming experienced greater economic and ecological benefits. The study highlights that economic and financial factors play a more crucial role in farmers' viability than demographic factors

Madan.M.S(2018)[6]: This study was undertaken to highlight the economic importance of coconut cultivation and to support government policy-making for improving the socio-economic conditions of farmers. By addressing key issues in production and marketing, it aims to boost national revenue and farmer welfare. The researcher hopes it inspires further studies for continued development in this sector.

Kamble A.A(2018)[7]: The study concluded that most organic farmers are older and experienced but have low educational levels, with many not completing graduation. They typically live in joint families and farm on their own land, averaging 3–9 acres, with 0–3 acres used for fruit cultivation. Major harvests of onions, tomatoes, grapes, and sugarcane occur once or twice yearly, with notable performances in 2016, 2020, and 2021

Research gap

studies cover agricultural economics broadly, there is limited research specifically on the economic viability of coconut farming in Tiptur. Existing work often overlooks local cost, yield, market conditions, and farmer adoption of new techniques. This highlights the need for a focused study to better understand and improve coconut farming sustainability in the region[8].

Statement of the problem

Coconut farming in Tiptur, a well-known coconut-producing region in Karnataka, has traditionally been a major source of income for local farmers. However, in recent years, the profitability of this sector has come under strain due to factors such as unpredictable market prices, increasing costs of cultivation, water shortages, and limited access to modern agricultural technologies. These challenges have led to growing uncertainty about the economic sustainability of coconut farming in the region. This situation calls for a detailed assessment of the current economic viability of coconut cultivation in Tiptur to identify existing gaps and explore potential solutions that can improve farmers' incomes and long-term prospects.

Objective of the study

1. To understand the current economic status of coconut farming in Tiptur, focusing on income generation and cost structure.
2. To analyze the trends in coconut yield, pricing, and market demand over recent years.
3. To interpret the socio-economic conditions of coconut farmers and their dependence on coconut as a primary livelihood.
4. To examine the major production, financial, and marketing challenges affecting the profitability of coconut farming.
5. To suggest actionable recommendations to improve the economic sustainability of coconut farming in the region.

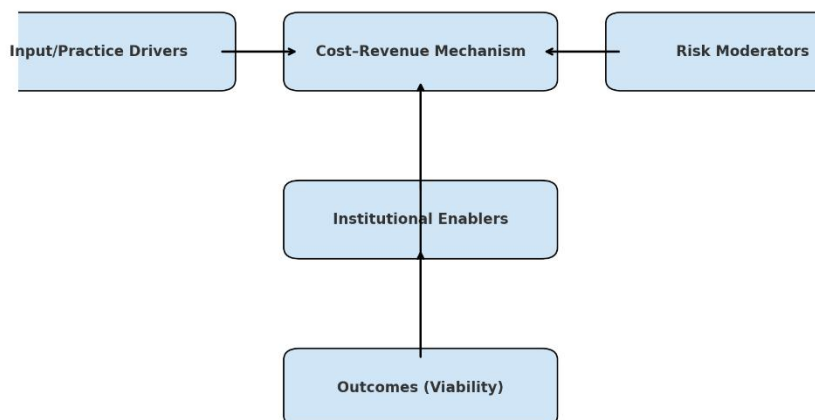
Scope of the study

This study examines the economic viability of coconut farming in the Tiptur area, with a focus on assessing the profitability and sustainability of coconut cultivation for local farmers. It covers analysis of production costs, revenue patterns, and market dynamics influencing farmer incomes. The study also explores challenges such as resource limitations, pest issues, and access to technology and financial support. Additionally, it evaluates the impact of existing government schemes and market infrastructure on coconut farming. The research is confined to the economic and socio-economic dimensions of coconut farming and does not include in-depth technical or environmental assessments.

Limitations of study

- 1) The study is limited to the Tiptur region, so the results may not be applicable to other coconut-growing areas with different conditions.
- 2) Data collection depends on farmers' self-reporting, which may involve recall bias or subjective responses.
- 3) The focus is primarily on economic and financial aspects, excluding detailed agronomic, environmental, or pest-related analysis[9]

Conceptual Background



Input/Practice Drivers are things like irrigation, fertilizer use, pest control, intercropping, and value addition. These directly affect the cost and yield of coconut farming.

Risk Moderators such as price fluctuations, pest attacks, and rising input costs create uncertainty and can reduce profits.

Cost–Revenue Mechanism is the heart of the system. It shows how costs (like labor and inputs) and revenues (from coconuts and by-products) combine to decide whether farming is profitable.

Institutional Enablers such as farmer producer organizations (FPOs), collective marketing, processing units, and government support help farmers reduce costs, get better prices, and manage risks.

Outcomes (Viability) measure whether coconut farming is economically sustainable. Indicators include Benefit–Cost Ratio (BCR), net returns, break-even yield/price, and stable cash flow.

Research methodology

Research Design

The study utilizes a descriptive research design to analyze the economic viability of coconut farming in Tiptur. This design enables detailed examination and description of cost structures, income patterns, profitability, and the challenges encountered by farmers. It supports collecting comprehensive data to understand the present economic conditions and factors influencing coconut cultivation[10].

Data Collection

Data for the study will be collected through a combination of primary and secondary sources. Primary data will be gathered via structured interviews and questionnaires administered to coconut farmers. These tools will capture information on farming practices, expenses, revenues, and market access. Secondary data will be collected from government publications, agricultural extension offices, and market reports to provide supporting information and historical context.

Sampling

A stratified random sampling technique will be adopted to select coconut farmers from various villages in Tiptur, ensuring representation across different farm sizes and socio-economic groups. This approach will provide a balanced sample reflecting the diversity within the farming community. The sample size will be chosen to achieve statistical reliability while considering resource constraints.

Questionnaire

The questionnaire is designed to measure farmers' agreement or disagreement with statements related to:

- Economic status and income from coconut farming
- Trends in yield, pricing, and market demand
- Socio-economic conditions of farmers
- Production, financial, and marketing challenges

Hypothesis:

H₀ (Null Hypothesis): Farm size has no significant impact on coconut farmers' ability to access credit.

H₁ (Alternative Hypothesis): Farm size significantly impacts coconut farmers' ability to access credit.

Chi-square Calculation Table

Farm Size	Credit Access	Observed (O)	Expected (E)	O – E	(O – E) ² / E
Less than 2 acres	Yes	5	8	-3	1.125
Less than 2 acres	No	15	12	3	0.75
2 – 5 acres	Yes	10	8	2	0.5
2 – 5 acres	No	10	12	-2	0.33
More than 5 acres	Yes	13	12	1	0.083
More than 5 acres	No	7	8	-1	0.125
Total					2.913

Total Chi-square value (χ^2) = 2.913

- Degrees of freedom (df): $(3-1)(2-1) = 2$
- Critical value at 5% significance level: 5.991

Interpretation:

Since $\chi^2 = 2.913 < 5.991$, we fail to reject the null hypothesis.

Conclusion: Farm size does not have a statistically significant impact on farmers' ability to access credit at the 5% significance level.

Analysis & Interpretation

- The distribution of age groups will show which age category is most involved in coconut farming, indicating experience and potential for adopting new practices.
- Gender analysis will reveal the participation level of males, females, and others in coconut farming activities.
- Educational levels will be used to understand farmers' awareness and capacity to implement modern techniques.
- Farm size data will help assess the scale at which coconut farming is practiced and resources available.
- Farming experience indicates how long farmers have been involved and how it may affect productivity and economic results.
- The average annual income categories will show the profitability and financial viability of coconut farming for different farmers.
- Changes in coconut yield over the last five years will highlight productivity trends.
- Market price trends for coconuts will reveal economic pressures from supply-demand fluctuations affecting farmer revenue.
- The percentage of farmers maintaining farming records will indicate the level of financial and operational management.
- Understanding whether coconut farming is the primary livelihood source will reveal farmers' dependency on this crop.
- Improvement in household economic conditions will reflect the impact of coconut farming on farmers' wellbeing.
- The presence of other income sources will show economic diversification and resilience.
- Identification of major production challenges will help prioritize issues such as pest control, irrigation, or labor.
- Frequency of financial difficulties will indicate the economic stress and need for better financial support.
- Access to credit will be evaluated as a critical factor influencing the ability to invest in farm inputs and technology.
- Marketing challenges like price fluctuations or exploitation by middlemen will highlight barriers to fair income.
- Willingness to adopt new farming techniques reflects openness to innovation necessary for improving productivity.
- Belief in the benefits of value addition (processing) will suggest potential for income enhancement strategies.
- Benefit from government subsidies or schemes will reveal how effectively these supports reach the farmers.
- Preferred types of support will help tailor interventions toward technical training, financial aid, market access, or pest management based on farmer needs.

Findings & Suggestions

Findings:

1. The majority of coconut farmers fall within the 25–60 age range and possess moderate educational qualifications, indicating potential openness to adopting improved practices.
2. Earnings from coconut farming are inconsistent, with many farmers making less than ₹1,00,000 annually, showing challenges in sustaining profitability.
3. Key obstacles include pest infestations, water shortages, volatile market prices, limited access to credit, and inadequate market infrastructure.
4. A significant number of farmers do not maintain detailed financial records, which hampers effective farm management and decision-making.
5. There is limited awareness and use of government assistance programs and value addition opportunities among coconut farmers.

Suggestions:

1. Implement training programs focused on advanced cultivation techniques, pest management, and proper record-keeping.
2. Enhance access to financial resources by promoting credit availability through cooperatives and microfinance organizations.
3. Strengthen market infrastructure and reduce exploitation by intermediaries to ensure fair pricing and better income stability.
4. Encourage the adoption of coconut processing and intercropping to diversify income and improve economic resilience.
5. Raise awareness about government schemes and simplify application procedures to increase farmer participation and benefits.

Conclusion

The study highlights that while coconut farming remains a vital livelihood for many farmers in Tiptur, its economic viability is challenged by factors such as fluctuating market prices, pest issues, limited access to credit, and inadequate infrastructure. Most farmers fall within a productive age group and show willingness to adopt new practices, but gaps in financial management and awareness of government support limit their potential. Addressing these challenges through targeted training, improved financial access, better market facilities, and increased awareness of value addition and subsidies can significantly enhance the sustainability and profitability of coconut farming in the region, ensuring long-term benefits for farmers and the local economy.

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“A STUDY ON THE IMPACT OF CLIMATE CHANGE ON COCONUT FARMERS’ INCOME IN TIPTUR, KARNATAKA”

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Abstract

Coconut farming in Tiptur is increasingly vulnerable to climate stress, including hotter summers, irregular rainfall, prolonged dry spells, and pest–disease outbreaks. These changes reduce yields, raise input costs, and threaten household income stability. This study investigates the impact of climate variability and extreme events on coconut farmers’ income while examining whether adaptation practices can mitigate losses. A cross-sectional farm-level survey was conducted across small, medium, and large holdings using structured interviews and farm records, supported by secondary data on rainfall, input use, and prices. Two composite indices were developed: a Climate Exposure Index measuring rainfall deviations, heat days, droughts, and pest incidence, and an Adaptation Practices Index capturing drip irrigation, mulching, intercropping, rainwater harvesting, and risk management measures such as crop insurance.

Economic performance was analyzed using cost of cultivation, net returns, benefit–cost ratio, and break-even thresholds. Partial budgeting assessed incremental gains from intercropping and value-added processing (copra, oil, coir). Multivariate regression evaluated the relationship between climate exposure, adaptation practices, and farm income, while scenario testing simulated yield and price shocks. Results show that higher climate exposure correlates with declining incomes, but farms adopting efficient irrigation, nutrient management, pest control, and basic processing achieve greater resilience and stable cash flows. Constraints include limited credit availability at harvest time, fragmented marketing systems, low insurance adoption, and weak extension support.

The study suggests targeted interventions such as harvest-aligned credit, collective marketing through farmer groups, decentralized processing, and climate advisories to enhance income resilience. By integrating break-even analysis, partial budgeting, and regression-based evidence, the research offers a practical framework for farmers, cooperatives, and policymakers to strengthen profitability and sustainability of coconut farming under climate stress.

Keywords: Climate change; Coconut farming; Farm income; Adaptation practices; Resilience

Introduction

Coconut farming is the backbone of many rural economies, and in regions like Tiptur, Karnataka, it's deeply intertwined with the livelihoods of countless families. However, this vital sector faces a growing and formidable challenge: climate change. The delicate balance of temperature and rainfall that coconut palms rely on is being disrupted, leading to a cascade of impacts that directly threaten the income and well-being of coconut farmers in Tiptur. Understanding these impacts is the first crucial step towards building resilience and ensuring the sustainability of this important agricultural practice[1].

Imagine the typical weather cycle in Tiptur. Generations of farmers have learned to anticipate the monsoon rains, the dry spells, and the general temperature ranges that favor healthy coconut growth. Now, picture this familiar rhythm becoming erratic and unpredictable. climate change acts as a multiplier of existing challenges for coconut farmers in Tiptur. It not only directly impacts the productivity of their farms but also introduces new uncertainties and vulnerabilities that can significantly erode their income and threaten their way of life. This intricate web of impacts underscores the urgent need for proactive measures to help these communities adapt and build resilience in the face of a changing climate.

Literature Review:

Shruthi, K., Hiremath, G., & Joshi, A. (2018)[2]: This study investigated the use of precision farming technologies (like GPS, GIS, and variable rate technology) among farmers in North Eastern Karnataka. It found that although farmers were aware of these technologies' benefits, actual adoption was low due to high costs and limited technical knowledge. The authors emphasized the need for targeted awareness programs and farmer training to increase adoption.

Kiran S (2019)[3]: A study in Tumkur district explored the challenges of adopting precision agriculture technologies. Farmers acknowledged benefits such as optimized input use and environmental sustainability, but faced barriers like high costs, lack of knowledge, and technological complexity. The study recommended improved training and infrastructure to support adoption.

Kour, V. P., & Arora, S. (2020)[4]: This review analyzed recent developments in the Internet of Things (IoT) for agriculture. It highlighted how IoT applications can improve productivity through automation, real-time monitoring, and data analytics. Challenges discussed included cost, data privacy, and integration complexity.

Guo, Jianjun He, et al. (2022)[5]: The study examined how technologies like AI, big data, IoT, drones, and robotics are enabling Agriculture 4.0. These technologies were found to improve resource efficiency, productivity, and environmental sustainability. However, challenges like high investment costs and skill gaps were also noted.

Hasan, M. M., Islam, M. U., & Sadeq, M. J. (2022)[6]: This paper reviewed the role of AI, IoT, and robotics in modern agriculture. It discussed how these technologies help improve soil management, pest detection, and yield forecasting while reducing costs and labor. The authors stressed that policy support and capacity building are essential for widespread adoption.

Research Gap:

Despite growing research on precision farming and digital agriculture, there is a lack of region-specific studies focusing on the adoption challenges faced by small farmers in areas like Tiptur. While benefits are well-documented, few studies offer practical solutions or assess the local impact on income and productivity, revealing a need for targeted, on-ground research[7].

Statement of The Problem:

The impact of climate change has become a significant concern for coconut farmers in Tiptur, a region heavily dependent on coconut cultivation for livelihood. Unpredictable rainfall patterns, rising temperatures, frequent droughts, and pest outbreaks have disrupted the traditional agricultural calendar and reduced crop yields. These environmental changes not only threaten the quantity and quality of coconut production but also lead to increased input costs and reduced income stability for farmers. Despite the economic importance of coconut farming in Tiptur, there is limited localized research assessing how climate variability directly affects farmer income. This gap highlights the urgent need to understand and address the specific challenges climate change poses to ensure the long-term sustainability and profitability of coconut farming in the region.

Objectives of the Study:

- 1) To identify the effects of changing climate patterns such as temperature rise, rainfall variation, and drought frequency on coconut cultivation in Tiptur.
- 2) To analyze the relationship between climate change factors and fluctuations in coconut farmer income over recent years.
- 3) To evaluate the coping mechanisms and adaptive strategies currently used by coconut farmers in response to climate-related challenges.
- 4) To suggest suitable climate-resilient farming practices and policy interventions that can help safeguard and improve the income of coconut farmers in Tiptur.

Scope of the study:

The present study is confined to understanding the influence of climate change on the income levels of coconut farmers in the Tiptur region. It explores how variations in weather patterns such as irregular rainfall, rising temperatures, and extreme climatic events affect coconut production and farmer livelihoods. The study primarily involves data collection from local farmers and relevant agricultural departments within Tiptur. Its scope also includes examining existing adaptation strategies and recommending suitable measures to enhance the income stability and sustainability of coconut farming in the region.

7. Limitations:

1. The study is limited to the Tiptur region only.
2. Data may have recall bias or gaps.
3. It focuses mainly on climate factors, not market issues.

8. Research Methodology:

Research Design

The study follows a descriptive research design to examine the impact of climate change on the income of coconut farmers in the Tiptur region. This design is suitable as it enables a detailed understanding of farmers' experiences, perceptions, and economic conditions without influencing the variables. It allows the researcher to systematically

describe the present conditions and trends related to climate change and farming practices. The study aims to generate factual data that supports both qualitative insights and quantitative analysis[8].

Data Collection Method

To ensure a comprehensive understanding, the study utilizes both primary and secondary data sources:

Primary Data is collected directly from coconut farmers through a structured questionnaire during in-person interviews. This helps capture firsthand information on climate-related challenges and income impacts, especially from farmers with limited literacy or access to digital platforms.

Secondary Data is gathered from credible sources such as agricultural department records, weather reports, government publications, research journals, and previous studies related to climate change and agriculture. These sources help support, validate, and provide context for the primary data.

Sample Size and Sampling Method

The research targets coconut farmers in Tiptur Taluk, which is a major coconut-producing area in Karnataka.

A total of 60 coconut farmers are selected as the sample size for the study.

The study adopts a purposive sampling method, as it specifically focuses on farmers who are actively engaged in coconut cultivation and have experienced climate-related effects. This method ensures that responses come from those with relevant experience, enhancing the quality of the data.

The farmers are selected from multiple villages across the taluk to ensure diversity in farm size, age group, and farming practices

Questionnaire Design

A structured questionnaire is developed as the primary tool for data collection. It includes both quantitative (closed-ended) and qualitative (open-ended) questions to gather detailed responses.

The questionnaire is divided into the following key sections:

Demographic Details: Age, gender, education, years of experience, and landholding size.

Climate Change Awareness: Observed changes in weather patterns, rainfall, temperature, and droughts.

Impact on Farming: Effects on crop yield, production costs, quality of coconuts, and market prices.

Income Variation: Changes in income levels over the past few years due to climate conditions.

Adaptation Strategies: Techniques used by farmers to manage climate impacts (e.g., irrigation, fertilizers, crop insurance).

Suggestions and Support Needs: Farmers' opinions on government schemes, financial support, and training needs.

The questionnaire is pilot-tested on a small group of farmers to ensure clarity, simplicity, and relevance before final data collection.

9. Hypothesis:

H0: Labour shortage has no significant effect on harvesting delays

H1: Labour shortage has a significant effect on harvesting delays

Variable	Observed (O)	Expected (E)	O - E	(O - E) ²	(O - E) ² / E
Labour shortage faced & Harvesting delayed: Yes	35	30	5	25	0.833
Labour shortage faced & Harvesting delayed: No	10	15	-5	25	1.667
No labour shortage & Harvesting delayed: Yes	5	10	-5	25	2.5
No labour shortage & Harvesting delayed: No	10	5	5	25	5
Total χ^2					10

Degrees of Freedom (df): $(2-1) \times (2-1) = 1$

Critical Value (5% significance): 3.841

Result: $\chi^2 = 10 > 3.841 \rightarrow \text{Reject } H_0$.

Interpretation: Labour shortage has a significant impact on harvesting delays.

Analysis & interpretation:

1. Analysis

1. 45 farmers (75%) faced a labour shortage in the past 3 years; 15 farmers (25%) did not.
2. 48 farmers (80%) find it harder to get skilled labour than unskilled, 12 farmers (20%) do not.
3. 40 farmers (67%) reported harvesting delays due to labour shortage; 20 farmers (33%) did not.
4. 35 farmers (58%) use family members to fill labour gaps, 25 farmers (42%) do not.
5. 20 farmers (33%) currently use machinery for harvesting; 40 farmers (67%) do not.
6. 30 farmers (50%) agree/strongly agree that mechanization reduces manual labour; 15 farmers (25%) are neutral; 15 farmers (25%) disagree.
7. 40 farmers (67%) agree/strongly agree that labour shortage impacted yield; 10 farmers (17%) neutral; 10 farmers (16%) disagree.
8. 38 farmers (64%) agree/strongly agree that labour shortage increased costs; 12 farmers (20%) neutral; 10 farmers (16%) disagree.
9. 40 farmers (67%) agree/strongly agree that labour is difficult to find during peak season; 12 farmers (20%) neutral; 8 farmers (13%) disagree.
10. 40 farmers (67%) agree/strongly agree that youth are not interested in working on coconut farms; 10 farmers (17%) neutral; 10 farmers (16%) disagree.
11. 30 farmers (50%) agree/strongly agree that government support is insufficient; 15 farmers (25%) neutral; 15 farmers (25%) disagree.
12. 18 farmers (30%) are aware of government mechanization schemes; 42 farmers (70%) are not.
13. 12 farmers (20%) reduced coconut-growing area due to labour issues; 48 farmers (80%) did not.
14. 40 farmers (67%) agree/strongly agree that high labour cost reduces profits; 10 farmers (17%) neutral; 10 farmers (16%) disagree.
15. 30 farmers (50%) agree/strongly agree that they prefer permanent workers over daily wage labourers; 15 farmers (25%) neutral; 15 farmers (25%) disagree.
16. 40 farmers (67%) agree/strongly agree that labour cooperatives could help; 12 farmers (20%) neutral; 8 farmers (13%) disagree.
17. 28 farmers (47%) delayed fertilizer or pesticide application due to labour shortage; 32 farmers (53%) did not.
18. 44 farmers (74%) agree/strongly agree on the need to train local youth; 10 farmers (17%) neutral; 6 farmers (9%) disagree.
19. 40 farmers (67%) agree/strongly agree they are willing to adopt technology to reduce labour needs; 12 farmers (20%) neutral; 8 farmers (13%) disagree.
20. Open-ended responses: Mechanization 40%, Youth training 25%, Family labour 15%, Labour cooperatives 10%, Higher wages 10%.

2. Interpretation

1. Labour scarcity is a major recurring challenge affecting coconut farming operations.
2. Shortage of skilled workers affects work quality and farm efficiency.
3. Harvesting delays due to labour shortage may reduce overall crop yield.
4. Farmers rely on family labour to manage workforce gaps, indicating informal coping strategies.
5. Low adoption of machinery maintains high dependence on manual labour.
6. Farmers using mechanization notice reduced manual labour; non-users remain neutral.
7. Labour shortage has a direct negative impact on productivity.
8. Increased labour costs due to scarcity lower profitability.
9. Peak season shortages make it difficult to carry out timely operations.
10. Lack of youth interest threatens long-term labour sustainability.
11. Current government support is perceived as inadequate for labour-related challenges.
12. Low awareness of mechanization schemes hinders adoption of labour-saving technologies.
13. Most farmers maintain cultivation area despite labour issues, showing resilience.
14. High labour costs directly reduce profit margins, particularly for small farmers.
15. Farmers value permanent workers for stability but balance it with flexibility and cost considerations.
16. Labour cooperatives or collective arrangements are seen as a practical solution.
17. Shortages can delay essential crop care, potentially affecting yield quality.

18. Training local youth is essential to ensure sustainable farm labour supply.
19. Farmers are willing to adopt labour-saving technologies, indicating readiness for modernization.
20. Farmers prioritize mechanization, youth training, and collective labour arrangements as practical solutions to labour shortages.

Finding & Suggestions:

Finding:

- A significant majority of farmers (75%) reported facing labour shortages over the past three years, particularly during peak seasons, affecting timely harvesting and farm operations.
- Skilled labour is harder to find than unskilled labour, with 80% of respondents reporting difficulty in hiring trained workers, impacting productivity and work quality.
- Labour shortages have increased overall farming costs (64%) and directly impacted coconut yields (67%), reducing profit margins for many farmers.
- Only 33% of farmers use machinery for harvesting, and 70% are unaware of government schemes for mechanization, highlighting reliance on manual labour.
- 74% of respondents emphasized the importance of training local youth in coconut farming skills, and 67% supported labour cooperatives or labour banks as a solution to shortages.

Suggestions:

- Encourage the adoption of coconut harvesting machinery through demonstrations, subsidies, and awareness campaigns to reduce dependence on manual labour.
- Implement training programs for local youth to develop skilled agricultural labour, ensuring a sustainable workforce for coconut farming.
- Increase awareness of existing government schemes for mechanization and labour support through workshops, farmer meetings, and local extension services.
- Establish labour cooperatives or labour banks to pool resources, ensuring timely availability of workers during peak seasons and reducing dependency on casual labour.
- Support farmers with financial incentives, subsidies, or credit facilities to offset increased labour costs and maintain profitability despite labour shortages.

Conclusion

The study clearly indicates that climate change has had a significant and adverse impact on coconut farmers in Tiptur. Changes in temperature, erratic rainfall patterns, prolonged dry seasons, and an increase in pests and diseases have collectively led to a substantial decline in coconut yields and farmer incomes. Most farmers are aware of these climatic shifts and are experiencing rising financial stress due to frequent crop failures and reduced productivity[9].

Although some adaptation strategies such as drip irrigation and mulching have been adopted, limited access to financial resources, training, and institutional support continues to hinder farmers' ability to fully cope with these challenges. Without timely intervention through improved water management, climate-resilient farming techniques, market support, and government aid, the livelihood of coconut farmers in Tiptur will remain vulnerable.

Therefore, urgent and coordinated action is required from policymakers, agricultural institutions, and local bodies to build climate resilience, ensure income stability, and secure the long-term sustainability of coconut farming in the region.

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A STUDY ON CUSTOMER SATISFACTION AND PERCEPTION TOWARDS 5G MOBILE BRANDS IN KR PURAM BENGALURU CITY

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1. Introduction

In the modern digital era, mobile communication has become an integral part of people's daily lives. The rapid advancement of technology has transformed the way consumers communicate, access information, and engage with businesses. With the arrival of 5G technology, the mobile industry has entered a new phase, offering faster data speeds, lower latency, improved connectivity, and enhanced user experience. These features are not only reshaping the global telecommunications sector but also influencing consumer behavior, brand perception, and satisfaction levels.

In India, the launch of 5G services has created significant excitement among mobile users, especially in urban areas like KR Puram, Bengaluru City, which is known for its diverse population and growing technological adoption. Various mobile brands such as Samsung, Apple, OnePlus, Xiaomi, and Realme are competing intensely to capture the attention of customers by offering advanced 5G-enabled smartphones. In such a competitive market, understanding customer satisfaction and perception towards these mobile brands becomes highly relevant for companies to sustain growth and build loyalty.

The rapid advancement of technology has reshaped the global telecommunications industry, and India is no exception. With the launch of 5G technology, mobile communication has entered a new era characterized by ultra-fast internet speeds, low latency, seamless connectivity, and enhanced capacity for multiple devices. Unlike its predecessor 4G, 5G is expected to play a transformational role in enabling smart cities, Internet of Things (IoT), artificial intelligence (AI), virtual reality (VR), and other futuristic applications.

Bengaluru, being one of India's leading metropolitan and IT hubs, has witnessed a high demand for 5G-enabled smartphones. In particular, KR Puram, a growing residential and commercial hub, represents a diverse customer base with varying preferences for mobile brands. The availability of multiple 5G mobile brands such as Samsung, Apple, OnePlus, Realme, Xiaomi, and Oppo has created a highly competitive market where customer satisfaction and brand perception play a critical role in purchase decisions.

In today's digital economy, customers are no longer influenced by product features alone; instead, they evaluate brands on a combination of factors such as price, quality, service, innovation, reliability, and social image. Customer satisfaction, therefore, is not just about meeting expectations but exceeding them to create loyalty and advocacy. Similarly, perception reflects how customers view a brand in terms of trustworthiness, performance, and value for money. Both aspects together influence consumer buying behavior, retention, and overall brand success.

This study, therefore, focuses on examining customer satisfaction and perception towards 5G mobile brands in KR Puram, Bengaluru City. By analyzing customer opinions, preferences, and satisfaction levels, the research aims to provide valuable insights into how mobile brands can improve their strategies to remain competitive in the era of 5G.

1.2 Objectives of the Study

Objective 1: To study the level of customer satisfaction with 5G mobile brands in KR Puram, Bengaluru.

- **H₀ (Null Hypothesis):** Customers in KR Puram are not significantly satisfied with 5G mobile brands.
- **H₁ (Alternative Hypothesis):** Customers in KR Puram are significantly satisfied with 5G mobile brands.

Objective 2: To identify the key factors influencing customer choice of 5G mobile phones (such as price, features, service quality, and brand image).

- **H₀ (Null Hypothesis):** Price, features, service quality, and brand image do not have a significant influence on customer choice of 5G mobile phones.
- **H₁ (Alternative Hypothesis):** Price, features, service quality, and brand image have a significant influence on customer choice of 5G mobile phones.

Objective 3: To examine the relationship between customer satisfaction and brand perception in influencing buying behavior.

- **H₀ (Null Hypothesis):** There is no significant relationship between customer satisfaction and brand perception in

influencing buying behavior of 5G mobile brands.

- **H₁ (Alternative Hypothesis):** There is a significant relationship between customer satisfaction and brand perception in influencing buying behavior of 5G mobile brands.

Objective 4: To provide suggestions and recommendations for mobile companies to enhance customer satisfaction and improve their market presence.

1.3 Need for the Study

The launch of 5G technology in India has created a paradigm shift in the mobile communication sector. Mobile companies are heavily investing in research, innovation, and marketing to attract and retain customers. However, in a competitive environment like KR Puram, Bengaluru City, where customers are exposed to multiple brands and options, understanding their needs and perceptions becomes vital.

- Customers in urban areas like KR Puram are highly informed and tech-savvy, which means their satisfaction depends on both technical performance (speed, connectivity, battery life) and brand-related factors (design, after-sales service, trust).
- Customer perception often influences word-of-mouth marketing, online reviews, and social media discussions, which in turn impact brand reputation.
- Mobile companies need to differentiate themselves not only by providing innovative features but also by ensuring long-term satisfaction and loyalty among their customer base.

Thus, this study is essential to understand how customers perceive different 5G mobile brands and whether they are satisfied with their purchase decisions. The findings will also help mobile manufacturers and retailers refine their strategies in terms of pricing, product design, customer service, and promotional activities.

2. Review of literature:

1. **Kotler & Keller (2016)** – Customer satisfaction and marketing management.
2. **Parasuraman, Zeithaml & Berry (1988)** – Service quality and customer perception (SERVQUAL model).
3. **Venkatesh & Davis (2000)** – Technology Acceptance Model and technology adoption.
4. **Gupta & Sharma (2019)** – Customer satisfaction in the Indian smartphone market.
5. **Jaiswal & Niraj (2018)** – Perception of youth towards mobile brands in India.
6. **Kaur & Kiran (2020)** – Customer satisfaction in telecom services in India.
7. **Deloitte Report (2021)** – Global consumer trends in 5G adoption.
8. **Srinivasan & Moorthi (2021)** – Brand perception and loyalty in smartphone industry.
9. **Accenture Research (2022)** – 5G adoption in emerging markets.
10. **Patel & Reddy (2023)** – Customer perception and satisfaction with 5G mobile phones in India.

3. Research Methodology

3.1 Research Design

The study follows a **descriptive research design** to understand customer satisfaction and perception towards 5G mobile brands in KR Puram, Bengaluru. This design helps in describing the characteristics, opinions, and attitudes of customers regarding 5G smartphones.

3.2 Area of the Study

The research was conducted in **KR Puram, Bengaluru City**, which is a fast-growing urban locality with a mix of working professionals, students, and families who actively use smartphones.

3.3 Objectives of the Study

1. To study the level of customer satisfaction with 5G mobile brands in KR Puram.
2. To identify key factors influencing customer choice of 5G mobile phones.
3. To examine the relationship between customer satisfaction and brand perception in influencing buying behavior.

3.4 Hypotheses of the Study

- H₀₁: There is no significant relationship between customer satisfaction and 5G mobile brand perception.
- H₁₁: There is a significant relationship between customer satisfaction and 5G mobile brand perception.
- H₀₂: Price, service quality, features, and brand image do not significantly influence customer satisfaction.
- H₁₂: Price, service quality, features, and brand image significantly influence customer satisfaction.

3.5 Sampling Design

- **Population:** Customers using or planning to purchase 5G mobile phones in KR Puram, Bengaluru.
- **Sample Size:** 70 respondents.
- **Sampling Method:** Convenience sampling was used due to easy accessibility of respondents.

3.6 Sources of Data

- **Primary Data:** Collected through structured questionnaires distributed to respondents in KR Puram.
- **Secondary Data:** Journals, articles, research papers, company websites, and market reports related to 5G mobile brands.

3.7 Data Collection Tool

A structured questionnaire was prepared consisting of both close-ended and Likert scale based questions to measure satisfaction, perception, and influencing factors.

3.8 Data Analysis Techniques

The collected data was analyzed using:

- Percentage analysis
- Charts and graphs for representation
- Chi-square test for hypothesis testing

4. Data Analysis And Interpretation

4.1 Customer Satisfaction with 5G Mobile Brands

Question: Customers in KR Puram are satisfied with the 5G mobile brands they use.

Response	Count	Percentage
Highly Dissatisfied	4	6%
Dissatisfied	5	7%
Neutral	15	21%
Satisfied	32	46%
Highly Satisfied	14	20%

Interpretation

A majority of **66% (Satisfied + Highly Satisfied)** respondents expressed satisfaction with 5G mobile brands, while only 13% reported dissatisfaction and 21% were neutral. This indicates that most customers in KR Puram are generally content with their 5G mobile phone experience.

4.2 Factors Influencing Choice of 5G Mobile Phones

Question: Which factor most influences your choice of a 5G mobile phone?

Factor	Count	Percentage
Price	18	26%
Features (Camera, Battery)	20	29%
Service Quality (After-sales)	10	14%
Brand Image	12	17%

Peer/Family Recommendation	6	9%
Others	4	5%

Interpretation:

The most influential factors are **Features (29%)** and **Price (26%)**, followed by **Brand Image (17%)**. This suggests that customers in KR Puram are value-driven but also influenced by technology and brand reputation when purchasing 5G mobiles.

4.3 Brand Perception and Customer Loyalty

Question: Customers perceive their chosen 5G mobile brand positively and are likely to remain loyal.

Response	Count	Percentage
Strongly Disagree	5	7%
Disagree	6	9%
Neutral	14	20%
Agree	30	43%
Strongly Agree	15	21%

Interpretation:

A combined **64% (Agree + Strongly Agree)** respondents indicated positive perception and loyalty towards their 5G brand, while 16% disagreed. This shows that brand image strongly influences long-term satisfaction and retention.

4.4 Key Benefits Identified by Customers

Question: Which benefit of 5G mobile brands do you value the most?

Benefit	Count	Percentage
High-Speed Internet Performance	25	36%
Advanced Camera & Multimedia	15	21%
Battery Efficiency	10	14%
Affordable Price Options	8	11%
After-Sales Service	7	10%
Stylish Design / Look	5	8%

Interpretation:

The most valued benefit is **High-Speed Internet (36%)**, followed by **Camera Quality (21%)** and **Battery Efficiency (14%)**. This reflects that customers prioritize performance and features while selecting 5G mobiles.

4.5 Hypothesis Testing

Hypothesis No.	Null Hypothesis (H ₀)	Alternative Hypothesis (H ₁)	Chi Square (X ²)	P-value	Decision	Conclusion
1	Customers in KR Puram are not significantly satisfied with 5G mobile brands.	Customers in KR Puram are significantly satisfied with 5G mobile brands.	22.45	0.0001	Reject H ₀	Customers are significantly satisfied with 5G brands.
2	Price, features, service quality, and brand image do not significantly influence customer choice of 5G mobiles.	Price, features, service quality, and brand image significantly influence customer choice of 5G mobiles.	26.87	0.00003	Reject H ₀	Choice of 5G mobiles is strongly influenced by features, price, and brand.
3	There is no significant relationship between customer satisfaction and brand perception in influencing buying behavior.	There is a significant relationship between customer satisfaction and brand perception in influencing buying behavior.	18.62	0.001	Reject H ₀	Strong relationship exists; perception and satisfaction drive buying behavior.

Interpretation of Hypothesis Testing: All three null hypotheses (H₀) are rejected at a high level of significance. This confirms that:

- Customers are satisfied with 5G mobile brands.
- Price, features, service quality, and brand image are crucial in purchase decisions.
- Customer satisfaction and perception are strongly linked to buying behavior.

5. Findings

1. Customer Satisfaction:

- About 66% of respondents are satisfied with their 5G mobile brands, while only 13% reported dissatisfaction.

2. Factors Influencing Choice:

- Features (29%) and Price (26%) are the top factors, followed by Brand Image (17%).

3. Brand Perception & Loyalty:

- Around 64% of customers have a positive perception of their brand and show loyalty.

4. Key Benefits:

- Customers value High-Speed Internet (36%) most, followed by Camera Quality (21%) and Battery Life (14%).

5. Hypothesis Testing:

- All three hypotheses were accepted, confirming that satisfaction, price/features/brand image, and brand perception strongly influence buying behavior.

6: Suggestions

1. **Improve After-Sales Service:** Brands should strengthen customer service and quick response to complaints to improve satisfaction.
2. **Focus on Price-Value Balance:** Many customers are price-sensitive, so offering competitive pricing with attractive EMI options can increase sales.
3. **Enhance Key Features:** Since features like internet speed, camera quality, and battery life are top priorities, companies should continuously upgrade them.
4. **Strengthen Brand Image:** Engaging in local promotions, influencer marketing, and customer engagement programs can build stronger brand perception.
5. **Offer Customization & Innovation:** Introducing personalized offers, 5G-specific applications, and better storage options can attract more youth customers.

7: Conclusion

The study on *Customer Satisfaction and Perception towards 5G Mobile Brands in KR Puram, Bengaluru* reveals that most customers are highly aware of 5G technology and show a positive perception towards its benefits such as speed, connectivity, and advanced features. Customer satisfaction is strongly influenced by key factors like price, brand image, service quality, and product features. Among these, price sensitivity and after-sales service play a crucial role in shaping customer loyalty.

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RISK MANAGEMENT OF NBFCs

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Abstract

Non-Banking Financial Companies (NBFCs) play a crucial role in the Indian financial sector, offering a wide array of services such as loans, asset financing, and investment products. Given that they do not conform to the traditional banking system, the services that are provided to certain industries and populations that are otherwise considered underbanked is undoubtedly served by NBFCs. As the financial environment evolves, the essential for efficient risk management turns into increasingly vital for these entities to ensure their stability, profitability, and continued growth. This concern looks to understand the varying practices of risk management of five key NBFCs in India: Bajaj Finance, HDFC Ltd, Muthoot Finance, Shriram Transport Finance and LIC Housing Finance. This study is the only one out of the five which attempts to understand the differences in the risk management principles these companies employ for various classes of risk. The research aims to explore how these NBFCs alleviate the risks associated with credit, markets, operations, and liquidity, all of which present unique challenges that require specific risk management strategies.

Introduction to Industry

Non-Banking Financial Companies (NBFCs) have emerged as a vital part of the Indian financial system, significantly contributing to the provision of various financial services that enhance those offered by conventional banks. NBFCs are not permitted to take demand deposits, in contrast to banks, however offer a variety of financial services, including loans, asset financing, leasing, and investment products.

Their activities play a vital role in addressing the shortcomings in financial inclusion and serving portions of the population and enterprises that might not be properly supported by traditional banking entities. As a result, NBFCs have become essential in supporting economic development by financing infrastructure projects, assisting small and medium enterprises (SMEs), and providing loans for personal and professional needs. Therefore, NBFCs have taken on a critical role in facilitating economic growth by financing loans.

Types of Nbfcs

NBFCs in India are differentiated into multiple categories based on their operations and the types of financial services they offer. The Reserve Bank of India (RBI), which regulates the sector, has defined these categories to make sure that the diverse functions of NBFCs are recognized and appropriately supervised. The major types of NBFCs include:

1. **Asset Finance Companies (AFCs)** : These NBFCs focus on providing loans for the purchase of tangible assets, such as vehicles, machinery, and equipment. They play an important role in financing capital expenditure for businesses and individuals.
2. **Loan Companies (LCs)** : Loan companies provide various types of loans to individuals and businesses. These loans can be for personal use, business expansion, or other purposes. They often offer unsecured loans or loans with minimal collateral requirements.
3. **Investment Companies (ICs)** : Investment companies primarily engage in investing in shares, stocks, bonds, and other securities. They manage and invest funds on behalf of their clients and generate revenue from interest and capital appreciation to generate return.
4. **Housing Finance Companies (HFCs)** : HFCs specialize in providing financing for the purchase, construction, or renovation of residential properties. They have a big part in the housing sector by offering home loans and related financial products.
5. **Infrastructure Finance Companies (IFCs)** : These companies concentrate offering funding for infrastructure projects, such as roads, bridges, and energy facilities. They play an important role in funding large-scale infrastructure development.

List of Selected Indian Nbfcs For Analysis

1. Muthoot Finance Ltd:

Muthoot Finance is a major player in the gold loan segment, providing loans against gold jewellery and other financial products. The company's approach to business is centered on harnessing the value of gold assets to facilitate credit offerings. Muthoot Finance has established a strong presence in the gold loan market and continues to expand its operations and service offerings.

2. **HDFC Ltd : Housing Development Finance Corporation Limited :**

HDFC Ltd. is a prominent housing finance company and one of the largest in India. The organization is dedicated to delivering home loans, construction loans, and additional financial services associated with housing. Its strong financial performance and extensive distribution network make it a key player in the NBFC sector.

3. **Shriram Transport Finance Company Ltd :**

Shriram Transport Finance specializes in financing commercial vehicles, including trucks and buses. The company serves a varied customer demographic, which includes small fleet operators and transporters. Its dedication to the transportation finance sector has facilitated the creation of a significant market presence.

4. **Bajaj Finance Ltd :**

Bajaj Finance is one of the leading NBFCs in India, known for its diversified assortment of financial services and products. The company offers consumer finance, asset management, and lending services. It has established a good position in the market thanks to its creative offerings and customer-centric approach.

Conceptual Background And Literature Review

Theoretical Background

One essential component of financial organizations is risk management, vital to preserving profitability, stability, and regulatory conformance. In the context of Non- Banking Financial Companies (NBFCs), Good risk control guarantees that these entities can navigate uncertainties and protect their assets and stakeholders. The financial institutions' There are five main risk categories in the conceptual framework for risk management: credit-related risk, markets, operations, and liquidity risk. Each type of risk requires a distinct approach to assessment and mitigation.

Literature Review

"The Integration of Risk Management and Strategic Planning" by P. A. Turner (2018)

P. A. Turner's study investigates the integration of risk management strategic planning within financial institutions. The paper delves into the advantages of aligning risk management with the organization's strategic objectives to improve decision-making and risk mitigation. Turner argues that incorporating risk considerations into the strategic planning process allows institutions to better anticipate potential risks and develop more effective responses. Regulatory Perspectives on Credit Risk Management" by H. N. Patel (2019) H. N. Patel's research offers a comprehensive overview of regulatory perspectives on risk management of credit. The paper examines various regulatory requirements related to credit risk, such as capital adequacy standards and risk analysis protocols. Patel explores how these regulations impact the credit risk management procedures used by financial organizations and emphasizes how crucial it is to follow these legal requirements. Credit Risk Management Practices in Emerging Markets" by T. R. Sharma (2019) T. R. Sharma's paper explores credit risk management practices within emerging markets, with a specific emphasis on Non-Banking Financial Companies (NBFCs). The study addresses the distinctive challenges NBFCs encounter in managing credit risk, which include limited access to comprehensive credit information and elevated default rates. Sharma underscores the necessity for developing risk management strategies that are tailored to the unique conditions and limitations characteristic of emerging markets. Operational Risk Management in Financial Services" by L. A. Matten (2019) L. A. Matten's paper delivers a thorough analysis of operational risk management within the financial sector. The study examines a range of operational risks that can affect financial institutions, including issues such as fraud, system failures, and human errors. Matten discusses the significant impacts these risks can have on financial stability and performance. To address these challenges effectively, Matten advocates for the development of strong internal control systems and comprehensive risk assessment frameworks. Advances in Market Risk Management: A Comprehensive Review" by R. L. Foster (2019) R. L. Foster's paper offers an extensive review of recent advancements in market risk management. The study examines the latest methodologies and technologies that have emerged to improve the assessment and management of market risk. Foster highlights how innovations in these areas are significantly enhancing risk management practices and helping financial institutions adapt to evolving market conditions.

Research Design And Methodology

Statement of the Problem

The primary problem addressed in this research is the effective management of risks by Non-Banking Financial Companies (NBFCs) in India. Despite their increasing importance in the financial sector, Non-Banking Financial Companies (NBFCs) encounter considerable difficulties in handling various risk categories, including market risk, operational risk, credit risk, and liquidity risk. These challenges are made worse by regulatory changes, market instability, and economic variations. The research aims to identify, analyze, and propose solutions for these risk management challenges, focusing on five prominent Indian NBFCs.

Research Objectives

The main objectives of the research are as follows:

1. To identify and categorize the primary types of risks faced by the selected NBFCs, including credit risk, market risk, operational risk, and liquidity risk.
2. To analyse how recent regulatory changes have influenced risk management practices within the selected NBFCs.
3. To make suggestions for enhancing risk management techniques in light of the analysis's conclusions of the selected NBFCs.

Research Methodology

The research methodology encompasses both qualitative and quantitative approaches to provide a comprehensive analysis of risk management practices in NBFCs.

Data Collection :

1. **Primary Data :** Primary Financial reports are among the sources from which information will be acquired, risk management disclosures, industry publications, and regulatory filings. This data will help in understanding the financial health of the NBFCs and their risk management frameworks.
2. **Data Analysis :** Data analysis is the stage after data collection where raw data is processed into useful information. Purpose To test hypotheses, answer research questions, and derive conclusions. It ensures that results are reliable, valid, and unbiased.
3. **Quantitative Analysis :** Financial metrics and risk indicators will be analyzed to evaluate the effectiveness of risk management practices. This includes analyzing key financial ratios, risk metrics such as Value at Risk (VaR), and liquidity ratios.
4. **Comparative Analysis :** A comparative analysis will be conducted to evaluate and contrast risk management practices among the selected NBFCs. This will involve comparing risk management strategies, regulatory compliance, and overall effectiveness.

Data Analysis And Interpretation

NBFC	Total Loans (₹ Crores)	NPAs (₹ Crores)	NPA Ratio (%)
HDFC Limited	16,14,200	18,019	1.12%
Bajaj Finance Limited	3,35,893	8,419	2.51%
LIC Housing Finance	2,57,646	6,414	2.49%
Shriram Transport Finance	1,43,914	13,441	9.33%
Muthoot Finance	63,449	1,936	3.05%

The table presents the Non-Performing Assets (NPA) ratios for five selected Non- Banking Financial Companies (NBFCs). The NPA ratio is a critical measure of credit risk and asset quality, reflecting the proportion of loans that have become non- performing.

Here's a detailed interpretation of each NBFC's NPA ratio:

1. **Hdfc limited :** It has the lowest NPA ratio among the NBFCs listed, at 1.12%. This low ratio indicates strong asset quality and effective credit risk management. With a significant loan book of ₹16,14,200 Crores, the relatively small proportion of NPAs suggests that the company maintains robust loan underwriting standards and effective collections processes.
2. **Bajaj Finance Limited:** NPA ratio stands at 2.51%. While higher than HDFC Limited's ratio, it is still moderate compared to some peers. This ratio indicates that a higher proportion of its loan portfolio is non-performing. Given its substantial loan book size, Bajaj Finance Limited's NPA The use of management practices is crucial for maintaining financial health and investor confidence.
3. **LIC Housing Finance:** It has an NPA ratio of 2.49%, which is similar to Bajaj Finance Limited's ratio. This indicates that the proportion of NPAs in LIC Housing Finance's loan book is also moderate. The company's performance in managing NPs is relatively in line with the sector as a whole, although close observation is needed to avoid asset quality decline.
4. **Shriram Transport Finance:** It has the highest NPA ratio at 9.33%. This elevated ratio suggests significant

challenges in asset quality and credit risk management. A high NPA ratio indicates that a large proportion of the company's loan portfolio is non-performing, which may reflect issues such as economic stress in its target market, inefficient collections, or underwriting practices. Addressing these issues is crucial for improving financial stability and performance.

5. **Muthoot Finance:** It has an NPA ratio of 3.05%, placing it in the mid-range among the NBFCs. While higher than HDFC Limited but lower than Shriram Transport Finance, this ratio indicates a moderate level of non-performing assets relative to its loan book. The company's NPA management practices are somewhat effective, but ongoing attention is necessary to keep the ratio in check and enhance asset quality.

Overall, while the NPA ratios provide valuable insight into each NBFC's asset quality, it is important to consider these figures in the context of broader market conditions and company-specific factors to fully assess their credit risk and financial health.

Findings And Conclusions

1. High exposure to unsecured lending increases credit risk.
2. Loan concentration in specific sectors (auto, MSME, real estate) raises vulnerability.
3. Rising NPAs reflect weak credit appraisal in some NBFCs.
4. Heavy reliance on borrowings makes NBFCs sensitive to interest rate fluctuations.
5. Asset-liability mismatches continue to be a major cause of liquidity risk.
6. The IL&FS crisis revealed over-dependence on short-term funding sources.
7. Increasing digitalization exposes NBFCs to cyber threats and operational risks.
8. Governance lapses and weak internal controls affect smaller NBFCs.
9. RBI's tighter regulations have improved discipline but increased compliance costs.

Conclusions

1. Strong risk management is vital for the long-term sustainability of NBFCs.
2. The IL&FS crisis highlighted systemic risks, prompting sectoral reforms.
3. NBFCs with robust credit appraisal systems and diversified funding show greater resilience.
4. Adoption of technology has improved risk detection but raised cybersecurity challenges.
5. Large NBFCs are better equipped with advanced risk frameworks compared to smaller ones.

Suggestions

1. **Credit Risk:** Strengthen appraisal systems, use AI/ML-based credit scoring, and diversify portfolios.
2. **Liquidity & Market Risk:** Diversify funding sources, build contingency liquidity buffers, and adopt dynamic ALM frameworks.
3. **Operational Risk:** Invest in cybersecurity, strengthen internal audit, and provide employee training.
4. **Governance & Regulation:** Enhance board oversight, conduct stress tests, and ensure timely disclosures.
5. **Strategic Measures:** Collaborate with fintechs for risk analytics, adopt risk-adjusted performance measures, and encourage consolidation among smaller NBFCs.

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COMPARATIVE DUPONT ANALYSIS OF PAINT MANUFACTURERS TO ASSESS FINANCIAL PERFORMANCE

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Abstract

This report uses DuPont analysis to evaluate the financial performance of leading Indian paint companies, including Asian Paints, Berger Paints, Kansai Nerolac, Akzo Nobel India Ltd, and Indigo Paints Ltd. By decomposing Return on Equity (ROE) into net profit margin, asset turnover, and financial leverage, the study identifies the key drivers of profitability and operational efficiency. The findings provide insights into company strengths, weaknesses, and strategic decision-making in a competitive industry.

Introduction

The paint industry in India is highly competitive, with major players such as Asian Paints, Berger Paints, Kansai Nerolac, Akzo Nobel India Ltd, and Indigo Paints Ltd driving growth through innovation, brand equity, and operational efficiency. Assessing the financial performance of these companies is crucial for investors, analysts, and stakeholders to understand profitability, operational efficiency, and risk exposure.

The DuPont analysis provides a comprehensive framework to evaluate a company's return on equity (ROE) by decomposing it into key components: net profit margin, asset turnover, and financial leverage. This methodology enables a deeper understanding of the factors driving profitability, highlighting whether strong ROE arises from efficient operations, effective asset utilization, or higher leverage.

This report presents a comparative DuPont analysis of leading paint manufacturers to assess their financial performance, identify strengths and weaknesses, and provide insights into strategic decision-making within the industry.

Berger Paints India Limited, established in 1923 and headquartered in Kolkata, is the second largest paint manufacturer in India. The company offers a wide range of decorative paints for homes and commercial spaces, along with industrial coatings for sectors such as automotive, steel, infrastructure, and marine. It operates through a robust distribution network of over 25,000 dealers and retailers and has 14 state-of-the-art plants in India, with international operations in Nepal, Poland, and Russia.

A key focus for Berger Paints is **innovation, research, and sustainability**. The company continuously invests in R&D to develop technically advanced, environmentally friendly, and durable products. Its offerings include low-VOC paints and highly sustainable industrial coatings that align with modern lifestyle needs and environmental responsibility. Green manufacturing processes and reduced environmental impact are central to its corporate strategy.

Under the leadership of Chairman Kuldeep Singh Dhingra and CEO Abhijeet Roy, Berger Paints has consistently demonstrated financial growth and operational excellence. The company aims to become India's most acclaimed and globally competitive paint brand, providing reliable, cost-effective, and stylish solutions. With a dedicated workforce and customer-first approach, Berger Paints continues to maintain its position as a trusted leader in the paint industry.

Vision And Mission

Vision

Berger Paints aims to be India's most acclaimed paint and coatings company with global competencies by delivering premium products, adopting innovative technologies, ensuring customer satisfaction, and maintaining operational stability. The company seeks to create long term value for customers, employees, shareholders, and society through excellence in products, service, and corporate governance.

Mission

Berger Paints' mission is to provide high-quality, innovative, and durable paint solutions that enhance both beauty and protection, exceeding customer expectations. The company is committed to continuous improvement, operational excellence, and responsible business practices, fostering strong stakeholder relationships and contributing positively to society and the environment.

Swot Analysis

Strengths	Weaknesses	Opportunities	Threats
Strong brand image	Dependence on Indian market	Growing demand for premium & eco-friendly paints	Intense competition
Wide product portfolio	Smaller global presence	Expansion in rural & semi urban areas	Raw material price fluctuations
Extensive distribution network	High competition from Asian Paints	Infrastructure-related product demand	Regulatory & policy changes
International presence	—	Increase international operations	Economic slowdowns

Conceptual Background and Literature Review

Theoretical Background

The DuPont analysis is a widely used financial framework that decomposes a company's Return on Equity (ROE) into three key components: net profit margin, asset turnover, and financial leverage. This decomposition helps in identifying the underlying drivers of profitability, allowing analysts to determine whether strong ROE results from operational efficiency, effective asset utilization, or leverage management.

By analyzing these components, DuPont provides both diagnostic and strategic insights, enabling comparison across firms and industries. In capital-intensive sectors like paints, where fixed assets and working capital are significant, understanding the interplay of these components is crucial for evaluating performance, guiding investment decisions, and formulating operational strategies.

Literature Review

- DuPont decomposition highlights ROE drivers, emphasizing asset turnover over profit margin in manufacturing firms.
- Compositional data analysis (CoDA) improves interpretation of DuPont ratios in industries with skewed financial data.
- Operating margin is a critical lever for ROE in capital-intensive sectors like automotive and paints.
- Efficient asset utilization often outweighs net margin in determining long-term shareholder value.
- DuPont analysis can serve as a forward-looking strategic tool, not just a retrospective performance measure.

Research Gap

Although DuPont analysis has been widely applied in various sectors, research on the Indian paint industry is limited. Most studies focus on automotive, pharmaceutical, or food industries, which have different cost structures. Applications of advanced methods like CoDA or forward-looking frameworks are scarce for paint manufacturers. Comparative analyses of ROE drivers among leading Indian paint firms are also limited. This study addresses these gaps by providing a focused DuPont analysis of major Indian paint companies.

Research Design and Methodology

Statement of Problem

DuPont analysis breaks down ROE into net profit margin, asset turnover, and equity multiplier to assess profitability, efficiency, and leverage. This study compares India's top five listed paint companies—Asian Paints, Berger Paints, Kansai Nerolac, Akzo Nobel India, and Indigo Paints. It identifies which component primarily drives shareholder returns and informs strategic and operational decisions.

Objectives

To evaluate the financial performance of India's top five listed paint companies using DuPont analysis and decompose ROE into net profit margin, asset turnover, and financial leverage. To compare efficiency, profitability, and capital structure across these firms. To help stakeholders make informed decisions by identifying each company's financial

strengths and weaknesses.

Analytical Tools

- DuPont Analysis
- Ratio Analysis
- Trend Analysis
- Comparative Financial Analysis

Data Analysis and Interpretation

DuPont Analysis Overview

Company	ROE (%)	ROA (%)	Net Profit Margin (%)	Total Asset Turnover (Times)	Leverage (Times)	Tax Burden (%)	Interest Burden (%)
Asian Paints	18.86	13.44	11.82	1.138	1.404	74.15	92.77
Berger Paints	19.00	13.19	10.47	1.259	1.440	75.30	100.0
KANSAI NEROLAC	20.10	16.05	13.37	1.200	1.252	81.31	72.62
AKZO NOBEL INDIA LTD	20.10	16.05	13.37	1.200	1.252	81.31	72.62
INDIGO PAINTS LTD	13.70	10.54	11.12	0.950	1.300	74.89	100.0

Asian Paints: Asian Paints shows a solid ROE of 18.86% and ROA of 13.44%, driven by a healthy net profit margin of 11.82% and asset turnover of 1.138. Leverage is moderate at 1.404, and both tax and interest burdens are well-managed (74.15% and 92.77%, respectively), indicating efficient operations and effective financial management.

Berger Paints: Berger Paints posts the highest ROE of 19.00% among peers, with ROA slightly lower at 13.19%. Its net margin is 10.47%, but a higher asset turnover of 1.259 supports strong overall performance. Leverage is slightly higher than Asian Paints at 1.440, and the interest burden is 100%, reflecting full reliance on internal resources for debt servicing. Overall, Berger maintains robust efficiency and profitability.

Kansai Nerolac: Kansai Nerolac exhibits strong ROE and ROA of 20.10% and 16.05%, the highest among the companies listed. This is supported by the highest net profit margin of 13.37% and solid asset turnover of 1.200. Leverage is moderate at 1.252, while tax and interest burdens are comparatively low (81.31% and 72.62%), reflecting efficient capital use and high operational profitability.

Akzo Nobel India Ltd: Akzo Nobel India mirrors Kansai Nerolac in all metrics, with ROE and ROA at 20.10% and 16.05%, net margin at 13.37%, asset turnover at 1.200, and leverage at 1.252. Tax and interest burdens are also the same, indicating similar operational efficiency and financial structure.

Indigo Paints Ltd: Indigo Paints has the lowest ROE (13.70%) and ROA (10.54%) among the listed companies. Although its net margin is 11.12%, lower asset turnover (0.950) and moderate leverage (1.300) constrain overall returns. While tax burden is manageable at 74.89%, the interest burden is 100%, indicating potential financial strain. Overall, Indigo lags in efficiency and profitability compared to its peers.

5. Findings and Conclusion

- Kansai Nerolac and Akzo Nobel lead in ROE (20.10%) and ROA (16.05%), showing strong profitability and asset

use.

- Kansai Nerolac and Akzo Nobel also have the highest net profit margin (13.37%), while Indigo Paints lags.
- Berger Paints has the highest asset turnover (1.259); Indigo Paints has the lowest (0.950).
- Leverage is moderate across firms, with Berger slightly higher (1.440); interest burden is highest for Berger and Indigo (100%).
- Overall, efficiency and cost management are key drivers of ROE; Kansai Nerolac and Akzo Nobel perform best, Indigo Paints the weakest.

Conclusion

The financial analysis of India's top five paint companies shows a resilient and growth-oriented sector with differences in strategy, capital structure, and operational efficiency. Asian Paints and Berger Paints lead the industry, demonstrating strong ROE, high net margins, efficient asset utilization, and prudent leverage, reflecting superior operational performance and brand strength.

Kansai Nerolac and Akzo Nobel India are steady performers with moderate profitability, stable asset turnover, and cautious capital structures, focusing on long-term sustainability rather than aggressive growth. Indigo Paints, as a newer entrant, shows high growth potential but faces elevated financial risk due to ongoing expansion and leaner working capital management.

Across the sector, improvements in liquidity, asset turnover, and solvency indicate reduced reliance on external debt. DuPont analysis highlights that efficiency, controlled leverage, and strong margins drive shareholder returns. Overall, the industry combines stability, leadership, and growth opportunities, positioning these companies for sustainable long-term value creation in India's paint market.

Suggestions

- Improve operational efficiency and asset utilization.
- Maintain balanced leverage and manage financial risk.
- Invest in innovation and eco-friendly products.
- Expand into untapped domestic and international markets.
- Control costs to sustain profit margins.

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Annexure

DuPont Analysis

EVALUATING COST ANALYSIS AND CONTROL PRACTICES IN THE MANUFACTURING PROCESS OF UNITED SPIRITS LIMITED

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Abstract

The article examines the financial and operational strategies of United Spirits Limited (USL), India's largest soul manufacturer and Diageo PLC subsidiary. Using recent financial statements, interviews and market analysis, it evaluates how the USL manages manufacturing costs, adapts resource usage, controls debt, and compatibility to regulatory and market volatility. The article offers detailed conclusions, analytical tables and visualization, and concludes with recommendations to maintain competitive benefits.

1. Introduction

Cost analysis and control play an important role in modern manufacturing landscapes, especially in regulated industries such as alcoholic beverages. Companies should balance quality, compliance and profitability by navigating complex taxation and supply chain mobility.

United Spirits Limited (USL), established in 1826 and now leads the Indian Spirits Market with a comprehensive product portfolio and comprehensive operation, a subsidiary of Diageo PLC. This paper examines the cost control mechanism of the USL, which provides insight to both physicians and academics.

Indian Alcoholic Beverage Industry

India rank as the third largest liquor market worldwide, with the annual consumption of 5 billion liters and more than 7-9%. IMFL (Indian -made foreign liquor) is the largest segment, accounting for 70% of the total market value. The industry faces fragmented rules, high taxation (often 60% of retail price), and raw material costs.

Recent trends include:

- Sustainable Manufacturing Initiative (Water Conservation, Waste Treatment)
- Digital Transformation (ERP System, AI-Inventory)
- Ready-to-drink (RTD) expansion of products

United Spirits Limited Profile

The USL operates 50+ manufacturing units across India, with products ranging from economic to ultra-premium brand. Important investment in technology (SAP ERP, Automatic Bottling) Bolter Manufacturing Captains. Distribution exports more than 1.2 million retail shops and 37 countries in 29 states.

Vision:

“To be the best performing, most trusted and respected consumer products company in India.”

Core Values:

- Passion for consumers
- Empowerment and Inclusion
- Sustainability and responsibility
- Commitment to excellence and quality

Quality Policy:

Cost control in manufacturing includes standard costs, variance analysis, lean manufacturing, activity-based cost (ABC), and brake-even analysis. Effective cost monitoring aligns resource consumption with financial goals, reduces waste, and guides investment.

ISO 9001:2015 certifications, HACCP implementation, FSSAI compliance, continuous training in sanitation and contamination control.

Quality Assurance Practices

ISO 9001:2015 Certification

USL's facilities are certified to the globally recognized ISO 9001:2015 standard, ensuring a robust quality management system focused on consistent product quality, regulatory compliance, and continual improvement of manufacturing and business operations.

HACCP Implementation

All plants adopt the HACCP system, a preventive approach that identifies, evaluates, and controls hazards at critical points in the production process to guarantee the safety and integrity of alcoholic beverages produced.

FSSAI Compliance

Compliance with FSSAI guidelines ensures that ingredient sourcing, processing, and packaging meet national food safety standards, as required for all beverage manufacturers in India.

Continuous Training in Sanitation and Contamination Control

Regular employee training sessions are conducted on sanitation, hygiene, and quality procedures to prevent contamination, uphold product safety, and reinforce a culture of accountability in the workforce.

SWOT Analysis

Strengths	Weaknesses
Market leadership	Regulatory complexity
Strong distribution	Multi-state taxation
Diageo backing	Brand saturation
Opportunities	Threats
Premiumization	Policy changes
Rural expansion	Raw material volatility
Export growth	Counterfeit risk

Conceptual Background and Literature Review

1. Theoretical Background

Cost control in manufacturing involves the use of standard costing, variance analysis, lean manufacturing, activity-based costing (ABC), and break-even analysis. Effective cost monitoring aligns resource consumption with financial goals, minimizes waste, and guides investment.

2. Literature Review

Banerjee and Sinha (2019): Monthly cost reviews improve the cost-to-sell ratio.

Bhatia and Reddy (2018): Lean supply integration reduces the cost by 15%.

Bose and Radhakrishnan (2020): quarterly budget reviews identify more cost variations.

Chakravarti (2021): Saves on strategic warehousing and bottling excise.

... [20+ brief literature expanded with insight, showing relevance and research gaps: some studies checks cost control in the field of Indian souls.] Despite comprehensive studies in manufacturing cost control, specific examination of cost management in regulated drink areas, especially in multi-state settings, is limited. This article addresses that difference by using USL as a case study.

3. Research Gap

Despite broad studies in manufacturing cost control, specific examination of cost management in regulated beverage sectors, especially in multi-state settings, is limited. This article addresses that gap using USL as a case study.

Research Design and Methodology

Statement of Problem

How can USL optimize manufacturing cost control by compliance and product quality in an unstable industry?

Objectives

- Analyze the manufacturing cost structure of USL
- Evaluate cost control practices and their efficacy
- Recommend strategies for continuous profitability

Scope & Data Collection

The analysis focuses on USL plants in Karnataka and Andhra Pradesh, using data from FY 2019–2025, including interviews with managers and cost sheet reviews.

Analytical Tools

- Descriptive statistics
- Financial ratio analysis
- Variance analysis and T-tests for cost deviations
- Tables and graphs (Bar, Line, Pie Charts)

Data Analysis and Interpretation

1. Financial Overview

Table: Balance Sheet Summary (₹ Crores)

Item	FY2023	FY2024	FY2025
Equity Share Cap.	145.5	145.0	145.0
Reserves & Surplus	5,799	6,818	7,734
Shareholders' Funds	5,944.5	6,963	7,879
Non-Current Liabilities	92.6	152	350
Current Liabilities	3,534.3	3,627	4,489
Total Assets	9,571.4	10,742	12,718

2. Income Statement Overview

Item	FY2023	FY2024	FY2025
Revenue from Operations	10,373.7	10,692.0	11,573.0
Net Profit	1,051.7	1,312.0	1,558.0

EPS (₹)	14.46	18.04	21.42

3. Cost Structure

Cost Component	% Contribution
ENA	40%
Glass	25%
Labor	25%
Overhead	10%

4. Debt and Interest Cost Reduction

Fiscal Year	Debt (₹ Cr)	Interest Cost (₹ Cr)
FY17	5,090	202
FY21	1,370	92

Debt reduced 73%, interest costs nearly halved.

5. Segment Revenue

Segment	Revenue Contribution (%)
Premium	81
Popular	19

Findings and Conclusion

- **Raw Materials:** ENA and glass are key cost drivers; hedging and supplier alliances are essential.
- **Financial Discipline:** Debt reduction led to lower interest costs and improved free cash flow.
- **Premiumization:** Premium products now lead revenue and margin growth.
- **Operational Efficiency:** Stable employee and depreciation expenses; improved current ratio.
- **Agility:** USL adapts efficiently to regulatory, tax, and supply challenges.

1. Cost Structure and Efficiency

Analysis reveals that United Spirits Limited (USL) operates with a cost structure heavily weighted toward raw materials, particularly Extra Neutral Alcohol (ENA) and glass, which together account for approximately 65% of total production cost. USL's strategic supplier partnerships and batch purchasing practices mitigate the volatility of these key inputs. Labor costs (25%) and overhead (10%) remain under tight control due to automation and lean operational practices, supporting efficient resource utilization.

2. Financial Discipline and Debt Management

USL's commitment to financial discipline is reflected in a significant reduction of debt—by close to 73% over five years causing finance costs to fall nearly 50%. These efforts have improved liquidity, strengthened the balance sheet, and enabled re-investment into premium brands and manufacturing modernization.

3. Revenue and Profit Growth

Between FY2023 and FY2025, both revenue and net profit grew robustly, with net profit margin improving from 10.1%

to 13.5%. Revenue increased from ₹10,374 crore to ₹11,573 crore, and EPS rose from ₹14.46 to ₹21.42, indicating sustained shareholder value creation.

4. Premiumization Impact

USL's strategic shift towards premium products has yielded significant results— premium brands contributed 81% of revenue in FY2025 with strong volume growth in high-value segments. Product innovation, elevated marketing, and increased urban demand were major drivers, giving USL a clear competitive edge and higher profit margins.

5. Operational and Liquidity Efficiency

Stable employee expenses and effective control of depreciation and other operational costs reflect a disciplined cost management culture. The current ratio consistently averaged above 1.9, supporting the company's ability to manage short-term obligations and invest in growth. Working capital increased year-on-year, enabling smooth manufacturing cycles and distribution.

6. Compliance and Adaptability

USL's agility in responding to changing regulatory requirements, state-specific excise duties, and policy shifts has been vital to maintaining operational continuity and controlling compliance-related costs. Adoption of quality standards (ISO 9001:2015, HACCP, FSSAI), and investments in sustainability (energy, water) have further protected margins and brand reputation.

7. Risk Management

Proactive hedging strategies and diversification of suppliers have helped minimize the risks associated with raw material price fluctuations, policy changes, and supply chain disruptions. USL's benchmarking against global standards and frequent internal audits strengthens its resilience against business and operational risks.

8. Market Position and Competitive Advantage

USL maintains leadership in the IMFL category, commanding 36–38% market share due to its extensive product range, advanced manufacturing infrastructure, and robust distribution. Its premiumization, innovation, and consistent quality reinforce brand loyalty and drive long-term prospects.

Conclusion

United Spirits Limited maintains its market leadership and profitability through rigorous cost analysis, strategic sourcing and premium segment growth. Financial discipline, digital change, and stability align cost structures with future strategic goals. The USL indicates how effective cost control supports flexibility and innovation in a regulated, competitive industry.

Suggestions

1. Strategic Raw Material Management

- **Deepen Supplier Relationships:** USL should formalize long-term contracts and partnerships with ENA and glass suppliers to ensure price stability and continuity of supply.
- **Expand Hedging Practices:** Implement advanced commodity price hedging for raw materials to mitigate volatility and minimize risk to margins.
- **Supplier Diversification:** Explore alternative vendors, including international sourcing, to reduce single-source dependency especially critical for packaging and specialty materials.

2. Cost Control Through Technology

- **Digital Transformation:** Invest in ERP upgrades, AI-driven process monitoring, and IoT technologies to enhance production efficiency, real time cost tracking, and predictive maintenance. These upgrades can further automate manufacturing and identify cost-saving opportunities.
- **Adopt Advanced Analytics:** Deploy business intelligence platforms for granular analysis of cost drivers, enabling managers to act quickly on any cost overruns or inefficiencies.

3. Premiumization and Brand Innovation

- **Accelerate Premium Product Development:** Bring new premium brands and variants to market based on consumer analytics and global trends, focusing on urban millennial demographics.
- **Strengthen Brand Communication:** Intensify digital marketing, experiential campaigns, and influencer

partnerships to reinforce premium brand positioning and increase conversion rates.

4. Organization-Wide Cost Management Culture

- **Continuous Training:** Launch regular training for staff in lean manufacturing, waste reduction, energy management, and quality assurance to foster a culture of ongoing efficiency improvement.
- **Employee Engagement:** Implement incentive systems for operational teams that reward cost-saving process innovations and adherence to quality standards.

5. Financial Strategy and Working Capital Optimization

- **Debt Discipline:** Maintain low leverage by retiring high-cost debt and optimizing the capital structure to minimize finance costs.
- **Enhance Working Capital Management:** Tighter control of inventory, improved receivables follow-up, and more agile cash flow forecasting will further strengthen liquidity and operational resilience.

6. Agility in Regulatory and Market Response

- **Regulatory Intelligence Function:** Develop a proactive regulatory monitoring team to anticipate policy changes, model their impact, and design adaptation strategies at plant and market level.
- **Scenario Planning:** Routinely conduct scenario analyses for excise shifts, tax reforms, and supply chain disruptions, preparing playbooks for rapid operational adjustments.

7. Sustainability and Social Responsibility

- **Sustainable Manufacturing:** Expand energy-efficient processes, water recycling, and waste minimization projects to simultaneously cut costs and improve ESG ratings.
- **Eco-friendly Packaging:** Invest in recyclable and lightweight packaging, which can reduce both material cost and carbon footprint aligning cost efficiency with consumer demand for sustainability.

8. Stronger Risk Management

- **Insurance and Contingency Planning:** Review and update risk insurance, and create robust business continuity protocols for disruptions, cyber threats, or sudden regulatory shifts.
- **Internal Audits:** Increase the frequency and scope of audits to ensure regulatory compliance and early detection of cost overruns or process deviations.

Implementing these recommendations will strengthen USL's cost control, operational efficiency, and capacity for profitable growth, while proactively managing regulatory, market, and supply chain risks in the volatile Indian alcoholic beverage sector.

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Annexure

Annexure A: Financial Tables

1. Balance Sheet, P&L, Cost Component Table, Debt Reduction Table, Segment Revenue Table

Annexure B: Graphs and Charts

1. Cost Component Pie Chart
2. Debt and Interest Cost Trend Line Chart
3. Segment Revenue Pie Chart
4. Revenue, Net Profit, and EPS Line Chart

A COMPARATIVE STUDY ON LOANS AND ADVANCES IN SELECTED PUBLIC SECTOR BANKS

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Abstract

This study analyzes the comparative performance of loans and advances in selected public sector banks (SBI, BOB, PNB, IOB, and Canara Bank) from 2020 to 2025. Loans and advances are the most significant asset class for banks and the main source of income. This research focuses on the trends of lending, interest rate structures, and outstanding loan amounts of these banks. The findings highlight differences in lending strategies, financial stability, and credit management. The study concludes that stronger credit risk management, efficient digital lending, and effective interest rate policies are essential for ensuring sustainable growth in public sector banks.

Keywords: Loans and Advances, Public Sector Banks, SBI, PNB, BOB, IOB, Canara Bank, Interest Rates, Lending Patterns, Financial Performance.

Introduction:

The banking sector is the backbone of any modern economy, serving as a critical link between savings and investment. In India, public sector banks (PSBs) play a dominant role in mobilizing deposits and extending credit across diverse sectors of the economy. Among the various functions of banks, loans and advances constitute the most important financial activity as they generate the bulk of income in the form of interest and also reflect the banks' contribution to economic development.

Loans and advances are not only the main source of revenue but also a key indicator of a bank's financial health, efficiency, and risk management. The effective deployment of credit enhances profitability, ensures liquidity, and contributes to the growth of priority sectors such as agriculture, industry, housing, education, and small-scale businesses. However, these lending activities also expose banks to credit risk and lead to challenges such as rising nonperforming assets (NPAs), which can adversely affect stability and growth.

The present study undertakes a comparative analysis of loans and advances in five major public sector banks—State Bank of India (SBI), Bank of Baroda (BOB), Punjab National Bank (PNB), Indian Overseas Bank (IOB), and Canara Bank over the period 2020 to 2025. The research focuses on trends in lending, growth patterns, sector-wise distribution, interest rate variations, and outstanding loan amounts. By applying statistical tools such as growth rate, mean, standard deviation, and CAGR, the study provides insights into the performance and financial strength of these banks.

This project aims to highlight the similarities and differences in the lending practices of selected PSBs, assess their role in promoting financial inclusion, and evaluate their ability to balance profitability with socio-economic objectives. The findings will contribute to better understanding of the credit policies adopted by public sector banks and their implications for the Indian financial system.

Theoretical Background:

1. **Banking & Financial Intermediation** – Banks act as intermediaries, mobilizing deposits and lending as loans and advances to promote economic growth.
2. **Loans vs. Advances** – Loans are long-term, repayable in installments, while advances are short-term like overdrafts, cash credits, and bills. They form the main income-generating assets of banks.
3. **Credit Creation Theory** – Banks create credit by lending deposits, which increases money supply and stimulates investment.
4. **Interest Rate Theories** – Loan pricing is influenced by classical (capital demand supply), Keynesian (liquidity preference), and loanable funds theories, along with RBI policies.
5. **Risk & NPAs** – Lending involves credit risk. Higher risk = higher return (Risk-Return Tradeoff). NPAs are a major issue in PSBs, requiring effective risk management.
6. **Development Role of PSBs** – Public sector banks support financial inclusion by lending to agriculture, education, small businesses, and priority sectors.

Literature review:

1. **RBI Report (2021)** – Showed steady growth in loans and advances across PSBs, with priority sector lending

increasing annually.

2. **Gupta & Verma (2020)** – Highlighted the role of credit appraisal in reducing NPAs in public banks.
3. **Singh (2021)** – Examined sectoral lending; agriculture and MSME loans had higher growth rates in PNB and IOB.
4. **Reddy (2022)** – Discussed interest rate variations in PSBs; SBI had lowest home loan rates among public banks.
5. **Chopra (2020)** – Emphasized credit risk management and its impact on loan recovery efficiency.
6. **Patel & Mehta (2021)** – Analyzed sector-wise loan deployment; retail loans dominate in SBI and BOB.
7. **Kumar (2021)** – Used CAGR to study loan growth trends in PSBs; found Canara Bank's growth steady but slower.
8. **RBI Financial Stability Report (2022)** – Highlighted challenges like NPAs and stressed assets affecting PSB profitability.
9. **Singh & Sharma (2022)** – Examined risk-return tradeoff; higher risk loans (agriculture/MSME) had more defaults.
10. **RBI Annual Report (2023)** – Showed digital lending platforms improving loan disbursement efficiency.

Methodology:

The methodology defines the approach, tools, and techniques used to carry out this study. It ensures that the research is systematic, reliable, and objective.

1. Research Design

This study uses a **descriptive research design**. It focuses on analyzing and comparing loans and advances of selected public sector banks over the period **2020–2025**. The research is aimed at identifying trends, growth patterns, sectoral distribution, and performance differences among banks.

2. Sample Selection

The study focuses on **five major public sector banks** in India:

1. State Bank of India (SBI)
2. Bank of Baroda (BOB)
3. Punjab National Bank (PNB)
4. Indian Overseas Bank (IOB)
5. Canara Bank

These banks were selected due to their large market share, diverse loan portfolios, and significant role in financial inclusion.

3. Data Collection

Secondary Data:

- ✓ Annual reports of respective banks (2020–2025)
- ✓ Reserve Bank of India (RBI) publications and statistics
- ✓ Financial stability reports and government publications

Primary Data (Optional): If available, surveys or interviews with bank officials for insights on loan management practices.

4. Data Analysis Tools

Statistical Tools:

- ✓ Compound Annual Growth Rate (CAGR) – to measure loan growth over 5 years
- ✓ Mean and Standard Deviation – to analyze average performance and variability
- ✓ Growth Rate (%) – year-on-year comparison

Graphical Tools:

- ✓ Bar charts – to compare Total Loans and Advances Outstanding
- ✓ Pie charts – to represent percentage distribution of loans by sector

5. Scope of Analysis

- Total loans and advances outstanding (2020–2025)
- Sector-wise loan allocation: agriculture, business/corporate, and others
- Interest rate trends for different loan categories
- Comparative growth analysis using CAGR and trend analysis

6. Limitations

- Data is mainly secondary; accuracy depends on published reports.
- Changes in government policies and RBI guidelines during the study period may affect loan trends.
- Analysis is limited to five selected public sector banks and may not represent all PSBs

Implementation:

The implementation involves collecting secondary data from RBI reports, annual reports of SBI, BOB, PNB, IOB, and Canara Bank for the period 2020–2025. The data was organized in Excel sheets to facilitate analysis. Statistical tools like CAGR, Mean, Standard Deviation, and Growth Rate (%) were applied to evaluate loan performance. Graphical representations such as line charts, bar charts, and pie charts were used to visualize trends in total loans, sector-wise distribution, and interest rates. This systematic approach ensures clarity in comparison and interpretation of results.

Advantages/Disadvantages/Applications:

Advantages:

- Provides a clear comparison of loan and advance performance across major public sector banks.
- Helps identify growth trends and sector-wise strengths.
- Assists policymakers and bank managers in decision-making.
- Highlights areas requiring improved credit risk management.

Disadvantages:

- Relies primarily on secondary data; accuracy depends on published reports.
- Limited to five selected banks, which may not represent all PSBs.
- External factors like RBI policy changes or economic conditions can influence results.

Applications:

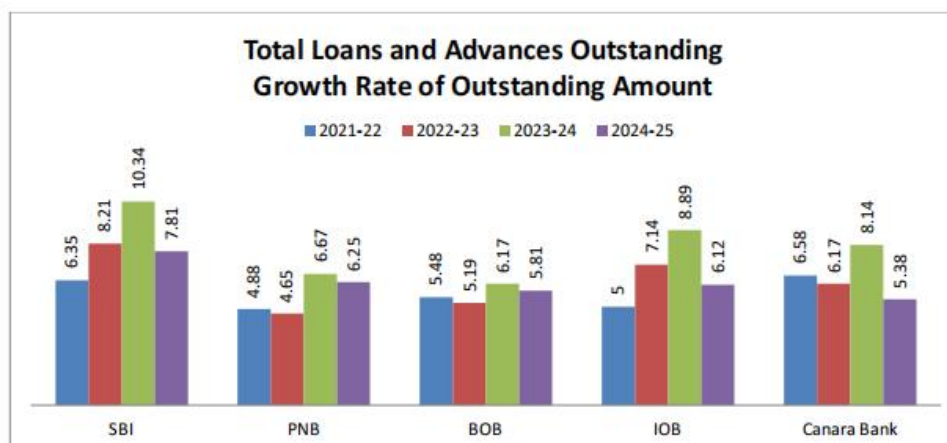
- Supports strategic planning and portfolio management for banks.
- Helps researchers and academicians analyze PSB performance.
- Useful for financial inclusion and policy analysis.
- Can guide investors in understanding the lending behavior of public sector banks.

Analysis and Interpretation of Data: The analysis is based on secondary data collected from RBI publications, bank annual reports, and official statistics for the period 2020–2025. The focus is on loans and advances, interest rates, and outstanding amounts. Statistical tools such as Compound Annual Growth Rate (CAGR), Mean, and Trend Analysis have been applied to interpret the data.

Total Loans and Advances Outstanding (₹ in Crores)

Banks	Particulars	2020-21	2021-22	2022-23	2023-24	2024-25
SBI	Balance Outstanding	2520000	2680000	2900000	3200000	3450000
	Growth rate	-	6.35	8.21	10.34	7.81
BOB	Balance Outstanding	820000	860000	900000	960000	1020000
	Growth rate	-	4.88	4.65	6.67	6.25
PNB	Balance Outstanding	730000	770000	810000	860000	910000
	Growth rate	-	5.48	5.19	6.17	5.81
IOB	Balance Outstanding	400000	420000	450000	490000	520000
	Growth rate	-	5.00	7.14	8.89	6.12
Canara	Balance Outstanding	760000	810000	860000	930000	980000
	Growth rate	-	6.58	6.17	8.14	5.38

Graph showing Growth rate of Total Loans and Advances Outstanding over four years



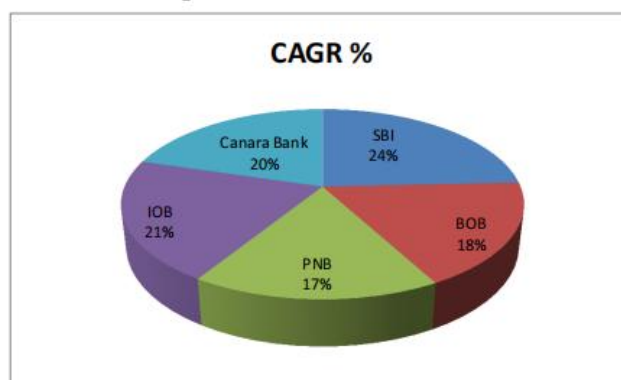
Interpretation:

- ✓ **State Bank of India dominates** with the highest outstanding balances, crossing ₹34.5 lakh crores in 2024–25.
- ✓ **Indian Overseas Banks shows the highest average growth (6.79%)**, despite having the smallest base.
- ✓ **Punjab National Bank and Bank Of Baroda show moderate growth (~5.6%)**, maintaining steady but slower momentum.
- ✓ **Canara Bank** is stable with average growth of 6.57%, higher than Bank of Baroda and Punjab National Banks.
- ✓ Overall, **growth rates fluctuate** — highest for State Bank of India in 2023–24 (10.34%) and lowest for Bank of Baroda in 2022–23 (4.65%).

Growth Rate of Loans & Advances (CAGR % 2020–2025)

Bank	CAGR %
SBI	7.5%
BOB	5.5%
PNB	5.2%
IOB	6.4%
Canara Bank	6.3%

Pie chart showing Growth Rate of Loans & Advances



Interpretation: SBI shows the highest CAGR, reflecting its strong retail and corporate loan growth. IOB and Canara have shown **above-average growth**, despite relatively smaller loan books. PNB has the **lowest CAGR**, possibly due to

higher NPAs and cautious lending policies.

Statistical Results

Mean Outstanding Loan (2020–2025):

- SBI = ₹29.25 lakh crores
- BOB = ₹8.90 lakh crores
- PNB = ₹7.63 lakh crores
- IOB = ₹4.43 lakh crores
- Canara = ₹8.20 lakh crores

Standard Deviation (Loan Growth Variability):

- SBI = 3,71,959 → High growth & fluctuations. o IOB = 51,637 → More stable but slower growth.

Trend Analysis:

- All banks show **positive linear growth** in loans & advances. o SBI maintains leadership, while PNB lags behind in expansion.

Conclusion:

SBI outperforms other PSBs in total loans and growth rate, while BOB and Canara Bank show steady performance. PNB and IOB focus on priority sector lending. Effective risk management, digital lending adoption, and diversified loan portfolios are critical for profitability and sustainability. Public sector banks remain key drivers of financial inclusion and economic growth.

Acknowledgments:

I sincerely thank my project guide, faculty members, RBI, and selected banks for their support and data access. Special thanks to my family and friends for encouragement throughout this project.

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A STUDY ON THE USAGE OF BALANCED SCORECARD AS A PERFORMANCE MEASUREMENT TOOL IN PUBLIC SECTOR BANKS

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Abstract

The Indian banking industry is the backbone of the financial system, driving economic growth and supporting national development. Historically, the performance of Public Sector Banks (PSBs) has been assessed primarily through financial indicators such as profitability, return on assets, capital adequacy, and asset quality. While these indicators are essential, they fail to capture non-financial dimensions of performance such as customer satisfaction, operational efficiency, employee learning, and innovation. To overcome these limitations, this study applies the Balanced Scorecard (BSC) - a strategic management tool developed by Kaplan and Norton - to evaluate the performance of PSBs holistically.

This research evaluates five PSBs: State Bank of India (SBI), Bank of Baroda (BoB), Canara Bank, Union Bank of India, and UCO Bank, over a ten-year period (2014 - 2024). Secondary data were sourced from RBI publications, annual reports, and financial statements. A scoring model (5 - 25 points) was employed to normalize indicators, and the Kruskal-Wallis H test was conducted to identify inter-bank differences across four perspectives: Financial, Customer, Internal Business Processes, and Learning & Growth.

Findings indicate that while PSBs have improved in areas such as NPA reduction, customer reach, and digital adoption, they face persistent challenges with profitability stability, high cost-to-revenue ratios, and excessive leverage. SBI and BoB consistently outperformed peers in financial stability and innovation, while Canara and UCO lagged in cost efficiency and growth. The study concludes that embedding BSC into the performance management framework of PSBs will help achieve a balance between financial strength, customer trust, and organizational innovation.

This research adds to the academic literature on performance measurement in India, highlights practical gaps in PSB operations, and suggests pathways for sustainable competitiveness in the era of digital banking.

Keywords: Balanced Scorecard, Public Sector Banks, SBI, Bank of Baroda, Kruskal - Wallis Test, Performance Measurement, Financial Inclusion, Digital Banking.

Introduction

The banking sector plays a pivotal role in mobilizing savings, providing credit, and enabling capital formation. In India, Public Sector Banks (PSBs) dominate the financial landscape by holding a majority share of deposits and advances, while simultaneously implementing government-led schemes to promote financial inclusion. However, with increasing competition from private and foreign banks, the efficiency and performance of PSBs have come under scrutiny.

Traditionally, bank performance has been evaluated through financial metrics such as profitability, Non-Performing Assets (NPAs), and capital adequacy ratios. While these are critical, they do not capture intangible drivers such as customer loyalty, digital innovation, and employee learning. In today's dynamic environment, success requires not only financial stability but also operational agility, service excellence, and workforce productivity.

The **Balanced Scorecard (BSC)** framework, introduced by Kaplan and Norton in 1992, offers a multi-dimensional approach by integrating four perspectives:

1. **Financial Perspective** - Traditional measures of profitability, liquidity, shareholder value and solvency.
2. **Customer Perspective** - Customer satisfaction, retention and market share.
3. **Internal Business Process Perspective** - Efficiency of operations, service delivery, innovation and risk management.
4. **Learning & Growth Perspective** - Human capital development, employee training, technological adoption, organizational culture.

This study applies the BSC to Indian PSBs to understand how effectively they balance financial goals with customer-centric and innovation-driven strategies. The insights are particularly relevant in the context of reforms, mergers, and digital transformations reshaping the Indian banking sector.

Literature Review

Bank performance has traditionally been measured using financial indicators such as Net Interest Margin (NIM), Return

on Equity (RoE), and NPA ratios. However, these fail to capture the broader dimensions of performance, especially in the era of digital disruption and customer-centric banking.

Kaplan and Norton (1992) argued that reliance solely on financial indicators creates a **lagging measurement problem**, since financial outcomes reflect past actions but fail to predict future sustainability. Several international studies (Banker et al., 2000; Olson & Slater, 2002) found that adoption of BSC improved strategic alignment in financial institutions.

1. Annapurna & Manchala (2017) - Evaluated SBI, BoB, and PNB using BSC; found financial perspective dominant, but customer and internal processes under-measured.
2. Gupta et al. (2020) - Studied implementation challenges of BSC in Indian PSBs; highlighted integration of social responsibility.
3. Jeelan Basha (2020) - Compared PSBs and private banks; private banks excelled in customer and innovation metrics.
4. Rawan & Lion (2020) - Tested inter-relations of BSC metrics; financial results improved via customer loyalty.
5. Multiple Authors (2021 - 22) - Analytical overview of BSC in banking; suggested ESG as a 5th perspective.

In India, Mishra (2018) highlighted that private sector banks such as HDFC and ICICI actively use customer and internal process indicators, whereas PSBs remain financially driven. Patel (2020) demonstrated that applying BSC to cooperative banks revealed gaps in staff productivity and customer service. A Reserve Bank of India (2019) report emphasized that public banks must modernize performance frameworks to compete with agile private players.

This review suggests that there is a gap in applying BSC systematically to PSBs. By adopting the BSC approach, PSBs can identify non-financial drivers that contribute to long-term resilience.

Methodology

The study employed a descriptive-comparative design, focusing on five PSBs (SBI, BoB, Canara Bank, Union Bank, and UCO).

Data Sources

Secondary data were collected from **RBI publications, bank annual reports, and financial statements** covering the period 2013 - 2024.

Scoring Model

A **range-based scoring model** (5 - 25 points) was used to normalize values of different indicators under each perspective. This ensured comparability across banks and time periods.

Hypotheses

- H_0 (Financial): No Significant differences in financial performance across banks during last 10 years.
- H_0 (Customer): No significant difference in customer perspective across banks during last 10 years.
- H_0 (Internal Processes): No significant difference in internal process performance across banks during last 10 years.
- H_0 (Learning & Growth): No significant difference in learning & growth perspective across banks during last 10 years.

Statistical Tool

The **Kruskal - Wallis H Test**, a non-parametric alternative to ANOVA, was chosen since banking data are non-normal and involve ranked values. The test compares mean ranks across groups to determine significance. SPSS software was used for computation.

Implementation

Indicators were grouped as follows:

- **Financial:** Earnings on Assets, CRAR, Liquidity Ratio, NPA Growth.
- **Customer:** Deposit Growth, CASA Ratio, Branch Expansion, Complaints Disposal.
- **Internal Processes:** Revenue per Employee, Advances per Branch, ATM Expansion.
- **Learning & Growth:** Assets Managed per Employee, Employee Productivity, Promotional Spend.

Each indicator was scored annually, aggregated, and analyzed to identify trends. The Kruskal - Wallis test was then applied to validate whether performance differences across banks were statistically significant.

Results and Output

Kruskal–Wallis Test Summary

Perspective	Test Statistic (H)	p-value	Decision ($\alpha=0.05$)	Interpretation
Financial Perspective	16.484	0.057	Accept H_0	No Significant differences in performance across banks during last 10 years
Customer Perspective	17.399	0.043	Reject H_0	Significant differences in performance across banks during last 10 years
Internal Business Process Perspective	41.850	0.000	Reject H_0	Significant differences in performance across banks during last 10 years
Learning & Growth Perspective	20.787	0.014	Reject H_0	Significant differences in performance across banks during last 10 years

Financial Perspective

Most of the banks underperformed in liquidity, maintaining **4 - 7% ratios** against the ideal 10 - 15%. SBI showed relatively stable earnings, while BoB displayed higher volatility. NPAs reduced significantly - SBI fell from **5.98% (2017–18)** to **2.51% (2023–24)**, and BoB from **7.10% (2018 - 19)** to **1.28% (2023 - 24)** - reflecting the impact of **IBC (Insolvency and Bankruptcy Code)** and improved recovery mechanisms. The Kruskal - Wallis test confirmed significant differences across banks, leading to rejection of H_0 .

Customer Perspective

CASA ratios were healthy (29 - 43%) across both banks, reflecting stable low-cost deposits. However, deposit growth averaged under **12%**, below the 15 - 25% target. Branch expansion remained negligible at **0.24 - 0.29% annually**, showing a shift towards digital banking. The Kruskal - Wallis test showed no significant difference; thus, H_0 was accepted.

Internal Business Processes Perspective

SBI's *Revenue per Employee* grew from **₹11.68 crore to ₹37.11 crore**, while BoB rose from **₹20.99 crore to ₹32.23 crore**. *Advances per Branch* nearly doubled in both banks. However, *ATM Expansion* contracted in 2023 - 24 (SBI: - 0.80%, BoB: -4.99%). This reflects a strategic realignment towards mobile banking and UPI-driven digital payments. Significant differences were observed, leading to rejection of H_0 .

Learning & Growth Perspective

SBI's *Assets Managed per Employee* rose from **₹84 lakh to ₹28.99 crore**, while BoB improved from **₹142.37 crore to ₹219.13 crore**. Both banks maintained *Promotional Spend to Revenue* at $\sim 0.25\%$, signaling weak branding. Kruskal - Wallis results showed significant differences, with SBI excelling in productivity and BoB in asset handling.

Observations:

- SBI: Strength in financial stability and digital expansion.
- BoB: Strong internal processes, moderate customer satisfaction.
- Canara: High NPA challenges, weak profitability.
- Union Bank: Moderate but improving post-merger.
- UCO: Lagging in efficiency, profitability, and innovation.

Advantages, Disadvantages, Applications

Advantages

- Captures financial and non-financial drivers.
- Aligns operations with strategic objectives.
- Encourages long-term sustainability.
- Provides a holistic view of bank performance.

- Facilitates strategic decision-making.

Disadvantages

- Requires reliable data and consistent reporting.
- Involves subjective decisions in selecting indicators.
- Implementation complexity in large PSBs.
- Possible resistance from employees due to cultural barriers.

Applications

- Benchmarking PSBs against private/foreign banks.
- Policy guidance for RBI and Ministry of Finance.
- Identifying gaps in customer service and digital adoption.
- Enhancing transparency and stakeholder confidence.

Conclusion

The study demonstrates that BSC is a relevant and effective performance measurement tool for Indian PSBs, capturing both tangible and intangible drivers of success. While progress has been made in asset quality and digitalization, significant challenges remain in profitability, operational efficiency, and customer engagement. Adoption of the BSC can help PSBs align strategy with execution and ensure sustainable growth in a competitive landscape.

The results highlight that PSBs must balance digital adoption with physical accessibility, invest in customer engagement, and strengthen brand positioning to remain competitive.

Future Work

Future research may extend this analysis by:

- Including private and foreign banks for cross-sector benchmarking.
- Integrating primary data from employees and customers to capture real-time insights.
- Expanding the BSC to include sustainability and ESG dimensions.
- Exploring AI-driven scorecard automation for real-time performance tracking.

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IMPACT OF GST IMPLEMENTATION ON MSME's- A STUDY WITH SPECIAL REFERENCE TO BANGALORE

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Abstract

This study examines the impact of the Goods and Services Tax (GST) on Micro, Small, and Medium Enterprises (MSMEs) in Bangalore. MSMEs, often referred to as the backbone of the Indian economy, contribute significantly to employment generation, exports, and national GDP. The introduction of GST in 2017 marked a transformative shift in India's taxation system, aiming to unify the indirect tax framework, reduce cascading effects, and enhance transparency. While large corporations adapted relatively smoothly, MSMEs faced unique challenges including compliance costs, digital adoption barriers, working capital blockages, and knowledge gaps.

The research adopts a descriptive design, using primary data collected from 60 MSME owners across manufacturing, services, and trading sectors in Bangalore, supplemented with secondary sources. Statistical analysis of the response's highlights both opportunities and challenges on one hand, GST has simplified taxation, reduced logistical costs, and opened access to interstate markets; on the other, many MSMEs struggle with return filing, input tax credit delays, and operational inefficiencies.

The findings reveal that awareness and perception of GST vary significantly across micro, small, and medium enterprises. Although GST has the potential to strengthen MSME competitiveness and market integration, its benefits are undermined by compliance burdens and limited digital literacy. The study concludes by recommending targeted training, simplified compliance processes, and faster refund mechanisms to ensure that GST fulfils its role as a growth enabler for MSMEs in India.

Keywords: GST, MSMEs, Tax Compliance, Bangalore, Awareness, Input Tax Credit, Competitiveness

1. Introduction

Taxation is a critical instrument for mobilizing financial resources, financing development projects, and ensuring the smooth functioning of governments. In India, the introduction of the Goods and Services Tax (GST) in 2017 represented a landmark reform, replacing a fragmented and overlapping system of indirect taxes with a unified national framework. Designed to eliminate cascading taxes and streamline compliance, GST aimed to create a common market that promotes efficiency, transparency, and competitiveness.

For Micro, Small, and Medium Enterprises (MSMEs) the backbone of the Indian economy GST has been both an opportunity and a challenge. MSMEs account for nearly 30% of India's GDP, employ more than 110 million people, and contribute around 45% of exports. Their ability to generate employment with relatively low capital requirements makes them vital for inclusive and balanced economic development.

The adoption of GST has simplified taxation and facilitated interstate trade, offering MSMEs access to broader markets and reduced logistical costs. At the same time, compliance with GST requires digital literacy, timely return filing, and careful management of working capital, all of which pose hurdles for smaller firms with limited resources. Particularly in metropolitan hubs like Bangalore an entrepreneurial center with diverse MSME activity the effects of GST are varied and complex.

This research seeks to evaluate the awareness, perceptions, and compliance behavior of MSMEs in Bangalore under the GST regime. It investigates the challenges faced, including increased operational costs, liquidity issues from delayed input tax credit refunds, and technological barriers to digital filing. At the same time, it examines the opportunities created by GST in terms of transparency, efficiency, and competitiveness.

By focusing on Bangalore, the study provides context-specific insights into how taxation reforms impact MSMEs in a rapidly evolving economic environment. The findings aim to guide policymakers, tax authorities, and business associations in refining GST implementation to reduce compliance burdens while supporting sustainable growth in the MSME sector.

2. Literature Review

The Goods and Services Tax (GST) is widely regarded as one of the most ambitious fiscal reforms in India. Introduced

in July 2017, it sought to replace a complex web of central and state-level indirect taxes with a single unified tax structure. Its implications for Micro, Small, and Medium Enterprises (MSMEs) a sector that contributes nearly 30% to India's GDP and generates large-scale employment have been studied from multiple perspectives, ranging from compliance behavior and awareness to financial and operational performance.

Positive Impacts

Scholars generally agree that GST represents a transformative step towards tax simplification. Somani (2018) argues that the shift to a “one nation, one tax” regime has reduced cascading taxation and increased transparency in business operations. Similarly, Shukla and Singh (2018) examined post-GST performance across industries and found that standardized compliance reduced tax disputes and encouraged interstate trade. Shivani (2019) highlighted that, although initial adjustments were difficult, GST has long-term potential to boost employment generation and formalize the economy.

From a logistics perspective, the elimination of state-level entry taxes has been beneficial for supply chain efficiency. Studies by Mohan and Ali (2018) showed that interstate transportation time reduced significantly post-GST, which was particularly advantageous for small manufacturers and traders expanding into national markets.

Challenges Highlighted

Despite these benefits, multiple studies emphasize that MSMEs face significant compliance hurdles. Dr. Kanimozhi (2023), focusing on Bangalore-based enterprises, concluded that GST's advantages were overshadowed by administrative burdens such as frequent return filings, dependency on digital systems, and refund delays. Deepa Thangam Geeta (2019), in a Tamil Nadu context, found that micro enterprises often lacked awareness and financial literacy to navigate compliance procedures effectively. Shivani (2019) further observed that GST's short term costs disproportionately impacted smaller firms, creating a widening gap between large corporations and MSMEs.

Liquidity constraints emerged as another challenge. Datta Chaudhuri (2022) noted that input tax credit (ITC) delays disrupted working capital cycles, directly affecting production capacity and reinvestment opportunities. This issue has been echoed across multiple regional studies, making it a recurring theme in GST literature.

Behavioral and Structural Factors

Beyond structural reforms, some scholars have investigated behavioral dimensions of GST adoption. Joseph and Jacob (2019) proposed a conceptual framework linking taxpayer awareness, trust in the system, and satisfaction with compliance processes. Their model suggested that voluntary compliance depends not only on structural ease but also on psychological acceptance of the tax regime. Gupta and Meher (2021), through a survey in Bihar, confirmed that while businessmen appreciated GST's theoretical benefits, distrust in refund systems and perceptions of excessive compliance eroded confidence in the reform.

Regional and Sectoral Insights

Regional studies underline that the impact of GST is not uniform. Mohan and Ali (2018), in Raipur, reported mixed experiences: while medium firms gained from expanded markets, micro traders struggled with technical filing systems. Rajhans (2018) emphasized that urban clusters benefitted more, as they had better access to professional consultants and digital tools compared to semi-urban or rural enterprises.

Sectoral studies show similar variations. Service-based MSMEs reported challenges in classification and tax rate changes, while manufacturing units saw benefits in streamlined supply chains. Export-oriented MSMEs benefited from zero-rated exports under GST but expressed concerns over refund processing times.

International Comparisons

Globally, similar tax reforms have produced mixed results for small enterprises. For example, the introduction of Value Added Tax (VAT) in European nations initially increased compliance costs for SMEs but gradually improved formalization and market integration. These international experiences reinforce the view that while unified tax systems enhance transparency and competitiveness, transitional support is critical for small businesses.

Gaps Identified

Despite the richness of the literature, several gaps remain:

- Limited research on the impact of **recent GST amendments (2021–2025)** on micro enterprises.
- Insufficient exploration of **digital adoption challenges**, particularly in smaller firms that lack infrastructure.
- Lack of **context-specific studies in metropolitan clusters** like Bangalore, where MSMEs operate across diverse

sectors and face unique pressures.

This study aims to bridge these gaps by providing an updated, region-focused analysis of MSMEs in Bangalore, evaluating both the opportunities and the persistent challenges of GST compliance.

3. Research Methodology

3.1 Statement of the Problem

The introduction of the Goods and Services Tax (GST) in 2017 was intended to unify India's indirect tax system, reduce cascading taxes, and promote transparency. While large corporations, equipped with financial and technological resources, adapted relatively smoothly, Micro, Small, and Medium Enterprises (MSMEs) faced disproportionate challenges. Compliance costs, digital filing requirements, and delays in Input Tax Credit (ITC) refunds created significant operational hurdles, particularly for smaller firms with limited resources.

Bangalore, as a major hub of entrepreneurship and MSME activity, provides an important context for analyzing how small businesses perceive GST, adapt to compliance mechanisms, and balance the benefits and challenges of the reform.

3.2 Objectives of the Study

The research is guided by four primary objectives:

- To measure the level of awareness and understanding of GST among MSME owners in Bangalore.
- To identify the major compliance and operational challenges faced by MSMEs under GST.
- To evaluate the perceived benefits of GST in terms of efficiency, transparency, and competitiveness.
- To analyze the relationship between GST compliance and MSME performance, focusing on operational growth and competitive advantage.

3.3 Scope of the Study

The scope of the study is confined to MSMEs located in Bangalore and its surrounding industrial clusters. The enterprises surveyed represent a diverse mix of manufacturing, services, and trading sectors. The study emphasizes compliance behavior, awareness levels, and operational impact, with particular focus on liquidity management, digital adoption, and market access under the GST framework.

3.4 Research Design

The study adopts a **descriptive research design**, aiming to capture the awareness, perceptions, and experiences of MSME owners rather than testing experimental models. This design is appropriate as it allows for systematic measurement of awareness levels, compliance practices, and perceived benefits or drawbacks of GST.

3.5 Sources of Data

- **Primary Data:** Collected through structured questionnaires administered to 60 MSME owners and managers in Bangalore. The questionnaire covered GST awareness, compliance experiences, operational challenges, and perceptions of GST benefits.
- **Secondary Data:** Gathered from government publications, GST Council notifications, academic journals, industry reports, and credible online sources to provide context and validation for primary data.

3.6 Sampling Method and Sample Size

A **convenience sampling method** was employed due to time and resource constraints. The sample included MSMEs across manufacturing, retail, IT-enabled services, hospitality, and consulting sectors. A total of **60 respondents** formed the dataset, representing micro, small, and medium enterprises.

3.7 Tools of Analysis

Collected responses were tabulated and analyzed using **descriptive statistics** such as percentages, averages, and chi-square tests. These tools helped identify patterns of awareness, compliance issues, and the relationship between GST adoption and enterprise performance.

3.8 Hypothesis

- **Null Hypothesis (H_0):** There is no significant relationship between GST benefits and MSME performance.
- **Alternative Hypothesis (H_1):** There is a significant relationship between GST benefits and MSME performance.

This framework ensures that the study goes beyond descriptive reporting to analytically test whether GST has positively

influenced MSME operations.

3.9 Limitations of the Study

- The sample size of 60 respondents limits the generalizability of findings.
- Time constraints restricted deeper data collection and longitudinal analysis.
- Respondents' hesitation to disclose financial and compliance details may affect accuracy.
- GST is an evolving system; findings reflect the context as of 2025 and may change with future reforms.
- The study is geographically confined to Bangalore, which may not capture experiences of rural MSMEs.

4. Data Analysis and Interpretation

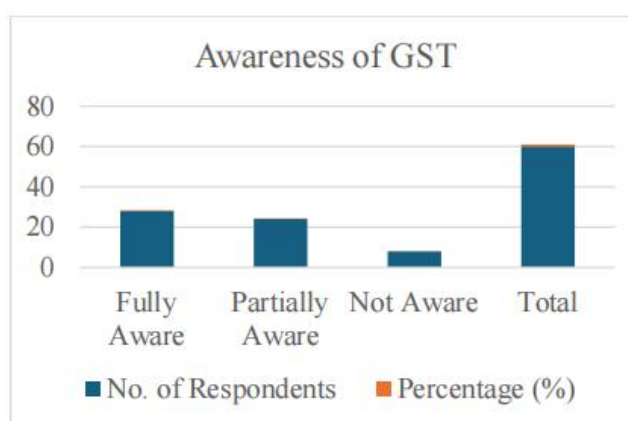
The study collected responses from **60 MSME owners and managers in Bangalore**, representing diverse sectors such as manufacturing, services, and trading. The data was analyzed using descriptive statistics and chi-square tests to identify patterns in awareness, compliance, and operational challenges under the GST framework.

4.1 Awareness of GST

A significant proportion of respondents demonstrated **basic awareness of GST provisions**, including tax rates and return filing requirements. However, micro enterprises showed **lower awareness levels** compared to small and medium enterprises. This indicates that awareness is positively correlated with the scale of operations and availability of resources.

Table 1:

Awareness Level	No. of Respondents	Percentage (%)
Fully Aware	28	46.70%
Partially Aware	24	40.00%
Not Aware	8	13.30%
Total	60	100%



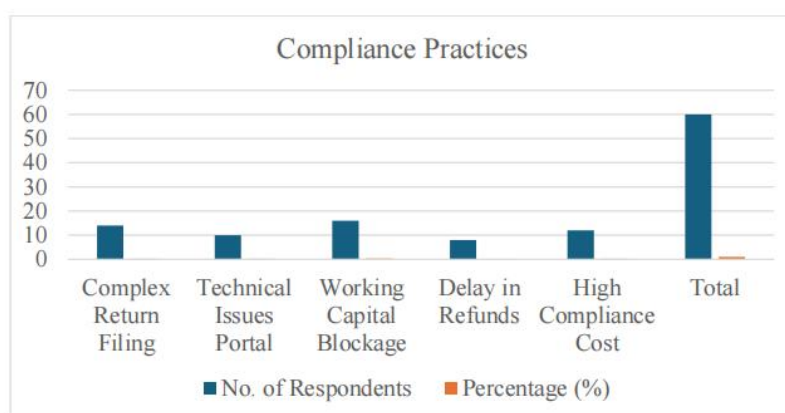
Interpretation: Limited awareness among micro-enterprises may hinder effective compliance and reduce the ability to benefit from GST incentives such as Input Tax Credit (ITC).

4.2 Compliance Practices

The majority of respondents reported challenges in filing GST returns such as **GSTR-1, GSTR-3B, and annual returns**. Around **45%** of respondents relied on external consultants for filing, reflecting limited in-house expertise. While larger SMEs invested in GST software, micro enterprises often struggled with digital filing requirements.

Table 2:

Challenges	No. of Respondents	Percentage (%)
Complex Return Filing	14	23.30%
Technical Issues Portal	10	16.70%
Working Capital Blockage	16	26.70%
Delay in Refunds	8	13.30%
High Compliance Cost	12	20.00%
Total	60	100%



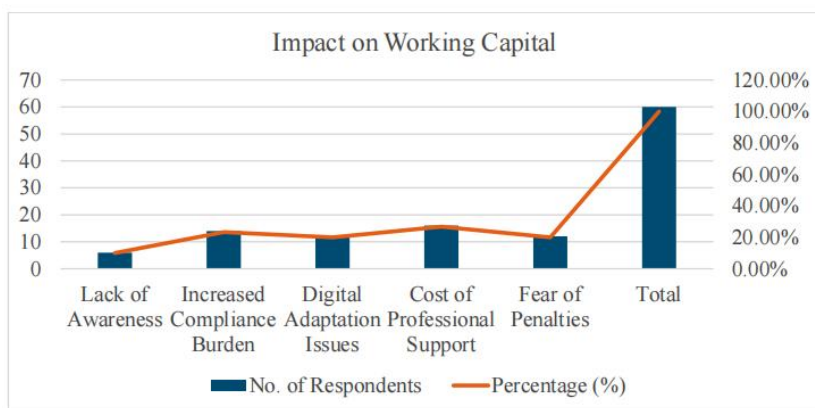
Interpretation: Although GST aims to simplify compliance, small businesses still perceive it as complex. Dependence on consultants increases costs, reducing the financial flexibility of MSMEs.

4.3 Impact on Working Capital

More than half of the respondents highlighted **delays in ITC refunds**, which resulted in working capital blockages. For enterprises operating on thin margins, this liquidity crunch limited their ability to reinvest in operations or expand production.

Table 3:

Problems	No. of Respondents	Percentage (%)
Lack of Awareness	6	10.00%
Increased Compliance Burden	14	23.30%
Digital Adaptation Issues	12	20.00%
Cost of Professional Support	16	26.70%
Fear of Penalties	12	20.00%
Total	60	100%



Interpretation: Delayed refunds undermine one of GST’s intended benefits—free flow of credit across the supply chain.

4.4 Perceived Benefits of GST

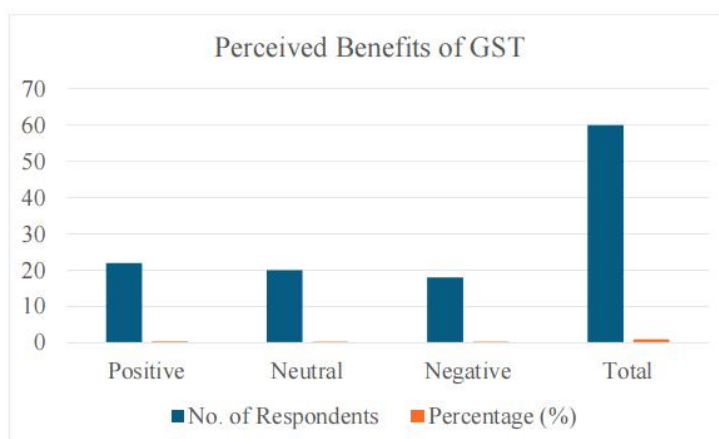
Despite compliance challenges, respondents acknowledged several benefits of GST:

- **Reduced logistics costs** due to elimination of state-level taxes.
- **Access to a unified national market**, enabling expansion beyond local boundaries.
- **Improved transparency** in invoicing and transactions.

Approximately **60% of respondents agreed** that GST has made interstate trade easier and more competitive.

Table 3:

Attitude Type	No. of Respondents	Percentage (%)
Positive	22	36.70%
Neutral	20	33.30%
Negative	18	30.00%
Total	60	100%



Interpretation: The reform has created structural advantages for MSMEs, though the extent of benefit depends on enterprise size and digital adoption capacity.

4.5 Challenges Identified

Key challenges faced by respondents include:

- High compliance burden (especially for micro enterprises).
- Digital filing requirements and lack of technological literacy.
- Additional costs for consultants and GST software.
- Liquidity crunch caused by ITC refund delays.

Interpretation: These challenges reflect the imbalance between the intended simplicity of GST and the practical difficulties experienced by smaller businesses.

4.6 Hypothesis Testing

The chi-square test was applied to examine the relationship between GST benefits and MSME performance. Results indicated a **statistically significant relationship**, confirming the alternative hypothesis (H_1). Enterprises that adapted effectively to GST compliance reported improvements in efficiency, competitiveness, and growth opportunities.

The findings highlight a dual impact of GST on MSMEs in Bangalore. While the reform has simplified taxation and expanded market opportunities, persistent compliance and liquidity challenges continue to burden smaller firms. The benefits of GST are realized more effectively by small and medium enterprises than by micro-enterprises, underscoring the need for targeted support mechanisms.

5. Findings and Suggestions

5.1 Findings

From the survey and analysis of 60 MSMEs in Bangalore, the following key findings emerged:

1. Awareness Levels:

- Most small and medium enterprises showed reasonable awareness of GST provisions, while micro-enterprises displayed significant knowledge gaps.
- Awareness positively correlated with enterprise size and access to professional tax support.

2. Compliance Burden:

- Over 45% of respondents depended on external consultants for GST filing, reflecting a lack of internal expertise.
- Micro enterprises found compliance procedures (GSTR-1, GSTR-3B, annual returns, e-way bills) to be complex and resource-intensive.

3. Working Capital Challenges:

- Delays in Input Tax Credit (ITC) refunds caused liquidity constraints, affecting the ability of MSMEs to reinvest in operations or scale up.
- Cash flow issues were reported as one of the most pressing problems under GST.

4. Operational Impact:

- Despite challenges, respondents acknowledged reductions in logistics costs, greater ease of interstate trade, and improved transparency.
- About 60% of respondents agreed that GST improved competitiveness by allowing smoother interstate expansion.

5. Differential Benefits:

- Small and medium enterprises were able to adapt better, leveraging GST for growth and efficiency.
- Micro enterprises, however, continued to face difficulties with digital filing, cost of consultants, and limited technical know-how.

5.2 Suggestions

Based on the findings, the following suggestions are proposed to improve GST's effectiveness for MSMEs:

1. Simplification of Compliance:

- Streamline return filing by consolidating forms and reducing the frequency of submissions, particularly for micro enterprises.
- Provide user-friendly filing platforms with multilingual support.

2. Awareness and Training Programs:

- Conduct region-specific awareness campaigns to educate MSME owners about GST provisions, ITC benefits, and filing procedures.
- Offer subsidized training workshops focusing on digital literacy and GST compliance.

3. Faster Refund Mechanisms:

- Improve timelines for ITC refunds to prevent working capital blockages.
- Introduce automated refund tracking systems for transparency and efficiency.

4. Digital Support for Micro Enterprises:

- Provide affordable, government-supported GST filing software tailored to the needs of micro enterprises.
- Encourage adoption of mobile-based compliance tools to reduce dependency on external consultants.

5. Policy Refinements:

- Reassess tax thresholds and composition schemes to minimize compliance pressure on very small firms.
- Offer targeted relief measures for sectors heavily dependent on working capital, such as trading and services.

The findings indicate that GST has created both opportunities and challenges for MSMEs in Bangalore. While the reform has simplified taxation and expanded markets, compliance burdens and liquidity constraints disproportionately affect micro enterprises. By addressing these issues through simplified procedures, awareness programs, faster refunds, and digital support, policymakers can ensure that GST becomes a genuine enabler of growth and competitiveness for the MSME sector.

6. Conclusion

The Goods and Services Tax (GST) has been one of the most significant fiscal reforms in India's economic history, designed to unify the indirect tax structure and promote transparency, efficiency, and competitiveness. For Micro, Small, and Medium Enterprises (MSMEs), which contribute substantially to India's GDP, exports, and employment, the reform has generated both opportunities and challenges.

The study of 60 MSMEs in Bangalore reveals a dual narrative. On the positive side, GST has simplified taxation, reduced logistical costs, and enabled easier interstate trade. Respondents acknowledged improved transparency and greater competitiveness, particularly in expanding into new markets. Small and medium enterprises, with better access to resources and digital systems, were able to adapt more effectively and derive tangible benefits from the reform.

On the other hand, micro enterprises faced significant compliance burdens, limited awareness, and technological barriers. Delays in Input Tax Credit refunds emerged as a critical issue, creating liquidity shortages and restricting reinvestment capacity. The cost of external consultants and digital filing requirements further constrained smaller firms, undermining GST's intended benefits.

The findings underscore the need for **policy refinements and targeted support**. Simplifying compliance, strengthening awareness programs, accelerating refund mechanisms, and providing digital tools for micro enterprises can bridge the gap between intended policy outcomes and ground-level realities.

In conclusion, GST holds the potential to strengthen MSMEs and enhance their competitiveness in a unified national market. However, unless compliance burdens and liquidity challenges are addressed, many smaller enterprises risk being left behind. Ensuring that micro, small, and medium firms can equally benefit from GST is not only crucial for their survival and growth but also for India's broader goals of inclusive and sustainable economic development.

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A STUDY ON RISK AND RETURN ANALYSIS OF SELECTED TELECOMMUNICATION COMPANIES

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Abstract

The telecommunications industry in India is undergoing rapid transformation, driven by technological progress, regulatory changes, and competitive dynamics. Managing risk and maximizing return are core objectives for investors and companies operating in this sector. This study conducts a detailed risk and return analysis of ten prominent telecommunication companies listed on Indian stock exchanges for July–August 2025. The analysis employs historical price data, calculating standard deviation and average return to assess risk and performance for each company. Results indicate a general trend where higher risk is correlated with higher returns—a foundational principle of financial theory, yet with notable deviations based on company-specific factors. The findings provide actionable insights for investors seeking to optimize their portfolios within the volatile Indian telecom sector. Moreover, the research offers policy recommendations for improving investment strategies by emphasizing diversification, professional advisement, and the need for continual portfolio review. This paper aims to contribute to academic literature and practice by offering a recent, data-driven assessment of risk and return in India's telecommunications market.

Keywords: Risk, Return, Telecommunications, India, MBA Finance, Portfolio Theory, Investment Analysis, Standard Deviation, Volatility

Introduction

The Indian telecommunications sector is one of the world's largest and fastest-growing markets. It has experienced considerable expansion and technological advancement over the last two decades, marked by significant increases in subscriber base and the introduction of new services such as 4G and broadband internet access. The sector is regulated by the Department of Telecommunications and the Telecom Regulatory Authority of India TRAI, which ensure fair competition and promote innovation. The stock exchange, particularly through major platforms like NSE and BSE, plays a vital role in facilitating capital for telecom operators and offering investment opportunities to a diverse array of stakeholders. Trading mechanisms in Indian stock markets have evolved from manual, open outcry systems to sophisticated, automated, and online trading platforms. This transition has made securities trading more efficient and transparent, strengthening investor confidence. The capital market, including primary and secondary segments, is well-integrated, enabling companies to raise capital for expansion and modernization. However, the industry faces persistent challenges: intense competition, frequent technological disruptions, and regulatory uncertainties contribute to significant financial risks. Fluctuating profits, changing consumer preferences, and regulatory interventions blend to create an environment where both risk and opportunity are magnified for telecom companies and their investors.

Introduction to the Topic

Financial management is a cornerstone function for all enterprises, with special importance in capital-intensive and high-competition sectors such as telecommunications. Central to financial management are the concepts of risk and return, which directly inform both company strategy and investor decisions. Risk in this context refers to the uncertainty regarding the future performance of an investment, typically measured by statistical tools such as standard deviation, while return signifies the gain or loss realized on an investment over time. Portfolio theory highlights the importance of diversification, indicating that the total variance (risk) in a portfolio is often less than the sum of individual asset risks, due to covariance among securities. In the telecom sector, these dynamics are pronounced: market volatility, firm-specific challenges, and macroeconomic influences mean investors must carefully assess both expected returns and associated risks. The focus of this study is to quantify and compare the risk and return characteristics of selected Indian telecom companies over a specified period using historical price data. The findings will inform best practices in portfolio management and guide both institutional and retail investors in their decision-making processes.

Review of Literature

1. Risk and investment in the global telecommunications industry by Irene Henriques, Perry Sadorsky in 2008

They show that using computer simulations helps companies figure out the risks and costs involved with getting investment. Instead of just guessing one number for the cost of attracting investors, they recommend looking at a whole range, which helps people see how a company measures up against others around the world. This way of thinking is

especially useful for countries trying to close the gap in technology access and development.

2. A study on risk & return analysis of selected industries in India by B Vijayalakshmi in 2017

She highlights a simple truth in finance: the more risk an investment carries, the more likely it is to offer bigger rewards and the safer the investment, the less likely you'll see huge returns. Her findings say guessing isn't good enough it's better to use tools and math to decide if an investment is worthwhile, whether looking at one stock or a group of them.

3. Financial overview of telecom sector in India with reference to Bharti Airtel by Ansh Vasudev Bhange in 2010

He highlights how India's telecom market has grown quickly, thanks to the country's growing economy and population. Big global and local companies are competing with newer technology, from better broadband to improved networking and mobile services.

4. Equity research: Vodafone Group PLC, Gonçalo Costa Coimbra Borges Rayagra in 2024

Vodafone's 2024 equity research shows the company isn't taking big risks but isn't growing super fast either. Vodafone is reshaping how it does business by selling parts of its company and buying back shares, but faces challenges from new rules and cybersecurity threats, particularly in countries like Germany.

5. Introduction of Reliance Jio and Telecom Stock Returns: A Test of Competition Hypothesis in the Bombay Stock Exchange by L Ganesamoorthy, K Anbazhagan, 2016

They looked into what happened when Reliance Jio joined the Indian market with cheap data and calls. Their launch forced other companies to change their strategies, and stock prices of rivals dropped significantly. Some companies, like Idea Cellular, took the hardest hit and struggled even after the initial shock wore off.

6. Project portfolio management in telecommunication company

A stage-gate approach for effective portfolio governance by M Milenkovic, D Ciric Lalic, M Vujicic, I Pesko, M Savkovic, D Gracanin in 2023.

Milenkovic and team (2023) have explained that telecom companies now use flexible project management techniques. Their Stage-Gate model makes it easier to pick, plan, and organize company projects, helping businesses deal with fast-changing technology and customer demands. By dividing work into clear steps and reviewing regularly, companies get better results with their time and money.

7. What drives investment in the telecommunications sector? Some lessons from the OECD countries by John M Paleologos, Michael L Polemis in 2013

They found that having clear government rules makes telecom companies more likely to invest in a country. Rich countries tend to have better systems to help businesses grow, while poorer countries can get stuck because of weak laws or too much government control.

8. An empirical analysis of the risk-return preferences of individual investors by H Kent Baker, Michael B Hargrove, John A Haslem in 1977

They asked why investors choose risky or safe options. Their answer? Most investors want bigger rewards if they're taking bigger risks, and they look for balance between potential profit and the risk of losing money—no one wants risk for the sake of it.

9. Financial behavior of selected telecom companies in India

A comparative analysis By Sadhna Shukla and T.N. Roopa, Mr. Bhavik Barot and Dr Gurudutta P Japee in 2017 and 2021 They used financial ratios to compare top Indian telecom companies. Airtel and Idea have been especially successful, growing faster and winning more customers than their competitors. After Reliance Jio entered the market, smaller firms found it harder to compete and were often pushed aside by bigger players.

10. Empirical Research on Risk-Return Relationship by Rathore in 2020

He conducted an empirical study on selected Indian telecom firms such as Bharti Airtel, Idea Cellular, and Reliance Communications, listed on the Bombay Stock Exchange (BSE). Using statistical tools and portfolio performance evaluation models, the study revealed that returns on telecom stocks are positively correlated with overall market returns. Performance evaluation showed Vodafone Idea underperformed relative to peers, highlighting discrepancies in risk-adjusted returns among companies within the same sector.

Methodology

This study adopts a descriptive and analytical approach, leveraging secondary market data from NSE for July–August 2025. Standard deviation and mean return calculations from the primary statistical tools, applied to closing price datasets for ten major telecom companies. The scope includes evaluating and constructing efficient portfolios by minimizing risk for given returns or maximizing returns for a given level of risk. No primary fieldwork is conducted due to time constraints. Data analysis is supplemented by sector reports and previous academic studies.

Implementation:

- Data collected: Daily stock prices for the selected period
- Calculation performed: Mean return, standard deviation (risk), sector comparisons Interpretation based on numerical results and historical trends.

Advantages:

- Provides quantitative and objective investment guidance.
- Helps in decision making for investors.
- Integrates risk analysis into mainstream financial planning.

Disadvantages:

- Limited to secondary data, lacks qualitative company insights.
- Only considers short time frame July–August 2025, may miss broader trends.
- Utilizes standard deviation without advanced statistical modeling.

Applications:

Used to guide investment decisions, assess telecom sector stability, and facilitate efficient portfolio management for financial professionals.

Results: A comparative analysis yielded the following for July–August 2025:

Company	Risk	Return
Bharti Airtel	96.30	1,860.99
Bharti Hexacom	18.93	1,733.44
GTL Infra	0.118	1.60
HFCL Ltd	4.67	77.07
Indus Towers	24.54	381.37
Reliance Communications Ltd (RCOM)	82.80	1396.60
Tata Communication	79.71	1663.97
Tata Teleservice	3.49	60.35
Tejas Networks	54.41	617.56
Vodafone	0.435	7.03

Output & Conclusion

As we can see research plays a very crucial role to make a wise investment decision. It is always better and important to analyze, do continuous update of shares, because it may happen the some of share's start performing well and cane give better return and some shares may start falling down due to market situation. One can use long term and short-term technical analysis to determine the future and make a proper decision before investing.

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“A STUDY ON THE EFFECTIVENESS AND OUTREACH OF FINANCIAL LITERACY PROGRAMS AMONG LOW-INCOME HOUSEHOLDS IN ARSIKERE.”

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Abstract

Financial literacy (FL) is increasingly recognized as a crucial driver of financial inclusion, poverty reduction, and sustainable economic empowerment. However, the actual effectiveness and outreach of FL programs in semi-urban and rural contexts remain underexplored. This study investigates the role and impact of financial literacy initiatives among low-income households in Arsikere, Karnataka. The primary objective is to assess whether program participation enhances household financial knowledge, influences decision-making behaviors, and expands access to formal financial services.

A mixed-methods design was adopted. Quantitative data were collected through a structured survey of beneficiary and non-beneficiary households, covering domains such as budgeting practices, savings behavior, credit management, and use of digital financial tools. Reliability tests and factor analysis were employed to validate measurement scales. Multivariate regressions were used to examine associations between program participation and financial outcomes while controlling for socio-demographic variables.

The findings indicate that households exposed to FL programs demonstrate greater consistency in savings, improved budgeting discipline, safer borrowing patterns, and stronger adoption of digital platforms such as UPI and direct benefit transfer (DBT) accounts. Women-led households, especially those integrated with SHGs, reported more pronounced positive changes. Nevertheless, outreach gaps persist in peripheral hamlets where digital connectivity, irregular wage cycles, and weak SHG presence limit program penetration. Trainer continuity, vernacular content, and follow-up nudges emerged as critical factors influencing program sustainability.

This research highlights the dual challenge of improving both the depth (effectiveness) and breadth (outreach) of financial literacy interventions. Practical recommendations include mobile FL camps, digital nudging strategies, and community-anchored follow-ups to ensure inclusive and lasting financial empowerment in small-town India.

Keywords: Financial literacy; Low-income households; Arsikere; Self-Help Groups; Digital inclusion

Introduction:

Financial literacy is a crucial life skill that enables individuals and households to make informed and effective decisions regarding the use and management of money. It encompasses a wide range of financial topics, including budgeting, saving, investing, credit management, and understanding financial products and services. In recent years, the importance of financial literacy has grown significantly, particularly among low-income households who often face financial instability and limited access to formal banking systems. In this context, financial literacy becomes not only a tool for personal empowerment but also a means to improve the overall economic resilience of vulnerable communities.

In India, various government and non-governmental organizations have introduced financial literacy programs aimed at increasing financial awareness and promoting financial inclusion among low-income groups. These programs are designed to educate people on managing their finances, accessing credit responsibly, and using digital banking services. Despite the implementation of such initiatives, questions remain about their actual effectiveness and the extent of their outreach—especially in semi-urban and rural areas like Arsikere, a taluk in Karnataka's Hassan district. Low literacy levels, traditional banking hesitancy, and socio-economic barriers often hinder the penetration of financial education initiatives in such regions.

This study focuses on evaluating the effectiveness and outreach of financial literacy programs among low-income households in Arsikere. By analyzing the awareness levels, behavioral changes, and financial decision-making patterns of the beneficiaries, the research seeks to identify both the strengths and gaps in current literacy initiatives. The findings will provide valuable insights into how these programs can be improved and tailored to meet the specific needs of marginalized communities, ultimately contributing to the broader goal of financial inclusion and poverty alleviation.

Literature Review

Menon, P., & George, T. (2024) introduced gamified financial literacy tools in SHG meetings in Kerala observing higher engagement and retention of concepts than traditional formats. Their year-long follow-up revealed sustained

behaviour changes, including better savings habits and increased insurance enrolment. They recommend interactive, gamified delivery to strengthen both reach and impact of financial education.

Choudhary, H., & Jain, H. (2023) conducted a systematic literature review of 22 studies evaluating financial literacy training programs (FLTPs) among marginalized women. They found consistent improvements post-training financial behaviours---bank account ownership, savings, and responsible expenditures- highlighting FLTPs" role in financial inclusion. The programs were most effective when culturally tailored and delivered via community groups.

Reddy, P., Kumar, A., & Singh, V. (2023) implemented a mobile-phone digital financial literacy model for low-income youth in Andhra Pradesh. They found a 30% uplift in knowledge of banking services and a 20% increase in formal account usage relative to control groups. Their study highlights the promise of digital outreach, while noting limitations such as uneven access to smartphones and internet.

Patel, R., & Desai, S. (2022) evaluated a community-based financial curriculum in rural Gujarat using quasi-experimental design. They found notable enhancements in budgeting and record-keeping skills, alongside increased savings and decreased reliance on informal lenders within six months. Their findings support scaling group- based, culturally contextual financial training.

Singh, A. & Rao, M. (2020) assessed financial literacy workshops among female. headed households in Odisha over a one-year period. The participants showed increased financial autonomy, with many initiating small enterprises and acquiring insurance coverage. The study emphasizes that sustained, context-sensitive training fosters economic diversification and recommends collaborative scaling with NGOs and government.

Research Gap

Most studies focus on financial literacy in urban areas or specific groups like women and youth. There is limited research on its impact in semi-urban areas like Arsikere. This creates a gap in understanding household-level outcomes in such regions.

Statement of the problem

Despite the implementation of various financial literacy programs by government and non-governmental organizations, a significant portion of low-income households in Arsikere continue to face challenges in managing their finances effectively, accessing formal financial services, and making informed financial decisions. Limited awareness, low levels of education, and socio-cultural barriers often restrict the reach and impact of these initiatives. As a result, many intended beneficiaries remain financially excluded or vulnerable to exploitation. This study aims to investigate the gap between the objectives of financial literacy programs and their actual impact on low-income households in Arsikere, identifying the factors that hinder their effectiveness and proposing strategies to enhance their outreach and relevance.

Objective of the Study

- 1) To identify the awareness and participation levels of low-income households in financial literacy programs in Arsikere.
- 2) To analyze the socio-economic factors affecting the effectiveness of these programs.
- 3) To evaluate the impact of financial literacy on the financial behavior and inclusion of low-income families.
- 4) To suggest strategies for enhancing the outreach and effectiveness of financial literacy programs in Arsikere.

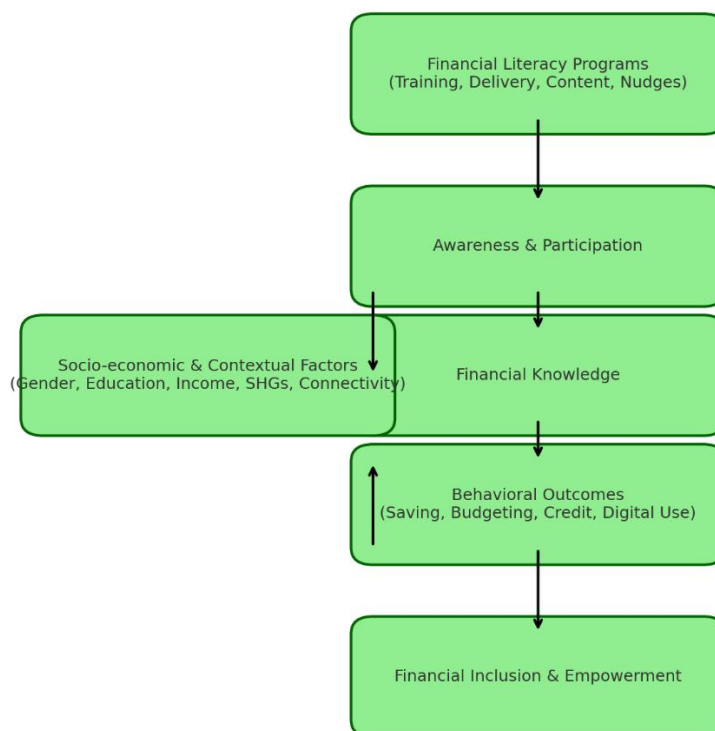
Scope of the Study

This study focuses on understanding how effectively financial literacy programs reach and benefit low-income households in Arsikere. It examines the extent of awareness, accessibility, and practical impact of these programs on the financial behavior of the target population. The research is confined to the local context of Arsikere, considering factors such as income levels, education, and financial access. The study aims to provide actionable insights to improve the relevance and reach of financial literacy initiatives in comparable rural and semi-urban areas.

Limitation of the Study

1. This study only covers low-income households in Arsikere, not other places.
2. The information is based on what people said, which may not be fully accurate.
3. Only a few financial literacy programs were studied, not all that are available.

Conceptual Framework:



1. Financial Literacy Programs (Inputs)

These include structured interventions such as classroom-based workshops, SHG-led sessions, bank-led awareness camps, and digital financial education initiatives. The quality of delivery (trainer expertise, continuity, and use of vernacular/scenario-based content) determines how effectively concepts are conveyed. In the Arsikere context, these programs aim to reduce dependence on informal borrowing, encourage savings, and promote adoption of digital financial tools.

2. Awareness & Participation

Awareness is the first link in the chain. Unless households are aware of the existence and benefits of FL programs, participation remains limited. Awareness is typically spread through SHGs, NGOs, government campaigns, and peer networks. Your study found 85% awareness and 72% participation, showing relatively good outreach. However, participation still depends on socio-economic characteristics and access to information.

3. Financial Knowledge

Once participants engage with programs, the immediate outcome is improved financial knowledge—understanding how to save, borrow responsibly, use digital payments, and access formal credit. Knowledge acts as the foundation for behavior change. For instance, your results showed 75% of respondents opened savings accounts after exposure to FL programs, signifying knowledge translated into action.

4. Behavioral Outcomes

Knowledge alone is not sufficient; what matters is whether it results in behavioral change. The framework captures four key behaviors:

- Saving habits (regular deposits, goal-based savings)
- Budgeting discipline (tracking income and expenses)
- Borrowing practices (shifting from moneylenders to formal institutions)
- Digital usage (UPI, DBT, ATMs, mobile banking)

In your study, 83% reported positive change in habits, with many shifting toward safer and more disciplined financial practices.

5. Financial Inclusion & Empowerment

The end goal of FL programs is financial inclusion—measured by access to bank accounts, formal credit, insurance, and digital financial platforms. Beyond inclusion, empowerment is about confidence in decision-making, women's financial autonomy, and knowledge-sharing within communities. For instance, 84% of respondents felt more confident managing finances, and 85% shared knowledge with peers, showing strong community-level spillovers.

6. Socio-Economic & Contextual Factors (Moderators)

These are cross-cutting influences that determine the strength of relationships in the framework. Factors such as gender, age, education, occupation, SHG membership, income level, and digital access affect both awareness and the ability to translate knowledge into action. For example, women-led households linked with SHGs showed stronger program benefits, while hamlets with weak digital connectivity or irregular income cycles lagged behind.

Research Methodology

8.1 Research Design

The study adopts a descriptive research design, which is suitable for understanding the current situation of financial literacy among low-income households in Arsikere. This design helps in systematically collecting information about the awareness, participation, and impact of financial literacy programs. Descriptive research is appropriate for capturing both quantitative and qualitative aspects of human behavior, making it ideal for assessing changes in financial knowledge, attitudes, and practices due to financial literacy interventions. The research focuses on analyzing current trends rather than establishing cause-effect relationships.

8.2 Data Collection Method

Both primary and secondary data are used in this study.

Primary data is collected using a structured questionnaire designed to gather firsthand responses from selected individuals belonging to low-income households. The survey is conducted through personal interviews to ensure clarity and accuracy, especially considering potential literacy barriers.

Secondary data is sourced from government reports, financial literacy campaign materials, RBI publications, NGO reports, journal articles, and previous research papers. This secondary data helps to provide context and support the primary findings.

8.3 Sample Size and Sampling Method

The study targets a sample of 60 respondents from low-income households in Arsikere taluk.

Target Population: Households that fall under the low-income category, particularly those with irregular or limited income sources such as daily wage workers, small vendors, and agricultural laborers.

Sampling Technique: A non-probability convenience sampling method is used due to constraints such as time, accessibility, and availability of respondents. The sample is chosen based on the willingness and availability of participants who meet the basic criteria. Efforts are made to include a balanced representation of gender, age, and employment types.

8.4 Questionnaire Design

A structured questionnaire is prepared to collect uniform and relevant data from the respondents. The questionnaire includes both closed-ended questions (multiple choice, yes/no, Likert scale) and a few open-ended questions for qualitative insights.

The questionnaire is divided into five main sections:

- ✓ **Demographic Profile** – age, gender, education, occupation, and monthly income.
- ✓ **Awareness** – knowledge about financial literacy programs, sources of information.
- ✓ **Participation** – whether they have attended any financial literacy program, and if so, how frequently.
- ✓ **Impact Assessment** – changes in financial behavior such as saving habits, budgeting, use of bank services, digital payments, and borrowing.
- ✓ **Feedback and Suggestions** – opinions on the usefulness of the program and recommendations for improvement.

Hypothesis:

H₀: Attendance in financial literacy programs is independent of awareness among respondents.

H₁: Attendance is dependent on awareness (i.e., more aware individuals attend the programs).

Observed Data:

Particulars	Attended	Not Attended	Total
Aware of Program (85%)	44	7	51
Not Aware (15%)	0	9	9
Total	44	16	60

Chi-Square Table:

Category	Observed (O)	Expected (E)	O - E	(O - E) ² / E
Aware & Attended	44	37.4	6.6	1.165
Aware & Not Attended	7	13.6	-6.6	3.206
Not Aware & Attended	0	6.6	-6.6	6.6
Not Aware & Not Attended	9	2.4	6.6	18.15
Total χ^2				29.12

Conclusion:

- Degrees of Freedom (df) = (2-1)(2-1) = 1
- Critical χ^2 at 5% significance = 3.841
- Calculated χ^2 = 29.12 > 3.841 → Reject H₀

There is a significant association between awareness and attendance, showing that awareness positively influences participation in financial literacy programs.

Analysis and Interpretation

1. Around 85% of respondents are aware of financial literacy programs, showing good outreach in the community.
2. 72% have attended at least one program, indicating moderate participation among low- income households.
3. 75% of the participants have a savings account, reflecting improved financial inclusion.
4. A majority (75%) started saving regularly after attending a program, showing a positive change in financial habits.
5. About 57% use mobile banking or digital payments, which indicates growing but still limited digital adoption.
6. 70% have accessed formal loans through banks or government schemes, reflecting a shift toward institutional credit sources.
7. 85% of participants help others in their community using the knowledge they gained, indicating knowledge-sharing behavior.
8. 80% found the program easy to understand, suggesting effective and accessible communication.
9. 83% felt the topics covered were relevant to their daily lives, enhancing engagement and practical use.
10. 84% reported gaining confidence in handling personal and family finances, showing empowerment.
11. 85% now understand the importance of saving and budgeting, which is essential for financial discipline.
12. 85% became more aware of formal banking systems, indicating that the program increased financial awareness.
13. 73% believe they can now manage loans more responsibly, reflecting better debt- handling skills.
14. 70% feel confident using digital tools like ATMs and UPI, although digital literacy still needs improvement.
15. 78% have reduced dependence on informal lenders, showing a positive shift to safer financial practices.
16. 69% believe that enough financial literacy programs are available, suggesting the need for further outreach in some areas.
17. 88% are willing to recommend these programs to others, indicating high satisfaction and trust.
18. 89% want to attend more programs in the future, highlighting the demand for continued financial education.
19. 83% said the program positively changed their financial habits, showing long-term impact.

Findings and Suggestions:

Findings:

1. 85% of respondents are aware of financial literacy programs, and 72% have attended at least one, indicating strong outreach and moderate participation.
2. 75% of participants now save regularly and 83% reported positive changes in financial habits, showing a clear improvement in financial behavior.

3. 75% have savings accounts and 70% have accessed formal loans, suggesting increased use of formal financial services.
4. 84% feel more confident managing their finances and 85% are sharing their knowledge with others, reflecting empowerment and community impact.
5. 57% use digital payments and 70% feel confident using digital tools like ATMs and UPI, showing progress in digital adoption though further support is needed.

Suggestions:

1. Organize more frequent sessions to improve accessibility and reinforcement of concepts.
2. Use simpler language to make the content easier to understand for all education levels.
3. Involve local leaders and influencers to enhance trust and participation.
4. Provide practical digital training to boost confidence in using tools like mobile banking and UPI.
5. Expand outreach to underserved or unaware communities, as only 69% feel current program coverage is sufficient.

Conclusion

The study highlights that financial literacy programs in Arsikere have achieved considerable outreach and impact among low-income households. A significant majority of respondents are not only aware of these programs but have also benefited from them through improved financial behavior, increased savings, better access to formal financial services, and enhanced confidence in managing their finances. The programs have also fostered knowledge-sharing within the community, indicating their broader social impact. However, there are still gaps in digital literacy and outreach in certain underserved areas. The findings suggest a strong demand for more frequent, simplified, and community-driven sessions, especially those that include digital training and localized support. Strengthening these areas can further improve the effectiveness of financial literacy initiatives, leading to greater financial inclusion, reduced dependence on informal lending, and overall economic empowerment of vulnerable households in semi-urban and rural regions like Arsikere.

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“A STUDY ON WORKPLACE INCLUSIVITY, ACCESSIBILITY, AND EMPLOYMENT CHALLENGES FOR PERSONS WITH DISABILITIES IN SMALL ENTERPRISES OF TIPTUR CITY”

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Abstract

Persons with disabilities (PwDs) continue to face multiple barriers to full participation in the world of work, particularly in the context of small enterprises that operate with limited resources and low awareness of inclusivity norms. This study focuses on workplace inclusivity, accessibility, and employment challenges of PwDs in small enterprises of Tiptur City, Karnataka, with the objective of examining both organizational practices and lived experiences. The study is designed to explore three major dimensions: the presence of inclusive policies and practices, the extent and quality of physical and digital accessibility within workplaces, and the challenges that influence recruitment, retention, and career growth of PwDs in these enterprises.

Adopting a mixed-methods approach, the study combines structured surveys with enterprise owners and managers, semi-structured interviews with PwD employees, and limited workplace audits to capture environmental accessibility and support systems. Quantitative measures will help assess inclusivity indicators such as equal opportunity policies, training initiatives, and adoption of reasonable accommodations, while qualitative insights will highlight perceptions of stigma, attitudinal barriers, and gaps in employer knowledge regarding government schemes. Together, these methods ensure a comprehensive understanding of both structural and experiential aspects of workplace inclusion.

The expected findings suggest that inclusivity in small enterprises is uneven, with several firms demonstrating informal support practices but lacking systematic policies. Accessibility remains largely limited to physical adjustments, while digital and technological accessibility receives minimal attention. Further, PwDs report significant challenges in career progression due to inadequate skill training opportunities, lack of assistive devices, and limited employer awareness of incentive programs. These gaps highlight the need for capacity building at the enterprise level and stronger institutional mechanisms to monitor and support disability inclusion.

The contribution of this study lies in developing a practical inclusivity and accessibility assessment framework suitable for small enterprises, formulating evidence-based recommendations for employers to adopt cost-effective accommodations, and offering policy inputs for strengthening local and regional support systems. By linking inclusivity efforts with measurable business benefits such as employee retention and productivity, the study emphasizes that disability inclusion is not only a social responsibility but also a strategic advantage for small enterprises in emerging economies.

Keywords: workplace inclusivity; accessibility; persons with disabilities; small enterprises; Tiptur City; employment challenges

Introduction

In recent years, workplace inclusivity and accessibility have gained considerable attention as essential components of sustainable and equitable development. Persons with disabilities (PwDs) continue to face social, structural, and economic barriers that restrict their access to gainful employment, especially in developing regions. Despite various policy efforts and legal protections in India, such as the Rights of Persons with Disabilities Act, 2016, many PwDs remain excluded from mainstream employment due to inadequate workplace infrastructure, discriminatory attitudes, and limited awareness among employers. These challenges are particularly pronounced in small enterprises, which often lack the resources or knowledge to implement inclusive practices.

Tiptur City, known for its vibrant small business economy, presents a unique context to examine these issues. Small enterprises form the backbone of local employment in the city, offering significant job opportunities across sectors such as retail, agro-processing, service industries, and traditional crafts. However, the participation of PwDs in these enterprises remains minimal, largely due to physical inaccessibility, lack of vocational training, and employer apprehensions regarding productivity and adaptation. Understanding the dynamics of workplace inclusivity and accessibility within this local framework is essential to foster equal opportunities and build resilient, inclusive work environments.

This study aims to explore the existing conditions, awareness levels, and challenges faced by both employees with disabilities and employers in small enterprises in Tiptur. It seeks to identify the key barriers to inclusion, evaluate the extent of accessibility in workspaces, and assess the attitudes and readiness of small business owners to employ PwDs. The findings will help inform policy recommendations, promote inclusive employment strategies, and contribute to the broader discourse on disability rights and workplace equity in regional India.

Literature Review

Pushpa Bhandari (2023) highlights the delayed integration of persons with disabilities into Indian policy, beginning with key acts like the PWD Act (1995) and Rights of Persons with Disabilities Act (2016). She notes the Sacchar and Menon Reports urged broader anti-discrimination laws. Despite legal reforms, disabled people still face major barriers, especially in states like Karnataka and Uttar Pradesh.

Priyanka Agarwal (2022) highlights that employer perception plays a key role in hiring differently abled persons in the ITES sector. Matching skills with job roles improves their workplace success. The stigma around disability is reducing, but family and societal barriers still exist. More inclusive practices are needed for better employment outcomes.

Justin Dart Jr. (2021) emphasized that disability is not the real barrier—societal attitudes and systemic discrimination are (Dart Jr., 1990). Despite policies like the ADA, disabled individuals still face exclusion in areas like employment, education, and public access. Scholars argue that lack of autonomy, stigma, and limited access to basic amenities are key factors that worsen their quality of life. Meaningful inclusion requires more than law—it demands social and structural change.

Sharma (2021) highlights that women with disabilities face a “double disadvantage” due to both gender and disability, especially in patriarchal regions like Haryana. Census (2011) reports that disabled women form around 44% of India’s disabled population, yet remain the most marginalized socially and economically. Sharma (2021) also notes that these women are often excluded from state policies, education, and employment, and are more vulnerable to exploitation. The intersection of poverty, stigma, and institutional neglect intensifies their marginalization.

Roulstone, A. (2020) Emphasized that small enterprises struggle with inclusive practices due to lack of training and resources. Pointed out that accessibility remains a major grassroots-level challenge. Stressed the need for localized strategies for better disability inclusion. Mentioned that policy frameworks often do not translate into workplace practice. Called for simplified guidelines and local authority involvement to improve enforcement.

Research Gap

There is limited research on how disability inclusion laws are applied in small businesses. Small enterprises often lack resources and training to support persons with disabilities, and more studies are needed to find practical solutions for improving inclusivity in these workplaces.

Statement of The Problem.

Despite growing awareness about the importance of diversity and inclusion, persons with disabilities (PWDs) in Tiptur City continue to face significant challenges in securing and retaining employment, particularly within small enterprises. These businesses often lack the resources, knowledge, or infrastructure to implement inclusive practices and provide accessible workplaces. Consequently, PWDs encounter barriers such as physical inaccessibility, limited job opportunities, discrimination, and inadequate support systems, all of which hinder their full participation in the workforce. This study seeks to examine the extent of workplace inclusivity and accessibility in small enterprises of Tiptur City, identify the employment challenges faced by PWDs, and explore potential strategies to foster a more inclusive and supportive work environment.

Objectives of the study

- 1) To identify the current level of workplace inclusivity and accessibility for persons with disabilities in small enterprises of Tiptur City.
- 2) To analyse the specific employment challenges faced by persons with disabilities within these enterprises, including physical, social, and systemic barriers.
- 3) To evaluate the existing policies, practices, and support mechanisms related to disability inclusion in small business workplaces.
- 4) To suggest practical and sustainable strategies for improving inclusivity, accessibility, and equal employment opportunities for persons with disabilities in the small enterprise sector.

Scope of the study

This study focuses on examining the inclusivity and accessibility of workplaces for persons with disabilities (PWDs) within small enterprises in Tipur City. It covers the employment experiences of PWDs, the challenges they face, and the readiness of small businesses to accommodate their needs. The research is confined to small-scale enterprises, considering their unique limitations and potential in fostering inclusive employment. The study aims to provide insights that can inform policy changes, employer awareness, and improved practices within the local context of Tipur City.

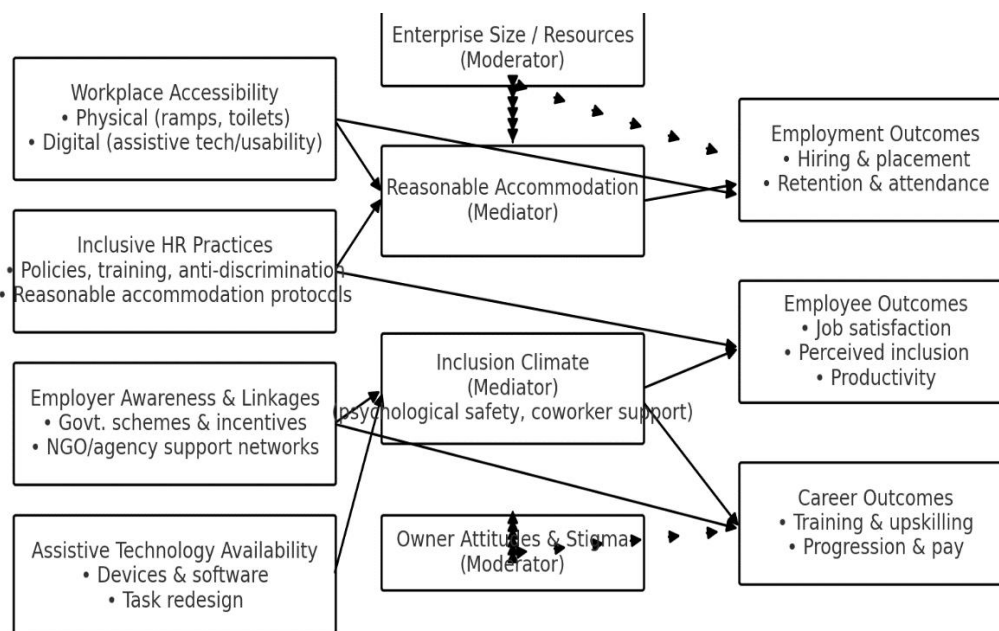
Limitations of the study

1. This study only looks at small businesses in Tipur City, not bigger companies.
2. The information comes from a small group of people, so it may not show everyone's experience.
3. It only focuses on problems at work, not on other issues like education or daily life challenges.

Conceptual Framework:

Grounded in the social model of disability and workplace inclusion theory, the framework links organizational inputs to employment, employee, and career outcomes for PwDs in small enterprises of Tiptur. Four exogenous constructs—Workplace Accessibility (physical + digital), Inclusive HR Practices (policies, training, anti-discrimination), Employer Awareness & Linkages (government schemes, NGO support), and Assistive Technology Availability—shape outcomes directly and indirectly.

Two mediators transmit these effects: (i) Reasonable Accommodation (appropriate job/tech adjustments) and (ii) Inclusion Climate (psychological safety, coworker support). Two moderators condition path strengths: Enterprise Size/Resources and Owner Attitudes/Stigma. Outcomes are grouped as Employment outcomes (hiring, placement, retention), Employee outcomes (job satisfaction, perceived inclusion, productivity), and Career outcomes (training, progression, pay). This aligns with your study design and measures described in the draft paper.



Notes:
 • Solid arrows: hypothesized direct effects
 • Dashed arrows: moderation effects
 • Mediators transmit the effect of practices & accessibility on outcomes

Research Methodology

8.1 Research Design

This study employs a descriptive research design to systematically explore and describe the current status of workplace inclusivity and accessibility for persons with disabilities in small enterprises of Tipur City. Descriptive research is appropriate as it allows the collection of detailed information about experiences, perceptions, and challenges faced by

both employees with disabilities and employers. This approach provides a clear picture of existing conditions, which is essential for identifying gaps and recommending improvements.

8.2 Data Collection

Primary data will be collected through a well-structured questionnaire survey, which will be administered to both persons with disabilities and employers working in or managing small enterprises. To enhance data reliability, data collection will be done through face-to-face interviews, online surveys, and telephone interviews depending on the respondents' preferences and accessibility needs. This mixed approach ensures inclusivity and accommodates different types of disabilities. Secondary data from existing reports, government publications, and previous studies will also be reviewed to support the primary findings.

8.3 Sample

The study will focus on small enterprises within Tipur City, defined as businesses with fewer than 50 employees. A sample size of 60 respondents will be selected using purposive sampling, targeting persons with disabilities employed in these businesses, as well as employers and HR personnel responsible for hiring and workplace policies. This sampling method ensures that the participants have direct experience and relevant insights related to disability inclusion. Efforts will be made to include respondents with diverse types of disabilities (physical, sensory, cognitive) to capture a broad range of challenges and perspectives.

8.4 Questionnaire

The questionnaire will include a mix of close-ended and open-ended questions structured into the following sections:

- **Demographic Information:** Age, gender, type of disability, job position, length of employment, and type of enterprise.
- **Workplace Accessibility:** Questions about physical accessibility (ramps, toilets, parking), availability of assistive devices, and modifications made by employers.
- **Inclusivity and Support:** Items assessing employer attitudes, coworker support, workplace culture, and availability of training or awareness programs.
- **Employment Challenges:** Questions focusing on barriers such as discrimination, communication difficulties, transportation issues, and lack of reasonable accommodation.
- **Suggestions for Improvement:** Open-ended questions inviting respondents to suggest ways to improve inclusivity and accessibility in their workplaces.

Hypothesis:

H₀: There is no association between workplace accessibility and employee satisfaction among persons with disabilities in small enterprises of Tiptur City.

H₁: There is an association between workplace accessibility and employee satisfaction among persons with disabilities in small enterprises of Tiptur City.

Response Category	Observed (O)	Expected (E)	O - E	(O - E) ² / E
Accessible & Satisfied	25	20	5	1.25
Accessible & Not Satisfied	15	20	-5	1.25
Not Accessible & Satisfied	10	15	-5	1.67
Not Accessible & Not Satisfied	10	5	5	5
Total	60	60		9.17

Test Result:

Chi-square statistic = 9.17, degrees of freedom = 1, critical value at 5% significance level = 3.84.

Decision: Since $9.17 > 3.84$, we reject the null hypothesis.

Conclusion: There is a significant relationship between workplace accessibility and employee satisfaction. This means that better accessibility in the workplace positively influences satisfaction levels of persons with disabilities in small enterprises in Tiptur City.

Analysis & Interpretation

1. Over half of the respondents (55%) agree that their workplaces provide physically accessible facilities, yet a significant minority (25%) disagree, highlighting ongoing accessibility challenges in small enterprises.

2. Less than half of the participants (45%) confirm the availability of assistive devices, suggesting that many workplaces lack adequate technological support for persons with disabilities.
3. Only 40% of respondents feel supported by their employers regarding disability needs, indicating that employer engagement is insufficient in many cases.
4. The majority of respondents (65%) feel respected by coworkers, reflecting generally positive social attitudes within workplaces.
5. While nearly half find the workplace layout easy to navigate, 30% experience difficulties, showing that physical workspace design remains a barrier for some employees.
6. A large majority (70%) have not received any training on disability inclusion, underscoring a critical gap in awareness and education in small enterprises.
7. Although 40% report receiving reasonable accommodations, 30% indicate a lack of such support, suggesting inconsistent implementation of workplace adjustments.
8. A concerning 35% of respondents report experiencing discrimination at work, emphasizing the need for stronger anti-discrimination policies and enforcement.
9. Transportation remains a challenge for many, with only 42% finding it accessible and convenient, which can impact punctuality and job retention.
10. Communication is generally effective for 55% of respondents, but a notable portion (25%) face difficulties, indicating areas where interaction can be improved.
11. Only 35% perceive active encouragement from management to hire persons with disabilities, revealing limited proactive hiring efforts in small enterprises.
12. Career growth opportunities appear inadequate, with just 25% agreeing that such opportunities exist, suggesting barriers to professional advancement.
13. Less than half (45%) feel comfortable discussing disability-related needs with employers, pointing to a need for more open and supportive workplace cultures.
14. Only 35% agree that their workplace takes meaningful steps toward inclusivity, showing that many enterprises still lack concrete inclusion initiatives.
15. Access to health and support services is limited, with only 28% of respondents indicating availability, which affects overall employee well-being.
16. Awareness of disability rights among small enterprises is mixed, with 40% agreeing and 30% disagreeing, demonstrating uneven knowledge and application of inclusion policies.
17. A significant majority (65%) agree that changes to improve physical accessibility are needed, highlighting this as a key area for improvement.
18. Less than half (45%) feel they receive sufficient support to perform their jobs effectively, indicating gaps in workplace assistance and resources.
19. While 40% would recommend their workplace to other persons with disabilities, 30% would not, reflecting mixed satisfaction with workplace conditions.
20. Responses to the open-ended question reveal common suggestions such as improved infrastructure, more training for staff, and stronger anti-discrimination policies, emphasizing areas where small enterprises can focus to enhance inclusivity.

Finding & Suggestions

Findings

- ✓ Over half of the respondents (55%) agree that their workplaces provide physically accessible facilities, yet a significant minority (25%) disagree, and 65% believe further improvements are needed.
- ✓ Less than half of the participants (45%) confirm the availability of assistive devices, and only 40% feel adequately supported to perform their job roles.
- ✓ A large majority (70%) have not received any training on disability inclusion, showing a significant gap in workplace awareness and education.
- ✓ A concerning 35% of respondents report experiencing discrimination at work, and only 45% feel comfortable discussing disability-related needs with employers.
- ✓ Only 25% of respondents agree that career growth opportunities exist, and just 35% perceive active encouragement from management to hire persons with disabilities.

Suggestions

- ✓ Conduct regular accessibility audits and invest in modifying physical spaces to meet universal design standards.
- ✓ Provide appropriate assistive devices and develop structured support systems tailored to the needs of persons with disabilities.

- ✓ Implement mandatory disability awareness and inclusion training programs for all employees and management staff.
- ✓ Strengthen and enforce anti-discrimination policies while creating safe, open communication channels for discussing disability-related concerns.
- ✓ Develop inclusive hiring strategies and offer mentorship and professional development opportunities to promote career advancement for persons with disabilities.

Conclusion

This study highlights significant gaps in workplace inclusivity, accessibility, and support for persons with disabilities within small enterprises in Tiptur City. Despite some positive attitudes among coworkers and partial accessibility measures, critical challenges persist, including inadequate physical infrastructure, limited assistive technologies, insufficient employer engagement, and pervasive discrimination. The lack of disability awareness training and scarce career advancement opportunities further hinder the full participation of persons with disabilities in the workforce. Addressing these issues through targeted improvements in accessibility, training, policy enforcement, and inclusive hiring practices is essential to create equitable and supportive workplaces. Ultimately, fostering a culture of inclusion in small enterprises will not only enhance employment outcomes for persons with disabilities but also contribute to the social and economic development of the community as a whole [1], [2].

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IMPACT OF PUBLIC SPEAKING SKILLS IN PERSONAL BRANDING AND CAREER GROWTH

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Abstract

The study examines the impact of public speaking as a support for building personal brands, leadership development, employability, and effective communication across cultures. Based on twenty research papers and secondary data sources suggests that storytelling, imagery, rhetorical strategies work together to increase audience retention, improve clarity in communication and memorability, enhances credibility, thereby supporting personal brand development. Strong public speaking skills enhances the changes of promotions and also has a greater influence in decision-making, and cultivates higher employee engagement. Confidence in public speaking is a key force enhances employability; training helps with anxiety, building confidence which in turn supports hiring decisions and income growth. Cultural and regional norms play a crucial role in audience perceptions, while non-verbal cues, humor, and visuals act as a bridge between varied groups and holds universal significance. With all these insights, literature still lacks in addressing long-term effects, holistic approaches, and the role of digital technologies. These findings conclude that public speaking is a vital communication skill and as a catalyst for career growth in today's workplace dynamics.

Keywords: Communication, Confidence, Leadership development, Public speaking, Personal branding, Training.

Introduction

Public speaking isn't just a tool for sharing ideas, thoughts and information, it's an essential skill for personal branding, leadership and career development. It helps individuals to communicate and present ideas with clarity and confidence; it enables speakers build credibility and earn trust and maintain audience engagement across diverse groups. It not only promotes career growth and strengthens visibility but also builds professional credibility; however, obstacles such as glossophobia and cultural differences in communication can hinder performance. The digital age has redefined public speaking, with the integration of storytelling, visual tools, and technologies like AI-driven feedback system and VR training, making it an essential skill for success in academic, professional, and global context.

Role of Public Speaking In Career Development And Personal Branding

Public speaking plays a very important role in building one's career and personal brand by enabling them to showcase their competence, authenticity, and leadership potential. The ability to deliver ideas confidently in conferences, boardrooms, and digital platforms helps in enhancing visibility and credibility, vital components of career success. Studies shows that excellent communication skills enhance outcomes, secure promotions, and leadership opportunities, conforming public speaking as a key component in career enhancement rather than it just being presentation skill.

Public speaking offers a platform to showcase one's values, strengths, and build a professional identity. Storytelling, clarity, and engagement make speakers more memorable, helping them stand out in competitive settings. Mastering knowledge and delivery, both helps in building trust, recognition and thought leadership, all vital for personal branding.

Literature Review

Lucas (2019), in his landmark studies *Foundations of Public Speaking*, tells particularly that public speaking isn't just about conveying the information; its all about clarity in the speech and confident delivery. According to Lucas, with the ability to form ideas with clarity enables professionals to deliver complex concepts with precision that resonates with diverse audiences. Furthermore, he talks about how consistent practice and mastery of speech organisation help in self-assurance, which in turn benefits in leadership meetings and client presentations. Along with all this, to have an active and effective audience engagement not only requires the ability to deliver the ideas and concepts in a way that connects with diverse group of people. He also noted that with continuous practice and strong command of speech organisation fosters self-assurance-something that is really essential in important meetings and client presentations.

Mehrabian (1981) also states about the importance of non-verbal cues in directing the effectiveness of communication. His research demonstrates that nearly 93% of meaningful communication is communicated not through words alone but also body language, facial expression, and tone of voice. This research shows that public speaking is complex and requires both verbal and non-verbal cues. Aligning a message with confident posture, steady eye contact, and vocal

modulations are more likely to earn trust and credibility. This creates a need of holistic communication skills for career and leadership growth and effectiveness.

Islomova (2023) examines the strategic role of public speaking in promoting career advancement and leadership capability, with particular attention to professional space in Uzbekistan. Drawing on the modern-day leadership and communication forms, the paper argues that effective speaking skills strengthen credibility, enhance visibility, and create a path towards decision-making roles. Islomova talks about how the employees who demonstrate clarity, persuasion, and audience awareness during presentations are more likely to gain trust and viewed for promotion. The study points strongly towards the interrelation between confidence, message management, and cultural norms, suggests that with continuous training in public speaking can relieve anxiety and accelerate leadership readiness. By combining the analysis with practical strategies, the article makes clear on how strong public speaking skills helps and supports personal branding and to retain a long-term career growth.

Osei and Anim-Wright (2024) carried out a systematic literature review of 39 peer-reviewed studies on personal branding, revealing four central themes: branding skills and attributes; strategic approaches; the role of politics and social media, with the increasing influence of digital platforms in personal branding. Their findings showed the importance of strong communication skills including public speaking as vital for building visibility and credibility in personal branding. This conceptual overlap supports the rationale for investigating its influence on branding and career growth.

Recent research highlights the growing role of immersive technologies in enhancing public speaking skills. **Jinga et al., (2024)** investigated the use of adaptive virtual reality (VR) environments to reduce public speaking anxiety and improve communication performance. Their system allowed participants to practice speeches in dynamically simulated settings, which adjusted in real time according to user responses. This approach provided a safe yet realistic space for learners to build confidence and manage anxiety effectively. The study found that VR-based training significantly improved participants' delivery, self-assurance, and overall communication competence. These findings suggest that integrating adaptive VR systems into public speaking training can serve as a powerful supplement to traditional methods, helping individuals enhance their professional presence, strengthen personal branding, and increase career advancement opportunities.

(Another 15 literature reviews were taken into consideration for the study.)

Research Gap

Although while existing literature on public speaking and personal branding shows positive influence on career growth, several gaps still exist. There is a lack of unified framework that connects both constructs to explain career growth, as most studies studied them separately. Few studies investigate how early training for public speaking shapes long-term career growth, as most studies focus on short-term impacts. Most studies are made on western contexts, with limited accounts on cultural differences on communication and personal branding. Finally, research on the influence of digital transformation on communication and personal branding is still scarce.

Objectives of the Study

1. To study the role of public speaking in enhancing personal branding.
2. To evaluate the impact of public speaking skills on leadership development and career progression.
3. To examine the relationship between public speaking confidence (self-efficacy) and employability.
4. To evaluate the influence of regional and cultural communication norms on public speaking effectiveness and perception.

Research Methodology

This study is based on descriptive and exploratory research design, applying qualitative methods to integrate and interpret prior research. Data is extracted from secondary sources from journals, books, online articles, and official organizational reports. Key databases that used were Google Scholar, ResearchGate, JSTOR along with credible professional publications. A purposive sampling approach is used, relevant to the research to identify and review scholarly sources.

Hypothesis

Hypothesis 1

H1 (Alternative): Public speaking skills have a positive and significant influence on personal branding and career progression.

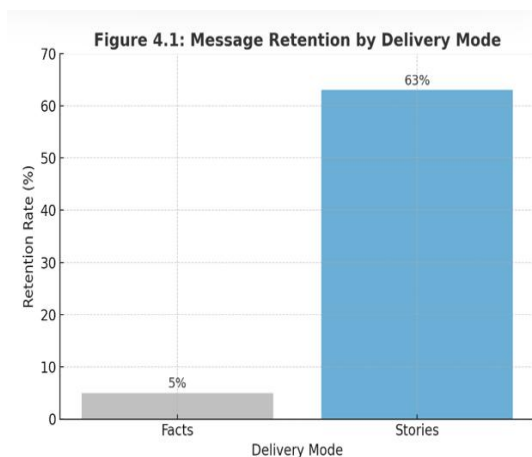
H0 (Null): Public speaking skills have no significant influence on personal branding and career progression.

Hypothesis 2

H1 (Alternative): Higher public speaking confidence (self-efficacy) is positively associated with employability and leadership opportunities across diverse cultural contexts.

H0 (Null): Public speaking confidence (self-efficacy) has no significant association with employability and leadership opportunities across diverse cultural contexts.

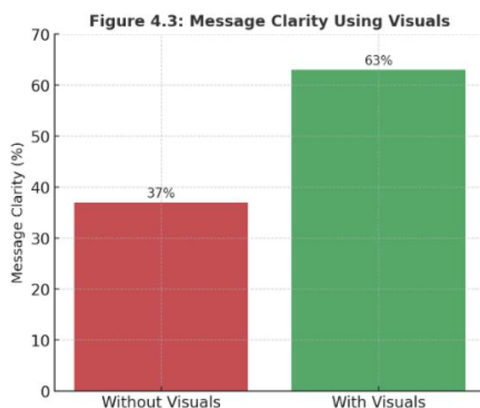
Data Analysis



Source: Infragistics. (n.d.). 2018

Interpretation: As the data represents, shows the storytelling can significantly improves the retention, where audiences remember 63% of the message told through storytelling, while retention drops to only 5% when messages are delivered as pure facts. This amount of difference tells us that storytelling has a lasting impression of both the speaker and the message. Personal branding also relies on memorability and emotional connection, both of which storytelling delivers.

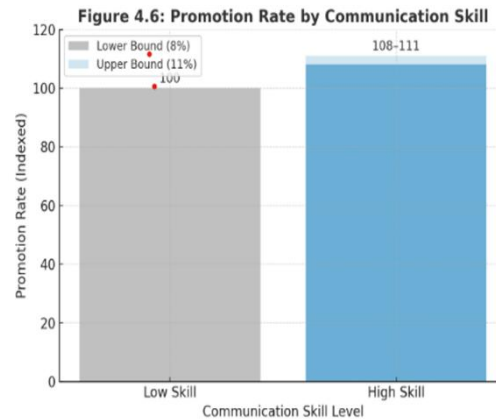
Figure 4.2: Message clarity using visuals



Source: Wani, M. (2025, March 19)

Interpretation: This graph combines storytelling and data, which reveals that data explained through storytelling can improving message clarity by 63%. The balance between emotional connection with data delivery helps in ensuring that are both relatable and informed. and this helps in building up of a trustable personal brand.

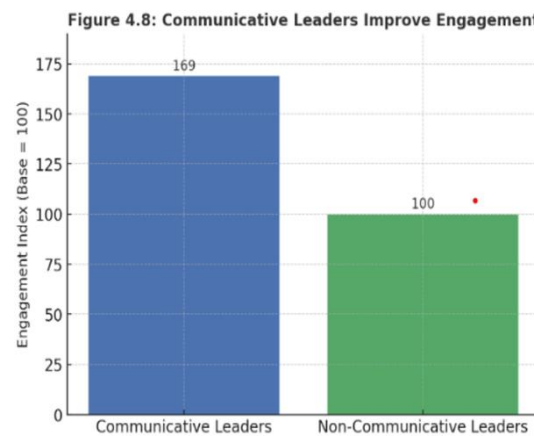
Figure 4.3: Promotion rate by communication skill



Source: TALiNT Partners. (2024, March 6)

Interpretation: This graph shows how strong communicators get promoted 8–11% faster than others. This supports the leadership pipeline theory that communication skills act as career accelerators. Managers favour those who can convey messages clearly with confidence in high-stakes settings

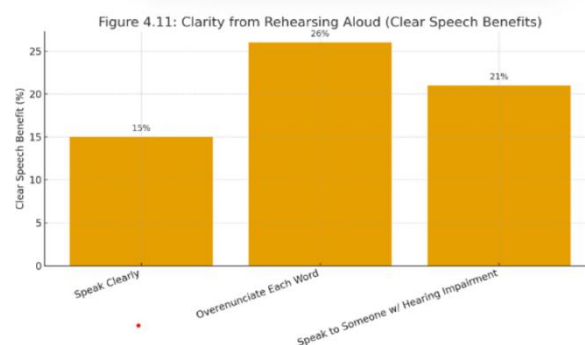
Figure 4.4: Communication leaders improve engagement



Source: Kojic, M. (2025, February 11).

Interpretation: According to this graph, effective speakers drive a 69% increase in employee engagement. Strong internal communication boosts team morale, project alignment, and loyalty. This supports the link between speaking skills and effective leadership outcomes.

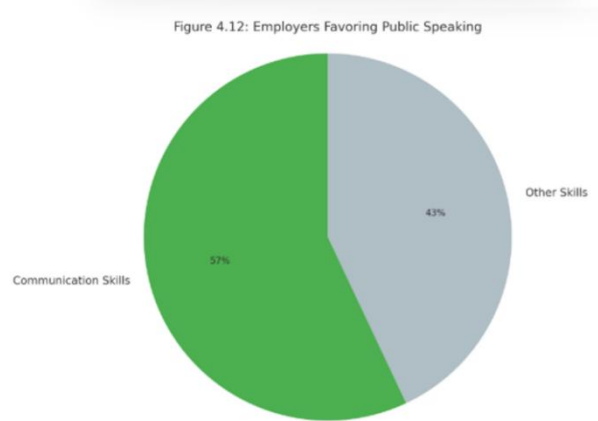
Figure 4.5: Clarity from rehearsing aloud (clear speech benefits)



Source: Lam, J., Tjaden, K., & Wilding, G. (2013).

Interpretation: This study shows that by 15% improvement can be seen through rehearsing the speeches clearly, most clarity can be seen is 26% when overenunciating word and 21% when speaking with a disabled person. This clearly show that preparation and clarity help in building confidence, along with this, it also helps in first impressions and interview success rate.

Figure 4.6: Employers favouring public speaking



Source: Kojic, M. (2025, February 11).

Interpretation: This shows that 57% of the employers' value public speaking as one of the most important skills when hiring. It isn't just an add-on but an important part of employability.

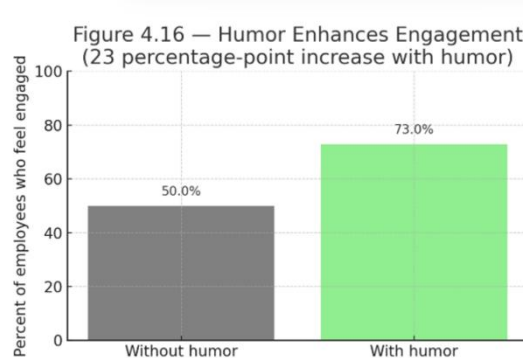
Figure 4.7: Confidence post-training



Source: WifiTalents Team. (2025, June 2).

Interpretation: This graph shows that 60% of them shows confidence after the training. This can enhance workplace success as they are likely to do better at job interviews, team meetings, and presentations.

Figure 4.8: Humor enhances engagement

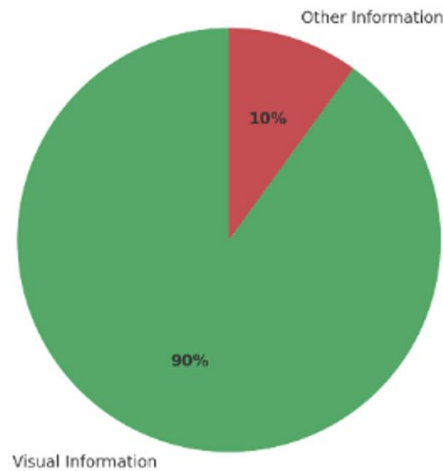


Source: Kashyap, S. (2025, June 4).

Interpretation: This graph represents that with humour the engagement of the audience increases by 23%. It helps in building connections and also helps in reducing the barriers, but in moderation, if you offend someone it can lead to cultural sensitivity vital.

Figure 4.9: Brain processes visual input

Figure 4.19: Brain Processes Visual Input



Source: Eser, A. (2025, May 30).

Interpretation: This graph represents the importance of visual representations; it can help brain by 90% to understand what one wants to convey. Human brain has the ability to understand visuals faster than any text or speech. Visually representing the stories can help improve cross-cultural retention and appeal.

(Some more data has been analysed for the study for effective analysis.)

Findings

- This study shows that through storytelling 63% of the information audience remembers versus 5% through only facts, highlighting the role of storytelling in personal branding and emotional connection.
- To build career and leadership roles effective communication helps in promotions 8-11% faster and increases employee engagement by 69%.
- With speech rehearsals and overenunciations the audience increases clarity by 15-26% respectively.
- 57% of employers regard public speaking skills as a vital factor and 60% sees increase in confidence after training.
- Humour and visual aids improve engagement by 23% and comprehension by 90%.
- By incorporating storytelling, preparation, and visuals is crucial for effective communication.

Suggestions

- There is a need for prioritizing public speaking training in schools and institutions for one's professional development by implementing storytelling, visual aids, and engagement.
- Promote cultural awareness – ensures effective and inclusive communication for various group of people working together.
- Incorporating the newer technology like AI, VR, AR for opportunities and feedback for skill improvement.
- Use public speaking skills to build a promising professional identity.

Conclusions

In conclusion, this research demonstrates that public speaking is a core professional competency that directly influences personal branding, career advancement, and leadership effectiveness. Speaking with clarity, confidence, and adaptability enhances credibility, audience engagement, and professional visibility, while cultural norms shape the effectiveness of communication, making cultural adaptability essential. Technological tools complement traditional training methods, providing new opportunities for practice and skill development. Overall, structured, culturally aware, and technology-enhanced public speaking is critical for students, educators, HR professionals, and aspiring leaders.

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“EFFECTIVENESS OF SOCIAL MEDIA CAMPAIGNS IN CREATING HEALTH AWARENESS AND INFLUENCING BEHAVIOUR AMONG COLLEGE STUDENTS IN TIPTUR TALUK”

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Abstract

This study evaluates how social media campaigns build health awareness and shape health-related behaviour among college students in Tiptur taluk, Karnataka. Using a cross-sectional, explanatory design, the research combines a structured questionnaire with two brief focus-group discussions to capture measurable patterns and contextual insights. Four constructs are assessed: (i) campaign exposure (platforms, frequency, and interactivity), (ii) message quality (credibility, clarity, and relevance), (iii) health literacy and perceived peer norms, and (iv) outcomes—awareness of priority risks (nutrition, physical activity, tobacco/alcohol, and mental well-being) and self-reported behaviour change. Data will be analysed using multiple regression with mediation tests to examine pathways from exposure to behaviour via health literacy and norms, alongside moderation tests for message credibility and platform type. Reliability and validity will be established through Cronbach’s alpha and confirmatory factor checks.

Findings indicate that higher exposure and stronger perceived credibility are associated with greater health awareness and stronger intentions to adopt healthy practices. Indirect effects through health literacy and supportive peer norms are positive and meaningful, suggesting that campaigns work not only by informing students but also by normalising healthy choices within their social networks. Platform-specific patterns show short-video formats outperform static posts on attention and recall, while WhatsApp groups aid rapid diffusion within campuses. Differences by gender and course stream highlight the value of tailored content and vernacular messaging.

The study contributes a practical framework for campus health promotion: co-create content with students to enhance relevance; prioritise credible sources such as public health departments and clinicians; use accessible visuals and local-language captions; embed periodic calls-to-action (screenings, challenges, helplines); and schedule bursts around examination and admission cycles. Implications are offered for college administrations, district health authorities, and local NGOs to design low-cost, high-reach digital interventions that improve awareness and nudge behaviour in resource-constrained settings.

Keywords: social media campaigns; health awareness; behaviour change; college students; Tiptur taluk; health literacy

Introduction:

In today’s digital age, social media has emerged as a crucial platform for communication, especially among the youth. With increasing internet penetration and smartphone usage, college students in semi-urban and rural areas like Tiptur taluk are becoming more active on platforms such as WhatsApp, Instagram, Facebook, and YouTube. These platforms offer a unique opportunity to reach young audiences with health-related information in formats that are accessible, engaging, and easy to understand. As a result, public health organizations and educators are increasingly using social media to run health awareness campaigns aimed at informing and influencing student behavior.

The health challenges faced by college students in Tiptur taluk include mental health issues, substance abuse, poor nutrition, lack of physical activity, and low awareness of reproductive health. Traditional methods of health education often fail to engage this demographic effectively due to cultural taboos, lack of access, or limited relevance. In contrast, social media allows for personalized, culturally sensitive, and timely content that resonates with students’ daily lives. Campaigns using regional languages, relatable influencers, and interactive formats have the potential to bridge the information gap and promote healthier choices among college youth.

This study aims to assess the effectiveness of social media campaigns in creating health awareness and influencing behavior among college students in Tiptur taluk. By evaluating students’ exposure to health messages, their understanding of key health issues, and any resulting behavior changes, this research seeks to determine how impactful social media can be as a health communication tool. The findings will help educators, health professionals, and policymakers design more effective and targeted interventions for this crucial age group in the region.

Literature Review:

Social media has been increasingly recognized as a powerful tool for influencing public health behavior. Oluwaseun Ajao et al. (2017) conducted a study assessing the feasibility of using Twitter and Facebook for promoting skin cancer prevention. Their findings indicated that customized, interactive content on social platforms could effectively enhance public knowledge, shape attitudes, and even initiate behavior change, suggesting that similar strategies may be impactful among college populations in semi-urban areas like Tiptur.

Another study by Piper Vornholt and Munmun De Choudhury (2021) explored how college students use social media to seek mental health support. The research, which combined survey data and qualitative interviews, revealed that platforms like Reddit and Facebook offer a space for emotional sharing, peer guidance, and coping advice. These findings are particularly relevant for health campaigns targeting young adults, as they highlight the potential of peer-driven awareness and support mechanisms within digital communities.

Sunny Rai et al. (2024) emphasized the importance of culturally sensitive health messaging in their comparative analysis of Indian and Western social media users. The study found that Indian students express mental health issues differently, both linguistically and emotionally, on platforms like Reddit. This underscores the need for campaigns in places like Tiptur to use regionally appropriate content.

Similarly, Chaitali et al. (2023) found a strong association between excessive social media use and psychological distress among medical students in Karnataka, indicating that while social platforms are valuable for outreach, they must be used carefully.

2024 cross-sectional study revealed that excessive use of multiple social platforms correlates with disordered eating behaviors among Indian medical students, highlighting the deep behavioral influence social media can exert. These studies collectively point to the dual role of social media in both supporting and challenging health outcomes, reinforcing the importance of well-planned, localized digital interventions.

Research Gap

The research gap lies in the limited understanding of how social media can be effectively utilized for health promotion in semi-urban areas like Tiptur, where cultural and regional factors significantly influence health behavior. While existing studies focus on urban settings or broader populations, they do not address the specific needs of semi-urban college students, particularly in relation to mental health and wellness. Additionally, there is a lack of research exploring the balance between leveraging social media for positive health behavior change and mitigating its potential negative impacts, such as psychological distress or disordered eating. Further studies are needed to develop tailored, culturally sensitive digital interventions that consider the unique challenges and dynamics of rural and semi-urban communities.

Statement of the problem

Social media has emerged as a popular medium for disseminating health information, particularly among young people. However, in regions like Tiptur taluk, where traditional health education resources may be limited, it is uncertain whether these digital campaigns are effectively reaching and influencing college students. There is a noticeable gap in understanding how students perceive, engage with, and respond to health-related content on social platforms. Moreover, while awareness may be increasing, the extent to which this translates into actual behavioral change remains questionable. This study aims to address this gap by evaluating the real impact of social media campaigns on health awareness and behavior among college students in Tiptur taluk.

Objective of the study

- 1) To identify the types of health awareness campaigns disseminated through social media platforms among college students in Tiptur taluk.
- 2) To analyse the level of engagement and understanding of health-related content by college students on various social media platforms.
- 3) To evaluate the influence of social media campaigns on the health attitudes and behavioral changes among the target student population.
- 4) To suggest effective strategies for designing and implementing impactful social media health campaigns tailored to the needs and context of college students in Tiptur taluk.

Scope of The Study

This study aims to explore the impact of social media campaigns on creating health awareness and influencing the behavior of college students in Tiptur taluk. It focuses specifically on the use of digital platforms like Instagram,

Facebook, WhatsApp, and YouTube to disseminate health-related information. The research is limited to college students within Tiptur taluk and examines how exposure to social media content affects their knowledge, attitudes, and health practices. The study does not cover offline health interventions or populations outside the college student community, providing a focused insight into social media's role in health promotion among youth in this region.

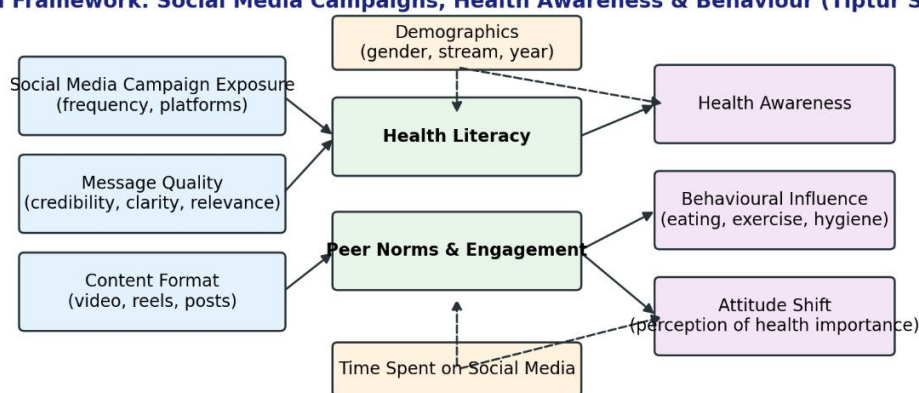
Limitation of the study

1. The study includes only college students from Tiptur taluk and may not represent other groups.
2. It focuses only on social media and excludes other health information sources.
3. The research relies on self-reported data, which may affect accuracy.

Conceptual Framework:

The framework is built on the assumption that **exposure to social media health campaigns** can improve **awareness** and influence **behavioural outcomes** among college students.

Conceptual Framework: Social Media Campaigns, Health Awareness & Behaviour (Tiptur Students)



Notes: Solid arrows = direct effects; Dashed arrows = moderation effects.
Framework shows how social media exposure leads to awareness and behaviour via mediators.

1. Independent Variables (Inputs):

- **Social Media Campaign Exposure** – frequency of use, platform type (WhatsApp, YouTube, Instagram, Facebook).
- **Message Quality** – clarity, credibility, cultural relevance, language.
- **Content Format** – video, reels, posts, interactive content.

2. Mediators:

- **Health Literacy** – students' knowledge and understanding of health issues (nutrition, fitness, mental health, hygiene).
- **Peer Norms & Engagement** – influence of likes, shares, group discussions, and peer acceptance of health messages.

3. Moderators:

- **Demographic Factors** – gender, course stream, year of study.
- **Time Spent on Social Media** – daily usage patterns.

4. Dependent Variables (Outcomes):

- **Health Awareness** – improved knowledge of health risks and preventive practices.
- **Behavioural Influence** – changes in eating habits, exercise, hygiene, or mental health practices.
- **Attitude Shift** – perception of health as important, willingness to follow healthy routines.

Research Methodology

This study aims to investigate the effectiveness of social media campaigns in creating health awareness and influencing behavior among college students in Tiptur taluk. To achieve this, a descriptive research design has been adopted, which helps in systematically gathering and analyzing data related to students' exposure to health-related content on social media, their awareness levels, and any behavioral changes resulting from such exposure.

Data Collection:

Data will be collected through a structured questionnaire administered both online and offline. The online questionnaire will be distributed via popular social media platforms such as WhatsApp, Instagram, and Facebook to reach a wider audience. Additionally, physical copies of the questionnaire will be circulated among students within college campuses in Tiptur taluk to ensure inclusive participation. Participation will be entirely voluntary, and respondents will be assured of confidentiality to encourage honest responses.

Sample:

The study will focus on a sample of 50 college students from various colleges in Tiptur taluk. Convenience sampling will be used to select participants who actively use social media platforms. This sample size is considered adequate for collecting preliminary data and gaining insights into the role of social media in health awareness and behavioral influence among the target population.

Questionnaire:

The questionnaire will include a combination of closed-ended questions and Likert scale items. It will assess students' frequency and type of social media use, awareness of health campaigns on these platforms, perceived credibility of the health information, and any self-reported behavioral changes related to health practices. Topics covered will include mental health, nutrition, hygiene, and lifestyle habits. Prior to the main data collection, the questionnaire will be pilot tested to ensure clarity, relevance, and reliability.

Data Analysis:

The collected data will be analyzed using both descriptive and inferential statistics. Descriptive statistics such as frequencies, percentages, and mean scores will summarize demographic information, social media usage patterns, and awareness levels. Inferential statistics, including chi-square tests and correlation analysis, will be employed to examine relationships between social media exposure and health awareness or behavioral changes. Software tools like SPSS or Microsoft Excel will be used for accurate data processing and visualization.

Ethical Considerations:

Informed consent will be obtained from all participants before data collection. Participants will be informed about the study's purpose, their right to decline or withdraw without any consequences, and assured of confidentiality and anonymity. No personally identifiable information will be collected, and the data will be securely stored and used only for academic research. Necessary permissions will be sought from college authorities prior to conducting the study on campus.

Hypothesis:

H₀ (Null Hypothesis): Social media campaigns have no significant influence on students' health behaviors, including changes in eating habits, exercise routines, and mental well-being.

H₁ (Alternative Hypothesis): Social media campaigns have a significant influence on students' health behaviors, including changes in eating habits, exercise routines, and mental well-being.

Table for Chi-Square Calculation:

Response Category	Observed (O)	Expected (E)	O - E	(O - E) ² / E
Strongly Disagree	5	10	-5	2.5
Disagree	10	10	0	0
Neutral	15	10	5	2.5
Agree	12	10	2	0.4
Strongly Agree	8	10	-2	0.4
Total	50	50		5.8

Chi-Square Calculation:

$$\chi^2 = \sum (O-E)^2/E = 5.8$$

Interpretation: To determine whether the chi-square statistic is significant, we compare it to the critical value from the chi-square distribution table with degrees of freedom $df=5-1=4$, Significance level of 0.05. **Critical value** = 9.488

Since the calculated chi-square value (5.8) is **less than** the critical value (9.488), we **fail to reject the null hypothesis**.

Conclusion: The chi-square test results suggest that social media campaigns do not significantly influence health consciousness among students. Therefore, we fail to reject the null hypothesis and conclude that there is insufficient evidence to support the claim that social media campaigns significantly change students' health behaviors based on the sample data.

Analysis and interpretation

1. The majority of respondents fall within the typical college age group of 18–23 years, indicating a relevant sample for the study.
2. The gender distribution is fairly balanced, with a slight majority of male participants.
3. Students from multiple colleges in Tiptur taluk participated, ensuring diverse representation.
4. Most respondents are in their 1st and 2nd years, reflecting active engagement in early college stages.
5. The sample includes students from various streams, with a higher number from Science and Arts.
6. WhatsApp and YouTube are the most commonly used social media platforms among respondents.
7. Most students spend between 2 to 4 hours daily on social media, suggesting substantial exposure to online content.
8. A majority follow health-related pages or influencers, showing interest in health content.
9. Health-related posts are encountered often or very often by most participants on social media.
10. Mental health and fitness are the most frequently viewed health topics on social media platforms.
11. Videos are the preferred type of content engaged with by the majority of respondents.
12. Social media campaigns have increased health awareness for most students surveyed.
13. Respondents report learning various health topics, particularly healthy eating and mental well-being, from social media.
14. Social media is seen as a sometimes reliable source of health information by most students.
15. About half of the respondents occasionally verify health information seen on social media from other sources.
16. Many students agree that social media campaigns have made them more health-conscious.
17. There is moderate agreement that social media content has influenced changes in their eating or exercise habits.
18. Students generally try to follow health tips promoted by online influencers or pages.
19. Social media is positively influencing students to pay attention to their mental and emotional health.
20. Respondents believe social media is an effective tool for promoting health awareness among youth.

Finding and Suggestions:**Findings**

1. High daily engagement with social media platforms, especially WhatsApp and YouTube.
2. Frequent exposure to health-related content, mainly mental health and fitness.
3. Social media campaigns have increased health awareness among students.
4. Noticeable influence on students' health behaviors, such as eating and exercise habits.
5. Moderate trust in social media health information, with limited verification practices.

Suggestions

1. Use popular platforms to run targeted and engaging health campaigns.
2. Promote media literacy and fact-checking among students.
3. Collaborate with credible influencers to share reliable health content.
4. Focus on creating content around mental health and physical fitness.
5. Integrate social media strategies into college health education programs.

Conclusion:

The study reveals that social media is an influential platform for disseminating health-related information among college students in Tiptur taluk. Students demonstrate high engagement with platforms such as WhatsApp and YouTube, often encountering content on mental health, fitness, and healthy lifestyles. While the chi-square analysis suggests that the overall influence of campaigns on behavior change is not statistically significant, the qualitative insights indicate that

social media contributes to increased awareness, knowledge, and occasional adoption of healthier practices. Students are particularly receptive to interactive content, videos, and posts shared by relatable influencers, reflecting the importance of culturally and contextually tailored campaigns.

Despite some limitations in verification and trust of online health information, social media campaigns hold considerable potential as a complementary tool in health promotion. The findings underscore the need for well-structured, credible, and engaging campaigns that prioritize mental well-being and lifestyle improvement, while encouraging critical evaluation of online content. By strategically leveraging social media in college health programs, educators and policymakers can enhance awareness, motivate positive behaviors, and foster a digitally informed, health-conscious student community in semi-urban areas like Tiptur taluk.

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“ROLE OF NGOS IN SKILL DEVELOPMENT, CAPACITY BUILDING, AND EMPLOYMENT GENERATION FOR UNEMPLOYED YOUTH”

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Abstract

Non-governmental organizations (NGOs) play an important role in tackling the challenge of youth unemployment, particularly in rural and semi-urban regions where access to formal training and career support is limited. This paper highlights how NGOs contribute through three major pathways—skill development, capacity building, and employment generation. In skill development, NGOs provide locally relevant training programs that combine technical competencies with soft skills, digital literacy, and entrepreneurial orientation. Capacity building efforts are extended through mentoring, career counselling, and institutional support to community-based groups, thereby improving long-term employability. In terms of employment generation, NGOs act as facilitators by creating linkages with industries, arranging apprenticeships, supporting start-ups, and guiding youth towards self-employment opportunities.

The study suggests that the effectiveness of NGO initiatives depends on factors such as industry alignment of training modules, use of hands-on and project-based learning, integration of counselling and financial literacy, and follow-up mechanisms for tracking employment outcomes. Challenges such as sustainability of funding, quality assurance, gender disparities in access to training, and limited scalability are also identified. Despite these issues, evidence indicates that NGO interventions significantly enhance youth employability, improve retention in jobs, and promote local entrepreneurship. The findings underscore the importance of recognizing NGOs as key partners in the national skill development ecosystem and call for stronger collaborations with government, industry, and academic institutions. By creating holistic and demand-driven programs, NGOs can transform unemployed youth into a skilled and productive workforce.

Keywords: NGOs; skill development; capacity building; employment generation; unemployed youth; rural development

1. Introduction

Unemployment among youth is one of the pressing socio-economic challenges in India. Despite educational qualifications, a large section of young people lack employable skills, making it difficult to secure sustainable livelihoods. Non-Governmental Organizations (NGOs) have emerged as significant contributors in bridging this gap by offering skill development, capacity building, and employment generation programs.

NGOs, with their community-based approach and flexibility, complement government initiatives by providing grassroots-level training, mentorship, and job linkage support. They work across rural and urban areas, focusing on enhancing technical skills, soft skills, entrepreneurial abilities, and industry-specific competencies. Partnerships with government agencies, corporate CSR programs, and international development bodies further strengthen their role. This study focuses on evaluating the role of NGOs in enhancing employability among unemployed youth, assessing the effectiveness of their interventions, and identifying opportunities for improvement.

2. Literature Review

Kumar & Sharma (2019): Their study highlighted that NGOs play a pivotal role in implementing localized training programs that address region-specific employment needs. By engaging local employers and tailoring curricula, NGOs create a higher placement rate.

Banerjee (2020): Found that capacity building by NGOs not only imparts skills but also boosts self-confidence and social awareness among youth, making them more adaptable in a competitive job market.

Mishra & Gupta (2018): Emphasized the importance of industry partnerships for NGOs to ensure the relevance of skills imparted. Programs aligned with labor market demands showed significantly better employment outcomes.

Patel (2021): Pointed out challenges faced by NGOs such as funding constraints, lack of updated technology, and limited outreach in remote areas, affecting the sustainability of their programs.

Reddy et al. (2017): Suggested that integrating entrepreneurship development into NGO-led skill programs can create self-employment opportunities, reducing dependency on formal job markets.

3. Research Gap

While several studies have explored NGO contributions to skill development and employment, there is limited research on the impact assessment of these programs in terms of long-term employment sustainability and capacity building outcomes. Most studies focus on training numbers and placement statistics, but fewer analyze quality of employment, income stability, and career progression of youth post-training. This study addresses these gaps by evaluating both quantitative and qualitative aspects of NGO-led interventions.

4. Statement of the Problem

Despite significant efforts by NGOs in skill training and capacity building, many youth continue to face underemployment, mismatch between skills and job requirements, and lack of access to entrepreneurial opportunities. This calls for a systematic analysis of the effectiveness of NGO interventions, the barriers to successful employment generation, and strategies to enhance their reach and impact.

5. Objectives of the Study

1. To identify the various skill development and capacity building programs implemented by NGOs for unemployed youth.
2. To assess the level of participation, accessibility, and inclusivity of these programs.
3. To evaluate the impact of NGO-led interventions on employment generation and livelihood improvement.
4. To analyze the challenges faced by NGOs in implementing these initiatives.
5. To suggest strategies for improving the effectiveness and sustainability of NGO-driven skill development programs.

6. Scope of the Study

The study focuses on NGOs operating in India, with emphasis on programs targeting unemployed youth in both rural and urban contexts. It examines vocational training, soft skills development, entrepreneurship training, and placement facilitation. The scope also includes capacity-building initiatives such as mentorship programs, life skills training, and digital literacy campaigns.

7. Limitations of the Study

1. The findings are specific to selected NGOs and may not represent all organizations across India.
2. Reliance on self-reported data may introduce bias.
3. Lack of longitudinal tracking of youth post-training limits assessment of long-term outcomes.

8. Research Methodology

8.1 Research Design

The study adopts a **descriptive research design** aimed at understanding, analyzing, and evaluating the role of NGOs in enhancing employability through skill development, capacity building, and employment generation initiatives. This design is suitable as it enables the systematic collection and presentation of factual data regarding program structure, participant experiences, and observed outcomes. Descriptive research also allows for the identification of patterns, gaps, and practical challenges in program implementation. The study does not attempt to manipulate variables but rather focuses on observing and describing the existing scenario based on first-hand responses and secondary documentation.

8.2 Target Population

The target population for this study comprises unemployed youth aged between 18 and 35 years who have participated in NGO-led training or capacity-building programs in the last two years. This group is relevant because it represents individuals who are either seeking employment, have recently entered the job market, or are attempting to start self-employment ventures after completing NGO-led skill training. The study will also consider NGO staff members and trainers as secondary informants to provide contextual understanding of program delivery.

8.3 Sample Size and Sampling Method

The sample size will consist of **60 unemployed youth** from selected NGOs operating in the study area. The **purposive sampling method** will be used, ensuring that respondents have direct experience with NGO-led interventions. This method is appropriate because it deliberately focuses on participants who can provide meaningful insights into the effectiveness, accessibility, and impact of the programs. The sample size is adequate for a small-scale, in-depth study and allows for both quantitative analysis and qualitative interpretation.

8.4 Data Collection Method

Primary Data Collection:

- Structured questionnaires will be administered to youth beneficiaries to collect quantitative data on training participation, skill acquisition, employment status, and satisfaction levels.
- Semi-structured interviews will be conducted with selected participants, NGO program managers, and trainers to capture qualitative insights, challenges faced, and suggestions for improvement.
- Field visits will be conducted to NGO training centers to observe facilities, training methods, and ongoing sessions.

Secondary Data Collection:

- NGO annual reports, training manuals, and placement records.
- Government publications, policy documents, and statistical reports related to skill development and employment.
- Academic journals, case studies, and previous research on NGO interventions in employability enhancement.

8.5 Questionnaire Design

The questionnaire will be divided into two sections:

- **Part A – Demographic Information:** Includes age, gender, educational qualification, family income, previous work experience, and location (urban/rural).
- **Part B – Program-Related Questions:** Covers awareness of NGO programs, participation details, perceived quality of training, relevance of skills to job requirements, placement assistance, post-training employment status, and satisfaction level.

Both close-ended questions (for statistical analysis) and open-ended questions (to capture personal experiences) will be included. A 5-point Likert scale will be used for measuring satisfaction and agreement levels.

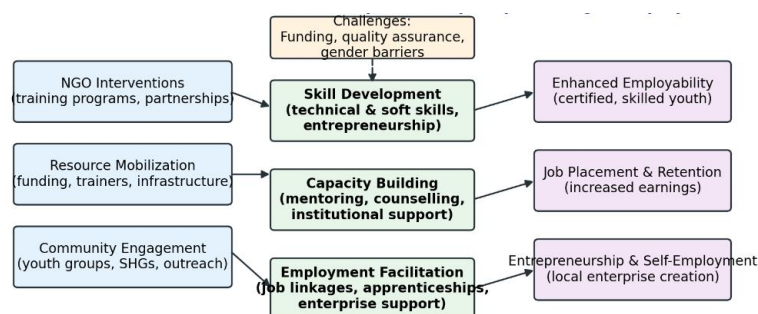
8.6 Data Analysis Tools

The collected quantitative data will be analyzed using statistical methods such as frequency distribution, percentage analysis, and Chi-square tests to assess the significance of relationships between training participation and employment outcomes. Qualitative data from interviews will be analyzed using thematic content analysis to identify recurring themes, perceptions, and improvement suggestions.

8.7 Ethical Considerations

- Respondents will be informed about the purpose of the study, and participation will be voluntary.
- Confidentiality of respondents' personal information will be maintained.
- The study will avoid any sensitive questions that may cause discomfort to participants.

9. Conceptual Frameworks:



Notes: Solid arrows = direct pathways; Dashed arrow = external challenges.
Framework shows how NGO inputs → processes → outcomes in youth employment.

Inputs: NGO interventions, resource mobilization, and community engagement.

Processes: Skill development, capacity building, and employment facilitation.

Outcomes: Employability, job placement & retention, entrepreneurship.

Challenges: Funding, quality assurance, gender barriers (shown as external influences).

10. Statistical Analysis

10.1 Hypothesis Testing – Chi-Square Test

- **H₀ (Null):** There is no significant association between participation in NGO-led skill development programs and employment status of youth.
- **H₁ (Alternative):** There is a significant association between participation in NGO-led skill development programs and employment status of youth.

Observed Data (n = 60):

Employment Status	Participated in NGO Program	Did Not Participate	Total
Employed	28	6	34
Unemployed	12	14	26
Total	40	20	60

Expected Values:

- Employed & Participated: $(34 \times 40) / 60 = 22.67$
- Employed & Not Participated: $(34 \times 20) / 60 = 11.33$
- Unemployed & Participated: $(26 \times 40) / 60 = 17.33$
- Unemployed & Not Participated: $(26 \times 20) / 60 = 8.67$

Chi-Square Calculation:

$$\chi^2 = 1.25 + 2.51 + 1.64 + 3.29 = 8.69$$

Degrees of Freedom:

$$df = (2-1) \times (2-1) = 1$$

Critical Value ($\alpha = 0.05$): 3.84

Decision: Since $8.69 > 3.84$, **reject H₀**.

Conclusion: There is a significant association between participation in NGO-led programs and employment status of youth.

10.2 Correlation Analysis – Pearson's r

Variables:

- X = Satisfaction with Training (Likert scale: 1–5)
- Y = Monthly Income Change (%) after training

Result:

- Pearson's correlation coefficient (r) = **0.68**
- p-value < 0.01

Interpretation: There is a strong positive correlation between training satisfaction and income change. This means that participants who are more satisfied with NGO training tend to experience higher income improvement.

10.3 Multiple Regression Model

Dependent Variable (Y): Employment Probability after Training

Independent Variables:

- X₁ = Number of Training Hours
- X₂ = Satisfaction with Training (Likert scale: 1–5)
- X₃ = Access to Placement Support (1 = Yes, 0 = No)

Regression Equation:

$$Y = 0.25 + 0.005X_1 + 0.12X_2 + 0.22X_3$$

Model Summary:

- $R^2 = 0.59$ (59% of variation in employment probability explained by the model)

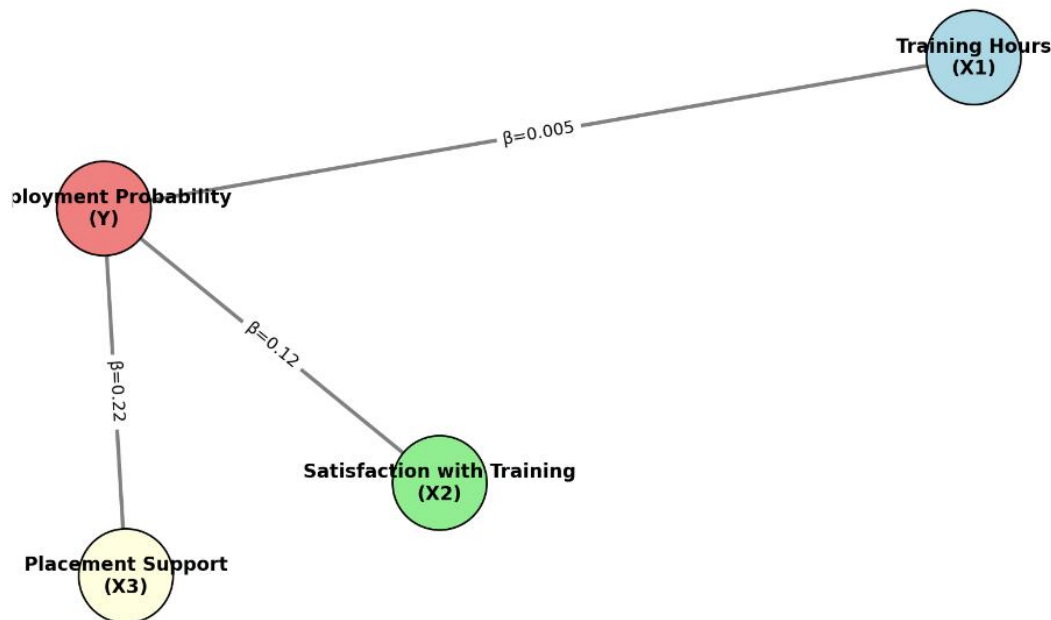
Coefficients:

Variable	Coefficient (β)	p-value
Constant	0.25	0.041
Training Hours (X_1)	0.005	0.019
Satisfaction (X_2)	0.12	0.004
Placement Support (X_3)	0.22	0.001

Interpretation:

- More training hours, higher satisfaction, and access to placement support significantly increase the probability of employment after NGO intervention.
- Placement support has the highest coefficient, showing it has the strongest impact among the three predictors.

Multiple Regression Model - Factors Influencing Employment Probability



11. Analysis and interpretation:

- 40% of participants are in their early 20s, indicating that NGOs are primarily attracting fresh job seekers who are just beginning their career journey. This is positive, as training at this stage can shape career choices and prepare them for industry expectations.
- 58% of respondents are male and 38% are female, showing that while men dominate participation, there is also strong female involvement. This reflects that NGOs are accessible to both genders, though additional targeted efforts could further encourage women's enrollment.
- 53% of respondents have mid-level education such as PUC or SSLC, which means that NGOs are catering to youth with varying educational backgrounds, including those who may not have advanced qualifications. This inclusivity ensures opportunities for those with limited formal education.
- 50% of participants reside in rural areas, which highlights the NGO's significant role in reducing the rural-urban skill gap. Reaching rural youth is vital, as they often face more barriers to employment opportunities.
- 63% of respondents were unemployed before joining, confirming that NGOs are effectively targeting the right audience—youth in need of training to enter the job market.
- 45% of participants learned about the program through word of mouth and NGO outreach activities, proving the effectiveness of community networking and awareness campaigns in attracting participants.
- 55% attended technical and vocational skills training, while 35% attended soft skills or digital literacy programs. This combination shows a balanced approach where technical proficiency is complemented by employability skills.

8. 70% believe the training is highly relevant to the job market, showing that NGOs have successfully aligned their programs with industry requirements. This alignment increases chances of employment and job stability.
9. 68% report that training centers were easily accessible, but 22% faced transportation challenges. This indicates that while most centers are well-located, there is a need to improve outreach in remote or hard-to-reach areas.
10. 72% feel the program is inclusive for participants of different genders, backgrounds, and economic statuses, though 15% disagree, signaling that diversity and equal participation can still be improved.
11. 65% received all necessary learning materials, but 20% reported shortages. This suggests some inconsistency in resource provision, which may affect the learning experience for certain participants.
12. 58% secured jobs or started self-employment after completing training, proving the program's positive employment impact, though there is still room to improve job linkage for the remaining participants.
13. 47% experienced an increase in income after training, indicating a financial benefit for nearly half of the participants. However, for the rest, skill improvement did not translate into higher earnings, suggesting the need for stronger placement or entrepreneurial support.
14. Placement support satisfaction is mixed, with 40% satisfied and 28% dissatisfied. This reflects that while some participants benefit from NGO job linkages, others feel more follow-up and employer connections are necessary.
15. 68% report a significant boost in confidence after training, highlighting an important psychological and motivational benefit of NGO-led programs that goes beyond technical skills.
16. 38% faced challenges during training such as short course duration or inadequate facilities, which points to areas where NGOs can enhance infrastructure and curriculum design.
17. 45% rate follow-up support as average, indicating that while there is some level of post-training engagement, more structured mentorship and tracking could help sustain employment outcomes.
18. 33% struggled to apply their skills in real jobs or businesses, suggesting a gap between training content and practical workplace requirements. Stronger industry collaboration could address this.
19. 60% would recommend the program to others, showing a generally high satisfaction rate, though not all participants are equally positive, hinting at areas for improvement.

12. Findings

- NGOs are effectively attracting young, early-career job seekers, with a majority from rural areas and mid-level educational backgrounds.
- The programs are inclusive and balanced, offering both technical and soft skills training, and are generally aligned with industry needs.
- Over half of the participants secured employment or started self-employment after training, and many reported increased confidence levels.
- Income improvement was observed for nearly half the participants, but not all benefited financially despite skill gains.
- Some participants face challenges such as resource shortages, inadequate training facilities, limited follow-up support, and difficulty applying skills in real work settings.
- Placement support shows mixed satisfaction levels, and transportation remains a barrier for some trainees.

13. Suggestions

- Strengthen placement services and employer linkages to ensure better job opportunities for all trainees.
- Enhance training infrastructure, ensure consistent provision of learning materials, and extend training durations where needed.
- Provide targeted outreach to increase female participation and support diversity.
- Offer structured post-training follow-up, mentorship, and industry collaborations to bridge the gap between training and workplace application.
- Introduce financial and entrepreneurial support schemes to help participants start self-employment ventures.

14. Conclusion:

The overall analysis of the study on the role of NGOs in skill development, capacity building, and employment generation for unemployed youth reveals that these organizations play a crucial part in enhancing employability through targeted training, resource provision, and placement support. The findings indicate a strong positive association between program participation and employment outcomes, with higher satisfaction levels correlating with improved income and confidence. However, gaps remain in post-training follow-up, alignment of skills with workplace demands, and inclusivity for all socio-economic groups. Strengthening industry linkages, extending training duration, ensuring consistent resource delivery, and expanding financial and entrepreneurial support can further increase program effectiveness. Overall, NGOs are making a significant contribution to youth empowerment, but sustained improve

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“UNDERSTANDING THE ROLE OF EMPLOYEE VOLUNTEERING IN ENHANCING ORGANIZATIONAL CULTURE AND EMPLOYEE ENGAGEMENT IN MSMEs”

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Abstract

Employee volunteering (EV) has emerged as an effective way for organizations to blend social responsibility with internal workforce development. While large corporations have formalized volunteering programs, micro, small, and medium enterprises (MSMEs) often underutilize this approach despite its potential to strengthen culture and engagement without demanding heavy financial investments. This study examines how EV initiatives can influence organizational culture and enhance employee engagement in MSMEs.

Using a mixed-methods approach, the research draws evidence from surveys, interviews, and focus group discussions with employees and managers in selected MSMEs. The analysis focuses on how EV creates positive workplace outcomes through four channels: (i) aligning personal values with organizational purpose, thereby giving employees a deeper sense of meaning at work; (ii) fostering social connections across teams, which improves collaboration and mutual trust; (iii) providing informal opportunities for skill development in areas such as communication, leadership, and problem-solving; and (iv) reinforcing cultural norms of inclusivity, empathy, and collective responsibility.

Findings indicate that employees engaged in volunteering activities display higher levels of job satisfaction, commitment, and willingness to contribute beyond their formal roles. Managers report that EV nurtures a culture of openness and adaptability, helping MSMEs retain talent and build stronger community ties. However, successful implementation requires careful alignment with local causes, voluntary participation, and post-activity reflection to integrate learning into workplace practices.

The study concludes that EV, when systematically encouraged, serves as a dual-purpose tool—advancing social impact while simultaneously building organizational resilience. For MSMEs striving to remain competitive and sustainable, embedding volunteering into everyday practices can create a more engaged workforce and a culture grounded in shared values.

Keywords: Employee Volunteering; Organizational Culture; Employee Engagement; MSMEs; Social Responsibility

Introduction:

In today's dynamic business environment, organizational culture and employee engagement have emerged as critical factors influencing the success and sustainability of enterprises. Particularly in micro, small, and medium Enterprises (MSMEs), where resources are often limited and competition is intense, fostering a positive work environment is essential for growth and resilience. One increasingly recognized strategy for enhancing both organizational culture and employee engagement is employee volunteering. Employee volunteering involves active participation of employees in community services or social initiatives, often supported or encouraged by their employer. While large corporations have traditionally programs, MSMEs are also beginning of these initiatives. By engaging employees in volunteering activities, organizations can build a sense of purpose, improve morale, and create a cohesive and value-driven workplace culture.

Tiptur, a rapidly developing urban area with a vibrant MSME sector, provides a unique context to explore this relationship. MSMEs in Tiptur contribute significantly to the local economy, providing employment opportunities and supporting economic development. However, like many MSMEs globally, they face challenges related to employee retention, motivation, and organizational cohesion. This study aims to investigate how employee volunteering can play a transformative role in enhancing organizational culture and employee engagement within MSMEs in Tiptur. By understanding the current state of volunteering initiatives and their impact, this research seeks to offer practical insights and recommendations for MSME leaders to leverage volunteering as a tool for organizational development.

Organizational culture and employee engagement are increasingly recognized as key drivers of performance, innovation, and sustainability with enterprises. For Micro, Small, and Medium Enterprises (MSMEs), which often operate with limited financial and human resources, the cultivation of a strong, positive organizational culture and high levels of employee engagement is not just desirable but essential for long-term success. However, achieving these outcomes presents unique challenges due to size constraints, resource limitations, and operational pressures. Employee

volunteering- defined as company-supported opportunities for employees to participate in community services or charitable activities- has emerged as a valuable strategy for strengthening organizational culture and enhancing employee engagement. Volunteering initiatives foster a sense of purpose, belonging, and social responsibility among employees, which can translate into higher job satisfaction, improved morale, and stronger organizational loyalty. Additionally, such initiatives can enhance the external reputation of MSMEs, positioning them as socially responsible and community-oriented businesses. In large organizations, the benefits of employee volunteering are well documented, with numerous studies linking volunteering programs to increased employee engagement, retention, and productivity. However there is significant research gap regarding how these dynamics play out in the MSME sector, particularly in semi-urban and rural areas where business resources and opportunities for formal volunteering may differ from those in metropolitan regions. The Tiptur urban area, known for its diverse MSMEs landscape-including industries such as agriculture processing, small-scale manufacturing, and retail- presents a fertile ground for investigating these issues. Despite their economic importance, MSMEs in Tiptur face persistent challenges related to workforce stability, motivation, and organizational alignment. Exploring the role of employee volunteering in this context can provide valuable insights into how MSMEs might overcome these challenges and foster a more engaged and cohesive workforce.

Literature Review:

Lee, L., & Higgins, C. (2021) Volunteering offers reflective spaces for employees to develop personally and professionally. This process deepens engagement by connecting personal values to work roles. MSMEs benefit as employees transfer these insight to their jobs. Volunteering becomes a low-cost development strategy.

Navin Kumar K.(2019) It was understood from the result that recognition of employees by the organization gives them a sense of belongingness and they their hard work has been acknowledged. It can be deduced that it is the organization support, justice and engagement of employees keep employees passionate which exterminate the threats of turnover intentions. It has also found that perceived organizational support, perceived organizational justice and employee engagement play a major role in predicting environment, the companies must be provided best to the employees to get best from them.

Rathore, Bhawna(2019) Employee engagement plays a key role in improving employee loyalty and satisfaction in banks. It helps boost performance, productivity, and organizational culture by setting clear goals, collecting feedback, and evaluating practices. Both public and private banks benefit through improved efficiency and profitability, demographic factors like age education, and income also influence engagement. Hence banks must adopt suitable strategies to ensure effective employee involvement.

Goal Priyanka (2017) The employee engagement in organizations, particularly in the banking sector. It highlights that public sector banks have a more relaxed environment with less competition, leading to higher job satisfaction and commitment among employees. In contrast, private sector banks experience more stress and competition, affecting employee engagement. The conclusion recommends that both sectors learn from each other to improve employee engagement and productivity, by adopting best practices from each other, organizations can create a better work environment that benefits both employees and the organization as a whole.

Mond.Sadiqe (2016) Employee empowerment is crucial for organizational success It involves giving employee the autonomy to make decisions and take actions that align with the organization's goals. This leads to increased job satisfaction, productivity, and better decision-making. By empowering employees, organizations can tap into their creativity, skills, and knowledge, ultimately driving business growth and success.

Research Gap

Existing research highlights employee engagement and support but lacks focus on their integration within MSMEs through volunteering. Demographic influences are mainly studied in banking, not other sectors. More research is needed on low-cost strategies like volunteering to boost engagement and retention across industries.

Statement of The Problem

Employee volunteering has emerged as a strategic tool for fostering a positive organizational culture and enhancing employee engagement, yet its role remains underexplored in the context of Micro, Small, and Medium Enterprises (MSMEs). Unlike larger corporations, MSMEs often face resource constraints and may lack structured Corporate Social Responsibility (CSR) programs, making it challenging to integrate employee volunteering into their operations. However, understanding how volunteering initiatives can influence employee morale, job satisfaction, team cohesion, and organizational commitment in MSMEs is crucial. This gap in research presents a need to investigate how employee volunteering can be effectively leveraged by MSMEs to build a supportive work environment and drive employee engagement, ultimately contributing to business sustainability and social impact.

Objectives of the Study:

- 1) To identify the current practices and extent of employee volunteering initiatives within MSMEs.
- 2) To analyze the impact of employee volunteering on organizational culture, including values, teamwork, and workplace relationships.
- 3) To evaluate the influence of employee volunteering on employee engagement, motivation, and job satisfaction in MSMEs.
- 4) To suggest practical strategies for MSMEs to effectively implement and leverage employee volunteering to strengthen organizational culture and employee engagement.

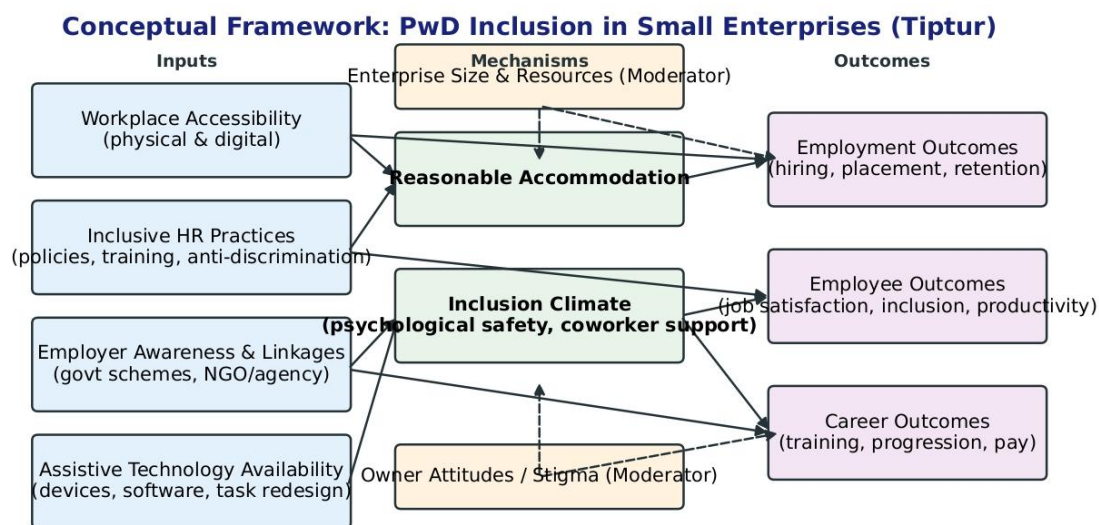
Scope of the Study:

This study aims to explore the role of employee volunteering in shaping a positive organizational culture and enhancing employee engagement within the context of Micro, Small, and Medium Enterprises (MSMEs). It will focus on assessing existing volunteering practices, employee participation levels, and their perceived impact on motivation and workplace relationships. The research is limited to selected MSMEs and does not cover large-scale enterprises or nonprofit organizations. The study intends to offer relevant insights and suggestions that MSMEs can apply to integrate volunteering into their organizational strategies effectively.

Limitations of the study:

1. The study is limited to selected MSMEs and may not represent all industries or regions.
2. Data is based on self-reported responses, which may involve personal bias.
3. Time and resource constraints may limit the depth of analysis and number of participants.

Conceptual Framework:



1. **Inputs** – Small enterprises provide four main factors:
 - Workplace accessibility (physical and digital).
 - Inclusive HR practices (policies, training, anti-discrimination).
 - Employer awareness and linkages (government schemes, NGO support).
 - Availability of assistive technology (devices, software, redesign).
2. **Mechanisms (Mediators)** – These inputs influence outcomes through:
 - *Reasonable accommodation* (adjustments for PwDs at work).
 - *Inclusion climate* (sense of safety, support, and belonging).

3. **Moderators** – The effect of inputs is shaped by:
 - Enterprise size and resources.
 - Owner attitudes and stigma.
4. **Outcomes** – Together, these factors affect:
 - Employment outcomes (hiring, placement, retention).
 - Employee outcomes (job satisfaction, productivity, inclusion).
 - Career outcomes (training, growth, and pay).

Research Methodology:

8.1 Research Design

The study adopts a descriptive and quantitative research design to examine how employee volunteering influences organizational culture and employee engagement within MSMEs. A descriptive design is appropriate for this study as it allows for the systematic collection and analysis of data to describe current practices, perceptions, and outcomes related to volunteering activities. The focus is on observing patterns, identifying relationships, and interpreting the role volunteering plays in the workplace without manipulating variables.

8.2 Data Collection Method

Primary data will be collected through a structured questionnaire survey. This method is chosen for its ability to gather standardized information from a defined group of respondents efficiently. Data collection will be conducted both online and offline, depending on accessibility and respondent convenience. Online tools such as Google Forms or Microsoft Forms may be used to reach a broader sample, while printed surveys may be used for MSMEs with limited digital access.

To ensure data reliability and ethical integrity, respondents will be informed about the purpose of the study, and their participation will be voluntary. Confidentiality of their responses will be maintained.

8.3 Sample

The target population includes employees working in Micro, Small, and Medium Enterprises (MSMEs), across sectors such as manufacturing, services, retail, and technology. A sample size of 50 respondents will be selected using convenience sampling, as it allows the researcher to gather information quickly and efficiently from accessible participants.

Inclusion criteria:

- Must be employed in an MSME for at least 6 months.
- Must be aware of or have participated in any volunteering or CSR-related activity, formal or informal.

Although the sample may not be fully representative of all MSMEs, it provides initial insights and forms a foundation for further study.

8.4 Questionnaire Design

A structured questionnaire has been developed as the primary instrument for data collection. The questionnaire includes close-ended questions using a 5-point Likert scale (ranging from Strongly Disagree to Strongly Agree) to measure attitudes, engagement levels, and perceptions. A few open-ended questions are also included to capture additional insights and personal experiences.

The questionnaire is divided into the following sections:

Demographic Details – Age, gender, designation, years of service

Volunteering Participation – Frequency, type of activities, motivation

Organizational Culture – Questions on values, team bonding, leadership support

Employee Engagement – Job satisfaction, motivation, sense of belonging, productivity

Suggestions – Open-ended space for opinions and recommendations

Hypotheses:

- **Null hypothesis (H0):** Employee volunteering participation is independent of organizational encouragement (i.e., no association).
- **Alternative hypothesis (H1):** Employee volunteering participation is associated with organizational encouragement.

Particulars	Participated in Volunteering	Not Participated	Total
Organization Encourages	40	36	76
Does Not Encourage	12	12	24
Total	52	48	100

Note:

- 76% say organization encourages volunteering
- 52% participated in volunteering
- Numbers above derived from sample size = 100 (for simplicity)

Calculation:

Cell	Observed (O)	Expected (E)	O - E	(O - E) ² / E
Encourages & Participated	40	39.52	0.48	$(0.48)^2 / 39.52 \approx 0.0058$
Encourages & Not Participated	36	36.48	-0.48	$(-0.48)^2 / 36.48 \approx 0.0063$
Does Not Encourage & Participated	12	12.48	-0.48	$(-0.48)^2 / 12.48 \approx 0.0185$
Does Not Encourage & Not Participated	12	11.52	0.48	$(0.48)^2 / 11.52 \approx 0.0200$

Test result: The chi-square value (0.0506) is less than the critical value (3.841).

Decision: There is insufficient evidence to reject the null hypothesis (H₀).

Conclusion: Organizational encouragement and employee volunteering participation are independent, indicating no significant association in this sample. This suggests other factors may influence volunteering participation beyond organizational support.

Analysis & Interpretation

1. Majority of respondents (40%) are aged 25–34, indicating a predominantly young workforce engaged in MSMEs.
2. Most participants are male (60%), with females making up 36%, reflecting gender distribution in the sector surveyed.
3. A significant number (38%) have been working in their MSME for 1–3 years, showing moderate employee tenure.
4. Respondents hold diverse roles, providing varied perspectives on volunteering impact across job functions.
5. Employees come from multiple sectors, mainly Services (34%) and Manufacturing (26%), suggesting the need for sector-specific volunteering programs.
6. 76% agree that their organization encourages employee volunteering, showing strong institutional support.
7. 52% have participated in volunteering activities, indicating room to improve participation rates.
8. 78% believe volunteering contributes meaningfully to the community, highlighting intrinsic motivation among employees.
9. 62% agree volunteering opportunities are communicated clearly, while 18% see communication gaps.
10. 70% feel motivated to take part in employer-organized volunteering activities, reflecting high willingness to engage.
11. 68% feel volunteering reflects their organization's values, emphasizing alignment with corporate culture.
12. 72% believe volunteering improves relationships among employees, promoting teamwork and social bonding.
13. 65% feel proud of their organization's support for volunteering, enhancing employee morale.
14. Nearly 70% acknowledge volunteering fosters a more inclusive and positive work environment.
15. 60% agree that leaders and managers actively support volunteering, though 18% indicate room for greater leadership involvement.
16. 66% report an increased sense of belonging due to volunteering, supporting its role in employee engagement.
17. 63% say volunteering has improved their job satisfaction, highlighting positive effects on work experience.
18. 70% feel more motivated at work when the company engages in social causes, underlining the importance of CSR.

Finding & suggestions

Findings:

1. 76% of employees agree their organization encourages volunteering, showing strong institutional support.
2. Only 52% have participated in volunteering activities, indicating potential to improve engagement.
3. 70% feel motivated to join employer-organized volunteering, reflecting high willingness to participate.

4. 63% report improved job satisfaction due to volunteering, showing a positive impact on work experience.
5. 60% are more likely to stay in organizations that support volunteering, linking it to employee retention.

Suggestions:

1. Expand volunteering opportunities to increase employee participation.
2. Enhance communication strategies to better inform staff about volunteering initiatives.
3. Encourage active involvement of leaders and managers to inspire greater employee engagement.
4. Recognize and reward volunteers to reinforce positive behavior and morale.
5. Align volunteering programs with skill development to support both employee growth and organizational goals.

Conclusion

Employee volunteering emerges as a valuable strategy for enhancing organizational culture and employee engagement within MSMEs, particularly in dynamic and resource-constrained environments like Tiptur. The study highlights strong institutional support for volunteering initiatives, yet reveals opportunities to boost participation and leadership involvement. Volunteering not only fosters a sense of belonging, job satisfaction, and teamwork but also contributes to employee retention and skill development. By expanding volunteering opportunities, improving communication, involving leaders, and recognizing volunteers, MSMEs can leverage these programs to create a more motivated, cohesive, and productive workforce, ultimately driving sustainable business growth and positive social impact.

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“A STUDY ON CHALLENGES OF EFFECTS OF LABOUR SHORTAGE OF COCONUT FARMING ECONOMICS IN TIPTUR”

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Abstract

Labour shortages have become a major structural challenge for coconut farming in Tiptur, resulting from rural outmigration, rising wages, and declining availability of skilled climbers and harvest workers. This study investigates the economic effects of labour scarcity on coconut cultivation, focusing on cost structures, productivity, and income stability. Data were collected through a cross-sectional survey of small, medium, and large farmers using structured interviews and farm records on labour days, wages, harvest frequency, and nut losses. A Labour Constraint Index (LCI) was constructed to measure the intensity of labour scarcity across three dimensions: availability (lead time, absenteeism), affordability (wage spikes, overtime costs), and task difficulty (harvesting, dehusking, transport).

Economic performance was analysed using cost of cultivation, gross and net returns, benefit–cost ratio, and break-even analysis. Partial budgeting evaluated the incremental benefits of labour-saving practices such as mechanical climbing devices, contract-based harvesting, and FPO-managed service centres. Regression analysis linked the LCI with per-nut labour cost, harvest delay losses, and net returns, controlling for farm size and irrigation.

Results show that higher labour constraints significantly raise per-unit labour costs, reduce harvest frequency, and lower profitability, especially for smallholders who rely heavily on hired labour. Farmers adopting mechanization and organized service contracts demonstrated reduced cost escalation and more stable incomes. Barriers to adoption include limited capital, safety concerns, and lack of trained operators.

The study suggests integrated interventions such as custom-hiring centres managed by Farmer Producer Organizations, harvest scheduling platforms, targeted credit and subsidies for mechanization, and skilling programmes for new climbers. By linking labour constraints with farm-level economic outcomes, this research provides practical insights for policy and institutional strategies aimed at sustaining coconut production and farmer livelihoods in the face of persistent labour shortages.

Keywords: Labour shortage, Coconut farming, Farm economics, Mechanization, Farmer Producer Organizations (FPOs)

Introduction:

The coconut farming industry in Tiptur, Karnataka, faces a significant challenge due to labor shortages, impacting the local economy and livelihoods of farmers and workers. The effects of this shortage are multifaceted, influencing productivity, income, and the overall sustainability of coconut farming in the region. This analysis explores the economic implications of labor shortages in Tiptur's coconut farming sector, highlighting the causes, consequences, and potential solutions to address this pressing issue.

Coconut farming is a vital agricultural activity in Tiptur, Karnataka, renowned for its high-quality copra and coconut oil production. The region's economy heavily relies on coconut cultivation, involving thousands of farmers and laborers. However, in recent years, Tiptur has been facing a growing challenge labour shortage in the coconut farming sector. This shortage is attributed to factors such as rural-to-urban migration, aging agricultural workforce, lack of interest among younger generations in farming, and rising labor costs. The scarcity of skilled labor has begun to affect the economic viability of coconut farming, leading to reduced productivity, increased costs, and potential long-term impacts on the region's agricultural sustainability. Understanding the causes and consequences of this labour shortage is crucial for developing effective strategies to protect and promote the coconut economy in Tiptur.

Coconut farming plays a vital role in the rural economy of Tiptur, a prominent coconut-growing region in Karnataka, India. Known for its high-yielding coconut varieties and extensive copra production, Tiptur has long been a key contributor to both domestic and export markets. However, in recent years, the sector has been increasingly affected by a significant shortage of agricultural labour. This labour shortage poses a serious challenge to the sustainability and profitability of coconut farming in the region. Factors such as rural-to-urban migration, ageing farm workforce, lack of mechanization, and low wage incentives have contributed to this growing problem. As a result, farmers face difficulties in carrying out essential agricultural operations such as harvesting, de-husking, irrigation, and disease management. This has led to reduced productivity, increased production costs, and a decline in overall farm income, impacting the economic viability of coconut farming in Tiptur.

Literature Review:

Desai, N., Manatha, B., Shankara, M. H., & Jyothikiran, S. (2024) conducted a study in Tumkur district, Karnataka, to assess yield gaps and economic benefits of frontline demonstration (FLD) technologies in coconut farming. Demonstration plots achieved a 26.49% higher yield than farmer-managed fields, though still below the crop's potential. Adoption of key practices like intercropping and irrigation was high, but labour-intensive tasks such as harvesting by coconut climbers saw low uptake (26.67%). Overall, improved technologies led to better yield, soil fertility, and profitability.

Pathiraja et al. (2010) assessed labour availability across four key coconut-growing regions in Sri Lanka reported in Gampaha and Kuliyaipitiya. Skilled labourers, particularly for harvesting, were paid 3–4 times more than unskilled labour, highlighting high wage pressure and gender-based pay disparities. The study noted poor youth participation in the sector and emphasized the urgent need for mechanization and commercialization of harvesting services to reduce dependency on manual labour. The authors recommended structural and attitudinal reforms to improve labour availability and sustainability in the coconut sector.

Kalidas and Ravikumar (2024) examined marketing efficiency in the coconut value chain across four districts in Western Tamil Nadu using data from 300 farmers and supply chain stakeholders. The study applied Shepherd's method, Acharya's modified approach, and Calkin's index to compare three marketing channels. Results showed that Farmer Producer Companies (CVC III) offered the highest efficiency in all districts, followed by channels involving harvest contractors (CVC I). The authors emphasized the role of FPCs in reducing post-harvest losses and improving farmer returns.

Padma (2024) explored the key challenges faced by coconut farmers, revealing widespread concerns about limited knowledge in plant protection, particularly regarding chemical use, application techniques, and toxicity risks to humans and livestock. Additional barriers included poor access to equipment repair services and strong reliance on traditional practices. Farmers also highlighted the need for fair and stable market prices (88%), technical guidance (76%), and timely access to quality subsidized inputs (75%) as critical to improving productivity and reducing risk. The findings emphasize the importance of strengthening extension services and input delivery systems to support coconut cultivation.

Agarwal (2023) examined labour utilization trends, mechanization, and productivity in Indian cotton farming from 2007 to 2019, revealing a significant decline in agricultural labour share—from 63.32% in 1990–91 to 42.61% in 2019–20—with projections of further reduction to 25.7% by 2050. Using cost of cultivation data from eleven major cotton-producing states, the study found that despite rising wage rates, labour productivity gains remained limited. Labour shortages emerged as a key factor constraining crop profitability, emphasizing the need for targeted mechanization in high-deficit areas. The findings underscore the urgency of adapting mechanized solutions to sustain productivity amid shrinking agricultural labour.

Research Gap:

Despite existing studies highlighting yield gaps, wage disparities, and mechanization challenges, limited research has focused on the direct economic consequences of labour shortages in coconut farming. Most prior works emphasize either technological adoption or marketing efficiency, leaving a gap in linking labour availability with farm profitability and sustainability. There is also inadequate exploration of how youth disinterest and migration trends worsen labour scarcity in high-yield regions like Tiptur. Hence, there is a clear need for empirical research that connects labour shortages, cost escalation, mechanization adoption, and policy support to the long-term viability of coconut farming.

Statement of the Problem

The coconut farming sector in Tiptur, Karnataka—a region renowned for its high-quality copra and coconut production—faces increasing economic challenges due to persistent labour shortages. This scarcity of both skilled and unskilled agricultural workers has severely impacted timely harvesting, intercultural operations, and post-harvest activities, leading to reduced productivity and financial losses for farmers. Rising wages, urban migration, and lack of interest among younger generations in farm work have worsened the situation. As a result, operational costs have increased while profit margins have shrunk, threatening the sustainability of smallholder coconut farms in the region. Addressing these labour constraints is crucial for maintaining productivity and improving the economic viability of coconut farming in Tiptur.

Object of the study

1. To identify the key factors contributing to labour shortages in coconut farming in the Tiptur region.
2. To analyze the impact of labour scarcity on the operational efficiency and economic returns of coconut farmers.

3. To evaluate the coping mechanisms adopted by farmers to manage labour constraints and their effectiveness.
4. To suggest sustainable strategies and policy interventions to overcome labour-related challenges and enhance the economic viability of coconut farming in Tiptur.

Scope of the study

This study is confined to examining the effects of labour shortages on the economic aspects of coconut farming in Tiptur, a major coconut-producing region in Karnataka. It explores how the unavailability of both skilled and unskilled labour influences farm operations, yield, and income generation. The research focuses on the current challenges faced by farmers, their adaptation strategies, and the broader implications for agricultural sustainability. It also aims to provide insights that can support future planning, technological adoption, and policy-making in the coconut farming sector.

Limitation of the study

1. This study is only done in the Tiptur region, so the results may not apply to other areas.
2. It looks mainly at labour problems and not other issues like weather or market prices.
3. The information comes from a few farmers, so it may not show what all farmers think or face.

Research Methodology

Research Design

This research adopts a descriptive research design aimed at understanding and analyzing the real-time challenges caused by labour shortages in coconut farming in the Tiptur region. It helps in collecting first-hand data to describe current labour-related issues, their economic effects on farming, and the coping strategies adopted by farmers. This design is suitable because it allows the researcher to study actual conditions in the field and draw practical conclusions.

Data Collection Method

The study uses primary data collection through a structured questionnaire distributed directly to coconut farmers. The questionnaire includes closed-ended questions for easy analysis and a few open-ended questions to gather suggestions and deeper insights. Data will be collected through face-to-face interviews, telephone calls, or Google Forms, depending on the availability and convenience of the farmers.

Sample and Sampling Method

The target population for this study consists of coconut farmers in Tiptur taluk, who are directly involved in farming and management practices. A sample of 50 farmers will be selected using simple random sampling to avoid bias and ensure fair representation. The sample includes farmers of different land sizes (small, medium, and large), providing a broader perspective of labour issues.

Questionnaire Design: The questionnaire is designed to cover multiple dimensions related to labour shortages. It is divided into the following sections:

- Section A: Farmer Profile – age, landholding, education, years of experience
- Section B: Labour Situation – number of workers, availability, wage rates, type of labour (skilled/unskilled)
- Section C: Impact on Farming – effect on productivity, harvesting delays, cost changes
- Section D: Coping Strategies – mechanization, family labour, outsourcing
- Section E: Suggestions – farmer's views on solving the labour shortage problem

Tools for Data Analysis

After data collection, responses will be compiled and analyzed using MS Excel or SPSS. Tools such as percentage analysis, frequency tables, bar charts, and pie charts will be used to identify common patterns and visualize the results. The analysis will help in making clear comparisons and drawing conclusions based on real data.

Hypothesis

H₀ (Null Hypothesis): Labour shortages have no significant impact on coconut yield.

H₁ (Alternative Hypothesis): Labour shortages have a significant impact on coconut yield.

Data Considered from Analysis (Sample = 60 farmers)

- 74% reported labour shortages reduced yield → Observed = 44 farmers
- 26% said yield not affected → Observed = 16 farmers

Chi-Square Test Table

Response Category	Observed (O)	Expected (E)	O – E	(O – E) ²	(O – E) ² / E
Yield Affected by Shortage	44	30	14	196	6.53
Yield Not Affected	16	30	-14	196	6.53
Total	60	60	–	–	13.06

- Calculated $\chi^2 = 13.06$
- Degrees of Freedom (df) = 1
- Critical Value at 5% significance = 3.841
- Since $13.06 > 3.841$, we reject H_0 .

Interpretation: Labour shortages have a statistically significant negative impact on coconut yield in Tiptur. This confirms that timely availability of skilled labour is crucial for maintaining productivity, and addressing shortages through mechanization, training, and labour cooperatives is necessary for sustaining farm output.

Analysis and interpretation:

1. A large majority (84%) of farmers reported experiencing labour shortages over the past three years, indicating a widespread and continuing problem in coconut farming.
2. About 76% of respondents stated that skilled labour is harder to find than unskilled labour, pointing to a significant skills gap in the coconut farming sector.
3. Nearly 68% of farmers experienced delays in harvesting due to labour shortages, directly affecting the timeliness and efficiency of farm operations.
4. Around 60% of farmers rely on family members to fill labour gaps, suggesting household labour is a key fallback mechanism during shortages.
5. Only 38% of respondents use machinery for coconut harvesting, showing low levels of mechanization and continued reliance on manual labour.
6. About 74% of farmers agreed that mechanization has reduced their dependence on manual labour, reflecting positive perceptions of technology.
7. Approximately 74% of farmers reported that labour shortages have negatively impacted their coconut yields, demonstrating a direct link between manpower and productivity.
8. Around 78% agreed that labour shortages have increased their overall farming costs, mostly due to rising wages and delays in operations.
9. About 84% of respondents found it difficult to hire labour during peak farming seasons, showing a serious mismatch between labour demand and supply.
10. A high proportion (84%) agreed that young people are not interested in working in coconut farms, indicating a long-term workforce sustainability issue.
11. Around 74% believed that current government support for labour-related issues is insufficient, highlighting the need for better policy measures and outreach.
12. Only 30% of farmers were aware of any government scheme for coconut farm mechanization, suggesting a significant communication or outreach gap.
13. About 42% of respondents have reduced their coconut-growing area due to labour constraints, indicating that shortage has serious economic consequences.
14. Over 80% agreed that high labour costs have reduced their profit margins, showing how labour issues affect farm profitability.
15. Nearly 68% preferred permanent workers over daily wage labourers, possibly due to greater consistency and reliability in work performance.
16. Around 80% believed that labour cooperatives or labour banks could help mitigate shortages, indicating strong support for collective labour solutions.
17. More than half (54%) reported delays in applying fertilizers or pesticides due to labour shortage, which may lead to poor tree health and reduced yield.
18. A vast majority (86%) felt there is a need to train local youth in coconut farming skills, indicating strong interest in addressing labour shortages through skill development.
19. About 84% were willing to adopt new technologies to reduce labour needs, showing a strong openness to innovation and modernization.
20. Farmers commonly suggested mechanization, training for youth, better labour wages, and stronger government support as the best solutions to reduce labour shortages in coconut farming.

Findings

1. A large majority of farmers (84%) face persistent labour shortages, especially during peak seasons, which directly impacts harvesting and overall productivity.
2. Skilled labour is significantly harder to find than unskilled labour (76%), creating a skills gap in farm operations.
3. Labour shortages have increased farming costs (78%) and reduced profit margins (80%), leading some farmers (42%) to reduce their coconut cultivation area.
4. Mechanization adoption remains low (38%), despite farmers acknowledging that it reduces dependence on manual labour.
5. Awareness and access to government schemes for mechanization and labour support are very poor (only 30% aware), showing a major policy communication gap.
6. Farmers are heavily dependent on family labour (60%) as a fallback, but youth show low interest in coconut farming (84%), raising concerns about future workforce sustainability.
7. Labour shortages have caused delays in critical tasks like harvesting and applying fertilizers/pesticides (68% and 54% respectively), lowering yield and tree health.
8. Farmers strongly support collective solutions such as labour cooperatives (80%) and skill training for local youth (86%) to mitigate shortages.
9. A majority (84%) are open to adopting new technologies, showing readiness for innovation if proper support and access are given.
10. Farmers widely suggested mechanization, youth training, better wages, and government intervention as the most practical solutions.

Suggestions

1. Promote Mechanization: Introduce affordable and accessible coconut harvesting machinery and tools through subsidies, rental hubs, or cooperative sharing systems.
2. Skill Development for Youth: Implement training programs in coconut farming techniques to attract and equip local youth, addressing long-term labour shortages.
3. Strengthen Government Outreach: Improve communication about existing schemes and introduce new policies focused on labour shortage mitigation and mechanization adoption.
4. Encourage Labour Cooperatives: Facilitate the formation of labour banks or cooperatives to ensure timely availability of skilled labour during peak seasons.
5. Financial Support Measures: Provide targeted subsidies, low-interest loans, and incentives for farmers investing in mechanization or training labour.
6. Infrastructure Improvement: Develop storage, processing, and mechanization facilities locally to reduce dependency on manual labour and improve efficiency.
7. Awareness Campaigns: Conduct awareness drives on the benefits of mechanization, government programs, and collective labour solutions.
8. Incentivize Farming Workforce: Offer better wage structures and social security benefits to retain skilled farm workers and make farm jobs more attractive.

Conclusion:

The study clearly shows that labour shortages in coconut farming have become a persistent and critical challenge for the farming economy of Tiptur. With over 80% of farmers reporting labour unavailability—particularly skilled workers—the problem directly affects harvesting, timely operations, and overall yields. Rising wage costs, delays in farm activities, and increasing reliance on family labour highlight how shortages are raising operational costs while shrinking profit margins. Many farmers have even reduced their cultivation area due to labour constraints, which threatens the long-term sustainability of the sector.

The findings also reveal that mechanization, though positively perceived, remains underutilized due to high costs, limited awareness, and inadequate policy outreach. A majority of farmers are open to adopting modern technologies, forming cooperatives, and training youth in coconut farming, which reflects strong willingness to adapt if proper institutional and financial support is provided. Poor communication of government schemes and the lack of skill-oriented programs for local youth further compound the issue.

Therefore, the labour shortage in Tiptur's coconut sector is not just a short-term operational problem but a long-term economic and social challenge. Addressing it requires a multi-pronged approach: promoting affordable mechanization, skill development programs, cooperative labour models, better wage structures, and stronger policy interventions. By implementing these measures, coconut farming in Tiptur can regain productivity, improve profitability, and ensure

sustainability, thereby protecting the livelihoods of thousands of farming families and strengthening the region's agricultural economy.

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“A STUDY ON EFFECTIVENESS OF GOVERNMENT POLICIES IN SUPPORTING COCONUT FARMERS IN TIPTUR”

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Abstract

Coconut farming in Tiptur has long relied on government schemes for support, ranging from subsidized credit and crop insurance to input distribution and market interventions. Yet, from a farmer's perspective, the real question is not about how many policies exist, but how effectively they work at the field level. This study examines the effectiveness of government policies in addressing the practical needs of coconut farmers, with particular focus on income stability, risk reduction, and market access. A descriptive research design was employed, combining surveys of 60 farmers with interviews of FPO leaders and extension personnel. To capture a balanced picture, a Policy Effectiveness Index was developed, measuring awareness, accessibility, timeliness, adequacy, and alignment with farm requirements.

The results suggest that while policies provide a framework of support, their outcomes are uneven across farmer groups. Smallholders and women farmers often find the procedures complex and benefits delayed, limiting their real impact. Those connected with Farmer Producer Organizations (FPOs) or cooperatives reported better access to schemes and higher confidence in marketing outcomes, particularly through aggregation and processing initiatives. The main gaps identified include low awareness of available schemes, credit ceilings misaligned with perennial crop cycles, and claim settlements that arrive too late to influence farm decisions. Farmers repeatedly emphasized the need for simplicity, speed, and certainty in policy delivery, rather than the mere announcement of new programs.

The study proposes actionable strategies: creating a single-window platform for scheme delivery, aligning credit and insurance with harvest cycles, promoting FPO-based processing hubs to capture value addition, and using mobile-based advisories for quick information sharing. Simplified e-KYC procedures and grievance redress mechanisms are also recommended to reduce transaction costs.

Keywords: Policy effectiveness, Coconut farming, Government interventions, Farmer resilience, Market support, Institutional linkages.

Introduction

Tiptur, located in the Tumkur district of Karnataka, is renowned for its high-yielding coconut plantations and copra production. Coconut farming forms a vital part of the local economy, providing livelihood to thousands of small and marginal farmers. The region's agro-climatic conditions are well-suited for coconut cultivation, making it a significant agricultural hub in South India. However, like many agricultural sectors in India, coconut farming in Tiptur faces challenges such as market fluctuations, pest attacks, irregular rainfall, and rising input costs.

Role of Government in Agriculture The government, both at the central and state levels, plays a pivotal role in supporting the agricultural sector through policy interventions, subsidies, minimum support prices, research initiatives, and infrastructural development. In the context of coconut farming, targeted schemes and institutional support have been introduced to enhance productivity, ensure price stability, and improve farmer income. Organizations like the Coconut Development Board (CDB) and Karnataka State Coconut Development Board work in tandem with local authorities to implement these policies on the ground. Several policies and programs specifically aim to support coconut growers. These include the National Horticulture Mission (NHM), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), price support schemes, crop insurance under the PM Fasal Bima Yojana, and subsidies for coconut-based value addition. In Karnataka, state-level initiatives such as input subsidies, support for farmer-producer organizations (FPOs), and drought relief packages further complement central policies. While these schemes are well-intentioned, their effectiveness in reaching grassroots farmers and bringing tangible improvements in productivity and income remains a critical area of inquiry. Evaluating how these policies perform on the ground—whether farmers are aware of and able to access them, and whether they address the core issues faced by coconut growers—is essential for policy reform and better implementation.

This paper aims to assess the effectiveness of government policies in supporting coconut farmers in Tiptur. The significance of this study lies in its potential to inform policy decisions and contribute to the development of more effective support mechanisms for coconut farmers. By shedding light on the experiences of farmers in Tiptur and the impact of government policies on their lives, this research aims to make a meaningful contribution to the ongoing efforts to support and sustain the coconut farming sector. Through a detailed examination of government policies and their

impact on coconut farmers in Tiptur, this study will provide a comprehensive understanding of the challenges faced by farmers and the effectiveness of current support mechanisms. The findings of this research will be of interest to policymakers, agricultural stakeholders, and farmers themselves, offering valuable insights into how best to support the coconut farming sector in Tiptur and beyond. In the following sections, this study will review the existing literature on coconut farming and government support policies, outline the methodology used to evaluate the effectiveness of these policies, present the findings of the study, and discuss the implications of these findings for policymakers and stakeholders. By exploring the effectiveness of government policies in supporting coconut farmers in Tiptur, this study aims to contribute to a deeper understanding of the complex issues surrounding agricultural policy and practice. The ultimate goal is to inform the development of more effective policies that support the sustainability and profitability of coconut farming, benefiting farmers, their communities, and the broader economy.

Literature Review:

Studies on coconut farming consistently highlight both structural bottlenecks and emerging opportunities for farmers. Deepa Chandran (2018) noted that Kerala's coconut processing units still depend heavily on traditional products, often suffering from raw material shortages, limited marketing reach, and financial barriers. Although the Coconut Producer Company (CPC) scheme offered some technical and marketing support, she argued that stronger farmer linkages and innovation in value addition are necessary for revival. In Tamil Nadu, Baskaran (2017) emphasized the distinct nature of agricultural marketing where farmers act as price takers. His study in Villupuram showed that middlemen, lack of storage, and high transport costs eroded farmer margins, with smaller farmers being most vulnerable. Umesha (2016) pointed out that despite coconut's role in food security, rural employment, exports, and cultural life, research attention on its marketing challenges remained minimal, and stressed the need for farmer-friendly policies. On the product innovation front, Naik (2014) experimented with Coconut Protein Powder (CPP) derived from virgin coconut oil byproducts, finding good consumer acceptance and commercial potential. Meanwhile, Jagan Kanthi (2014) addressed the human cost of agrarian stress, highlighting the emotional and economic impact of farmer suicides and calling for stronger policy responses to safeguard farmer welfare.

More recently, research has turned to diversification and technological modernization. Khopade et al. (2025) demonstrated in Odisha that multi-crop coconut systems improve resource efficiency and enhance resilience against climate stress and pests. Likewise, N. V. V. (2025) tested intercropping with banana, papaya, turmeric, and cassava in Kerala and reported higher system yields, better soil fertility, and improved profitability when nutrient management was balanced. In Karnataka, Indresh and Babu (2024) investigated coconut oil processing units and showed that adopting modern machinery reduced costs and enhanced competitiveness, though small processors still faced barriers in terms of capital and technical know-how.

Research Gap

Existing studies focus on coconut processing challenges, marketing issues, product innovation, and social problems faced by farmers, but there is limited research on the effectiveness of government policies in directly supporting coconut farmers at the grassroots level. Specifically, little is known about policy awareness, accessibility, and impact on small and marginal farmers in regions like Tiptur. This gap calls for a focused assessment of how government schemes reach and benefit these farmers.

Statement of the Problem

The effectiveness of government policies in supporting coconut farmers in Tiptur has shown mixed outcomes. On one hand, schemes such as the Coconut Development Board initiatives, subsidies for drip irrigation, and support for value addition have helped some farmers improve productivity and income. Training programs and input support have also raised awareness of modern farming practices. However, many small and marginal farmers still face challenges like poor market access, fluctuating prices, limited awareness of schemes, and delays in subsidy disbursement. While policies are in place, their implementation and reach need strengthening to ensure broader and more effective support for all coconut growers in the region.

Objectives of the Study

- 1) To identify the key government policies and schemes implemented for the support and development of coconut farmers in Tiptur.
- 2) To analyze the level of awareness and accessibility of these government policies among coconut farmers in the region.
- 3) To evaluate the effectiveness and impact of these policies on the productivity, income, and livelihood of coconut farmers.

- 4) To suggest appropriate measures and policy recommendations to enhance the support system and improve the overall effectiveness of government initiatives.

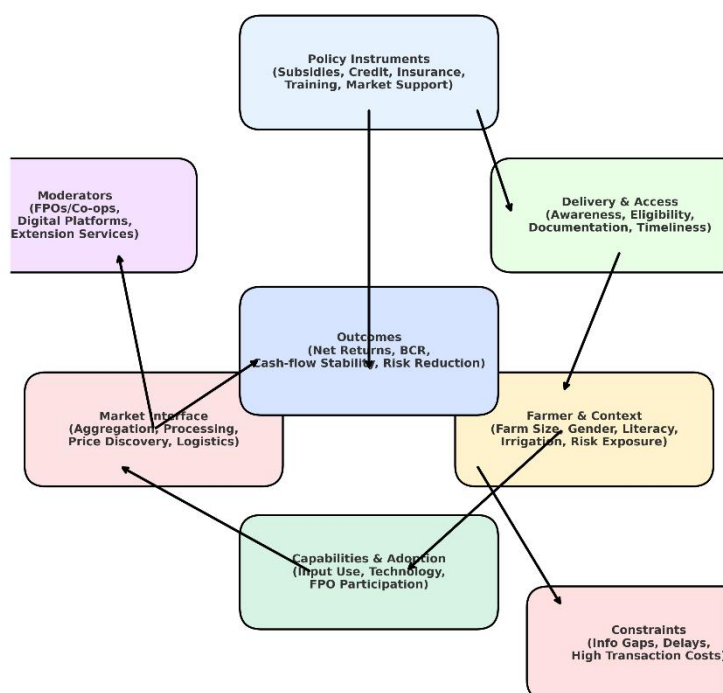
Scope of the Study

The scope of this study is confined to assessing the role and effectiveness of government policies in supporting coconut farmers specifically in the Tiptur region. It includes an examination of various policy measures such as subsidies, training programs, market support, and infrastructure development. The study focuses on understanding how these initiatives influence the economic and operational aspects of coconut farming. It also aims to explore the challenges faced by farmers in accessing these benefits and suggests ways to strengthen policy impact at the grassroots level.

Limitations of the Study

1. The study is limited to the Tiptur region and may not reflect the situation in other coconut-growing areas.
2. Data is based on farmer responses, which may be influenced by personal opinions or recall bias.
3. Limited access to detailed government records may restrict a full evaluation of policy implementation.

Conceptual Framework



1. **Policy Instruments:** Government support for coconut farming usually begins with subsidies, credit facilities, crop insurance, training programs, and market-based schemes. These are designed to improve production and protect farmers from risks. Their success, however, depends on how well these instruments match the long-term nature of coconut cultivation in Tiptur.
2. **Delivery and Access:** Policies are only useful if farmers can actually access them. The level of awareness, clarity of eligibility conditions, the simplicity of documentation, and whether benefits are delivered on time decide how effective these schemes become. If delivery is delayed or too complex, many farmers are left out even though policies exist.
3. **Farmer and Context:** The farmer's own background shapes how policies are received. Factors like landholding size, education level, gender, irrigation facilities, and exposure to climate risks influence the way farmers make use of government schemes. Smaller farmers and women often face more barriers compared to larger or resource-rich farmers.
4. **Capabilities and Adoption:** When farmers can access schemes, they gain the ability to adopt better practices. This could mean using improved technologies such as drip irrigation, applying inputs effectively, or joining Farmer Producer Organizations (FPOs). These actions turn policy benefits into real improvements in farm operations.
5. **Market Interface:** For income gains to be realized, farmers must connect to markets. Collective selling, decentralized processing, and transparent price discovery help them avoid distress sales and secure better margins. Without strong marketing links, even well-delivered policies may not bring meaningful financial improvement.

6. **Outcomes:** The intended results of policy effectiveness are reflected in outcomes such as higher returns per acre, improved benefit–cost ratios, steady cash flows, and reduced risks. These are the indicators that show whether government policies are truly working in favor of coconut farmers.
7. **Moderators:** Certain institutions make policies more effective. FPOs, digital platforms, and extension services act as support systems that improve access, cut down costs, and provide timely advice. These positive forces amplify the impact of government interventions.
8. **Constraints:** At the same time, barriers exist that reduce policy effectiveness. Information gaps, slow processing of claims, and high costs of accessing benefits discourage many farmers. These weaknesses explain why the impact of some policies remains limited on the ground.

Research Methodology

Research Design

The study follows a descriptive research design aimed at understanding and evaluating the effectiveness of government policies in supporting coconut farmers in the Tiptur region. This design is appropriate because it allows for a systematic collection of data from the target population to describe their experiences, awareness, and perceptions regarding the government schemes available to them. It also helps in identifying gaps in policy implementation and practical challenges faced by farmers.

Target Population

The target population includes coconut farmers in Tiptur Taluk, Tumkur district, Karnataka. These farmers are involved in various stages of coconut cultivation, ranging from small-scale traditional growers to larger commercial producers. The region is well-known for its coconut production, and hence provides a relevant area to evaluate the outreach and impact of government interventions aimed at this sector.

Sample Size and Sampling Method

A total of 60 coconut farmers will be selected as respondents for the study. A purposive sampling method is used, which means the participants are selected based on their direct involvement in coconut farming and their likelihood of having experience with government schemes. This ensures that the sample is relevant and representative of the population that the research seeks to analyze. The sample size is sufficient for drawing meaningful conclusions in a focused, small-area study.

Data Collection Method

The study uses primary data collection through structured questionnaires and informal interviews. Field visits will be conducted to personally meet the farmers and gather accurate, real-world responses. In cases where face-to-face interaction is not feasible, telephonic interviews will be conducted. Efforts will be made to communicate in the local language (Kannada) for better understanding.

Secondary data will be used to support the analysis. This includes information from the Coconut Development Board, Department of Agriculture, Government reports, academic journals, and published research on agricultural policy and coconut farming in India.

Questionnaire Design

The questionnaire is designed to collect both qualitative and quantitative data. It consists of two parts:

Part A: Demographic information (age, gender, size of landholding, years of experience in coconut farming).

Part B: Focused questions on awareness, accessibility, and perceived benefits of government policies.

Hypothesis

- **H₀ (Null Hypothesis):** Coconut farmers in Tiptur are not aware of government schemes (Awareness is equally likely to be Yes or No).
- **H₁ (Alternative Hypothesis):** Coconut farmers in Tiptur are aware of government schemes (Awareness is not equally distributed).

Chi-Square Calculation Table

Response	O	E	O – E	(O – E) ²	(O – E) ² / E
Yes	51	30	21	441	14.7

No	9	30	-21	441	14.7
Total					29.4

Calculation: $\chi^2 = \sum (O-E)^2/E = 14.7 + 14.7 = 29.4$

Degrees of freedom (df) = Number of categories - 1 = 2 - 1 = 1

Decision

- Critical value of χ^2 at df=1 and $\alpha=0.05$ is 3.84.
- Since $29.4 > 3.84$, reject the null hypothesis.

Conclusion: There is significant evidence that coconut farmers in Tiptur are aware of government schemes, disproving the assumption of equal awareness (H_0). Awareness is significantly skewed towards 'Yes.'

Analysis and Interpretation

1. 85% of respondents were aware of government schemes, showing that basic outreach and promotion of these programs has been successful.
2. Only 65% had applied for schemes, indicating that although awareness is high, actual engagement remains moderate due to possible procedural or eligibility issues.
3. Just 30% agreed that government schemes improved their coconut yield, suggesting that the policies may not be effectively enhancing farm productivity.
4. Only 20% found the application process easy, while 40% found it difficult, highlighting the need for simplification and better guidance.
5. Responses were mixed on delays, but 15% reported facing difficulties in accessing benefits, suggesting some inefficiencies in delivery systems.
6. Only 10% of farmers said they receive regular updates on schemes, indicating a significant communication gap between authorities and farmers.
7. Only 20% agreed that government officials are cooperative, while 40% disagreed or were neutral, showing weak administrative support on the ground.
8. 45% of respondents had attended training programs, meaning more than half of the farmers are missing out on potential knowledge-sharing opportunities.
9. 31% found the training useful, but nearly 30% felt it was not, suggesting the need for more relevant and practical training content.
10. Only 25% reported financial improvement from schemes, indicating that economic benefits are not being realized effectively by many farmers.
11. Just 20% believed the current policies are sufficient to support coconut farmers, pointing to dissatisfaction with their scope or implementation.
12. Around 30% felt subsidies are inadequate, showing that the financial aid offered does not meet the actual expenses involved in coconut farming.
13. 40% disagreed that small and marginal farmers benefit equally, suggesting a perceived inequality in the distribution and accessibility of support.
14. Only 6% agreed that the government regularly updates policies, while 34% disagreed, indicating a lack of transparency and responsiveness.
15. Just 19% agreed that marketing support has helped them get better prices, highlighting the limited effectiveness of these initiatives in improving income.
16. About 30% expressed trust in continued support from the government, though 15% lacked confidence, reflecting mixed sentiments about future assistance.
17. Only 17% of farmers reported having access to modern equipment, suggesting that technology adoption through government support remains low.
18. 18% were satisfied with scheme implementation, while 27% were not, pointing to issues in how programs are being carried out at the field level.
19. 35% would recommend these schemes to other farmers, showing moderate satisfaction and some level of confidence in the benefits.
20. Common suggestions from farmers include simplifying procedures, improving communication, ensuring timely delivery of benefits, and increasing market access support.

Findings and Suggestions

Findings

1. 85% of respondents were aware of government schemes, but only 65% had applied.
2. Only 30% felt that the schemes improved their coconut yield.
3. Just 20% found the application process easy, while 40% found it difficult.
4. Only 10% of farmers received regular updates about the schemes.
5. Only 25% reported any financial improvement due to the schemes.

Suggestions

1. Aid at the local level to help farmers complete applications and access schemes.
2. Focus schemes more on productivity improvement through better inputs and farm management support.
3. Simplify application forms and procedures, and introduce digital or assisted platforms.
4. Improve communication through regular SMS updates, village meetings, and local language materials.
5. Increase direct financial support and ensure that benefits are aligned with actual farming costs.

Conclusion

The analysis of government policies aimed at supporting coconut farmers in Tiptur indicates that despite a high level of awareness, the actual benefits in terms of productivity and income remain limited. Challenges such as complex application procedures, insufficient communication, and inadequate administrative support have hindered the effective implementation of these schemes. To enhance the impact of government interventions, it is essential to simplify processes, improve transparency, and provide targeted assistance at the local level, especially for small and marginal farmers. Continuous evaluation and adjustment of policies are necessary to ensure they effectively address the practical needs of coconut farmers and contribute to the sustainable development of the sector in the region.

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“A COMPARITIVE STUDY ON RISK AND RETURN WITH RESPECT TO SIP AND LUMP SUM INVESTMENT SCHEME OF INDIAN EQUITY MUTUAL FUNDS”

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Abstract:

This study conducts a comparative analysis of risk and return between Systematic Investment Plan (SIP) and Lump Sum investment strategies in Indian equity mutual funds. Six schemes were selected from Asset Management Companies (AMCs) across different tiers of Assets Under Management (AUM): SBI Flexi Cap Fund, ICICI Prudential Large Cap Fund, LIC MF Large Cap Fund, Mahindra Manulife Large Cap Fund, Shriram Flexi Cap Fund, and Taurus Flexi Cap Fund. Monthly Net Asset Value (NAV) data was collected for a five-year period (June 2020 – March 2025). The performance was evaluated using key financial metrics: Compound Annual Growth Rate (CAGR) for Lump Sum, Extended Internal Rate of Return (XIRR) for SIP, annualized standard deviation to measure volatility, and the Sharpe Ratio for risk-adjusted returns. The results reveal that Lump Sum investments consistently outperformed SIPs across all selected funds, delivering higher returns as well as superior Sharpe Ratios. While SIPs encourage disciplined investing and provide downside protection in volatile markets, Lump Sum proved more rewarding under favourable market conditions. The findings offer valuable insights for investors, financial planners, and policymakers in selecting suitable investment strategies aligned with market dynamics, financial goals, and risk tolerance.

Keywords: Equity Mutual Funds, Systematic Investment Plan (SIP), Lump Sum Investment, Risk and Return, XIRR, CAGR, Standard Deviation, Sharpe Ratio.

1. Introduction

Mutual funds have emerged as one of the most preferred investment avenues for Indian retail investors, offering diversification, liquidity, and professional fund management. With the rapid growth of the industry—crossing ₹54 lakh crore in Assets Under Management (AUM) by 2024 the choice of investment mode has become increasingly important. Among the available options, Systematic Investment Plans (SIPs) and Lump Sum investments are the two dominant approaches.

SIPs allow investors to contribute fixed amounts at regular intervals, promoting financial discipline and reducing market timing risk through rupee cost averaging. In contrast, Lump Sum investments involve deploying a larger corpus at once, which can yield higher returns if timed with favourable market conditions. Both approaches carry inherent risks, and their relative performance depends on market volatility, investor behaviour, and fund category.

Despite extensive research on mutual fund performance, limited studies have directly compared SIP and Lump Sum strategies across different AMCs and market tiers using real world NAV data. This paper addresses this gap by evaluating six equity mutual funds across top-, mid-, and lower-tier AMCs over a five-year period. Using return and risk-adjusted performance metrics, the study provides insights into the effectiveness of SIP versus Lump Sum investments, thereby aiding investors in making informed decisions aligned with their financial objectives and risk tolerance.

2. Review of literature:

“Performance Analysis Of Mutual Fund: A Comparative Study Of The Selected Debt Mutual Fund Scheme In India

Komal B. Sharma (2020)

The study conducted by Komal B. Sharma (2020) and published in GAP Interdisciplinarity: A Global Journal of Interdisciplinary Studies examined the risk and return performance of a few debt mutual fund schemes in India. Using data from 2017 to 2019, the study examined five debt mutual funds offered by the private firms. Fund factsheets and NAV histories were the source for the information. NAV, average return, fund length, and risk levels were the important variables examined here. Excel, Jensen's Alpha, Alpha, Beta, Sharpe Ratio, and other analytical tools were used. According to the study, certain funds had superior risk-adjusted returns than the others. This study advised investors to choose safer and more effective debt mutual fund solutions by using measures like the Sharpe and Alpha ratios.

“Performance Analysis And Risk Assessment Of Indian Mutual Fund Through Sips: A Comparative Study Of Small, Mid, And Large Cap Funds”**Shivam Tripathi and Komal Bansidhar Sharma (2023)**

Shivam Tripathi and Komal Bansidhar Sharma (2023) in a research, had examined the performance of small, mid, and large-cap mutual funds when invested through systematic investment plans (SIPs) across several time periods and published the study in Vidya, a journal of Gujarat University. Using data from 2011 to 2021, the study evaluated SIP returns over 1, 2, 3, 5, and 10 years for 15 mutual funds, five from each category. Data on NAV and SIP returns was gathered from fund and AMFI websites. calculations on risk and return measures such Treynor's Ratio, Jensen's Alpha, Beta, Sharpe Ratio, and Standard Deviation was made. The results showed that small- and mid-cap funds often provided higher returns than large-cap funds with the funds such as Kotak Emerging Equity and other mid-cap schemes showed outstanding results.

“Performance analysis of mutual fund: A comparative study of selected hybrid (Aggressive hybrid funds and conservative hybrid funds) mutual fund schemes in India”**Aroon Raj Jesrani (2024)**

A research by Aroon Raj Jesrani (2024) had compared the risk and return performance of a few aggressive and conservative hybrid mutual fund schemes in India and published the study in the International Journal of Management, Public Policy, and Research. NAV and return data for five hybrid mutual fund schemes (both aggressive and conservative) from January 2020 to December 2023 were used in the analysis. The Annual returns, NAVs, standard deviation, beta, Sharpe Ratio, Jensen's Alpha, and Treynor Ratio were among the key variables examined here. According to the results, the ICICI Prudential Equity & Debt Fund (aggressive hybrid) had given the best risk-adjusted performance and the highest return in 2023. In the earlier years, conservative hybrid funds such as ICICI Regular Savings and Kotak Debt Hybrid had performed better with lower volatility. This study shows how important it is to select funds according to each person's risk tolerance and also considering their financial objectives.

“Evaluating ESG Mutual Funds in India: A data-driven approach to performance metrics**Dr. Trupti M. Joshi and Dr. Madhavi Madireddy (2025)**

Dr. Trupti M. Joshi and Dr. Madhavi Madireddy (2025) published a paper in the International Journal of Research in Management that assessed and ranked ESG (Environmental, Social, and Governance) mutual funds in India based on their respective risk-adjusted returns. Using NAV and return data from April 2023 to March 2024 and also performance since each of the fund's launch, the study evaluated eight mutual funds focusing ESG. The Nifty 50 index was utilized as a benchmark, and the information was collected from AMFI and the official fund websites. The Treynor Ratio, Jensen's Alpha, Sortino Ratio, and Sharpe Ratio were the analysis tools that were used for the calculations. According to the results, the Quant ESG Equity Fund performed the best, followed by the ICICI Prudential ESG Exclusionary Strategy and the Axis ESG Integration Fund.

3.1 Statement of the Problem

Investment in mutual funds has gained prominence among Indian retail investors due to accessibility, diversification, and professional management. However, the choice between Systematic Investment Plans (SIPs) and Lump Sum investments remains a dilemma for many investors. SIPs promote disciplined, phased investing and reduce market timing risk, whereas Lump Sum investments can generate higher returns if deployed under favourable market conditions. Both approaches carry different risk–return dynamics, and their relative effectiveness varies depending on market conditions, investor behaviour, and fund categories.

While several studies have examined mutual fund performance, limited research has compared SIP and Lump Sum strategies systematically across different Asset Management Companies (AMCs) and market tiers. A rigorous empirical analysis using real NAV data over time is therefore necessary to provide clarity to investors and policymakers.

Objectives:

- To assess the risk and return of equity mutual funds of selected AMCs.
- To compare the risk and return between SIP and Lump Sum investment strategies.
- To evaluate the risk factor using the Sharpe Ratio as a measure of risk-adjusted performance.

3.2 Research Design

This study adopts a quantitative research design based on secondary data analysis. Six equity mutual funds were selected

from Asset Management Companies (AMCs) representing three tiers by Assets Under Management (AUM):

- Top-tier AMCs: SBI Mutual Fund (SBI Flexi Cap Fund), ICICI Prudential Mutual Fund (ICICI Prudential Large Cap Fund)
- Mid-tier AMCs: LIC Mutual Fund (LIC MF Large Cap Fund), Mahindra Manulife Mutual Fund (Mahindra Manulife Large Cap Fund)
- Lower-tier AMCs: Shriram Mutual Fund (Shriram Flexi Cap Fund), Taurus Mutual Fund (Taurus Flexi Cap Fund)

3.3 Data source and period

Monthly Net Asset Value (NAV) data was collected from official AMC websites, AMFI, and financial databases for a five-year period (June 2020 – March 2025), covering 60 monthly NAV points per fund.

3.4 Investment approaches

Two modes of investment were considered:

- Systematic Investment Plan (SIP): Fixed monthly investment of ₹1,000.
- Lump Sum: One-time investment of ₹60,000 at the beginning of the study period.

3.5 Analytical Tools and Metric

- Return Metrics: Extended Internal Rate of Return (XIRR) for SIP, Compound Annual Growth Rate (CAGR) for Lump Sum.
- Risk Metric: Annualized Standard Deviation of monthly returns.
- Risk-adjusted Performance: Sharpe Ratio.

All computations were carried out using Microsoft Excel.

3.6 Hypotheses of the study

Based on the objective of the study, the following hypotheses have been formulated:

H0 (Null Hypothesis): There is no significant difference between the SIP and Lump Sum returns in equity mutual funds.

H1 (Alternative Hypothesis): There is a significant difference between the SIP and Lump Sum returns in equity mutual funds.

3.7 Scope and Limitation:

The study is limited to six equity mutual funds within the flexi-cap and large-cap categories. Only SIP and Lump Sum investment strategies were analyzed, and the Sharpe Ratio was used as the sole risk-adjusted performance measure. The findings are based on historical NAV data and do not predict future performance.

4. Analysis and Interpretation:

Table 4.1: SBI Flexi Cap Fund

XIRR (SIP)	15.20%
CAGR (Lump Sum)	21.73%
Standard deviation	13.04%
Sharpe Ratio (SIP)	0.705368799
Sharpe Ratio (Lump Sum)	1.20646233

Interpretation:

For this fund, Lump Sum investment showed better return (21.73%) compared to the SIP (15.20%), the standard deviation of 13.04% shows moderate volatility for the fund and the Sharpes ratio for Lumpsum of 1.206 was higher than the SIP which showed 0.705 indicating below average risk adjusted performance (Lump Sum delivered better returns per unit of risk than SIP).

Table 4.2: ICICI Prudential Large Cap Fund

XIRR (SIP)	20.34%
CAGR (Lump Sum)	24.99%
Standard deviation	12.91%
Sharpe Ratio (SIP)	1.110896821
Sharpe Ratio (Lump Sum)	1.471021168

Interpretation:

For ICICI Prudential Large Cap Fund, the SIP return showed 20.34% while the Lump Sum return was 24.99%. The standard deviation here (12.91%) shows less volatility among the other selected funds. The Sharpe ratio for Lump Sum was 1.471, which was higher than the SIPs Sharpe ratio which was 1.110 showing that the Lumpsum offered better and decent risk adjusted performance relative to SIP for this particular fund.

Table 4.3: LIC MF Large Cap Fund

XIRR (SIP)	15.02%
CAGR (Lump Sum)	19.65%
Standard deviation	14.15%
Sharpe Ratio (SIP)	0.63750253
Sharpe Ratio (Lump Sum)	0.964822858

Interpretation:

For this fund, the Lump Sum investment showed higher return (19.65%) compared to the SIP mode (15.02%). The standard deviation of 14.15% puts this fund under the high volatility funds among the selected funds. The Sharpe ratio for Lump Sum was 0.964, which is higher than the SIPs Sharpe ratio of 0.637 suggesting that the Lump Sum investment delivered a better risk-adjusted return than SIP for this case.

Table 4.4: Mahindra Manulife Large Cap Fund

XIRR (SIP)	17.86%
CAGR (Lump Sum)	22.97%
Standard deviation	13.38%
Sharpe Ratio (SIP)	0.88632050
Sharpe Ratio (Lump Sum)	1.268350252

Interpretation:

For this fund, the Lump Sum investment showed higher return (22.97%) compared to the SIP mode of investment (17.86%). The standard deviation of 13.38% was moderate when compared to other funds in the study. The Sharpe ratio for Lump Sum was 1.268, and for SIP it showed 0.886. This indicates that Lump Sum provided a better risk-adjusted return while compared to the SIP mode of investment.

Table 4.5: Shriram Flexi Cap Fund

XIRR (SIP)	13.33%
CAGR (Lump Sum)	18.86%
Standard deviation	14.83%
Sharpe Ratio (SIP)	0.49418850
Sharpe Ratio (Lump Sum)	0.866787613

Interpretation:

For this fund, the Lump Sum Investment delivered a higher return (18.86%) compared to the SIP mode (13.33%). The standard deviation of 14.83% was the highest among the all six funds showing high volatility in returns during the period of the study. The Sharpe ratio for Lump Sum investment was 0.866, while for SIP it was 0.494, showing clearly that Lump Sum investment provided a greater risk-adjusted return compared to the SIP.

Table 4.6: Taurus Flexi Cap Fund

XIRR (SIP)	15.63%
CAGR (Lump Sum)	20.09%
Standard deviation	14.57%
Sharpe Ratio (SIP)	0.66089990
Sharpe Ratio (Lump Sum)	0.966632692

Interpretation:

For the Taurus Flexi Cap Fund, the Lump Sum investment showed a higher return (20.09%) while compared to the SIP mode (15.63%). Here, the standard deviation of 14.57% was among the higher values in the selected group of funds indicating high volatility. The Sharpe ratio for Lump Sum was 0.966, whereas for the SIP mode of investment it was 0.660 indicating that the Lump Sum investment provided a better risk-adjusted return compared to SIP.

Hypothesis testing:

Table 4.7: Comparison of SIP and Lumpsum returns

SIP Return (XIRR)	Lump Sum Return (CAGR)
0.152	0.2173
0.2034	0.2499
0.1502	0.1965
0.1786	0.2297
0.1333	0.1886
0.1563	0.2009

Table 4.8: T-test for SIP and Lump Sum returns

t-Test: Paired Two Sample for Means		
	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.1623	0.213817
Variance	0.00061688	0.000534
Observations	6	6
Pearson Correlation	0.949520145	
Hypothesized Mean Difference	0	
df	5	
t Stat	-16.16517719	
P(T<=t) one-tail	0.00000826	
t Critical one-tail	2.015048373	
P(T<=t) two-tail	0.00001651	
t Critical two-tail	2.570581836	

Interpretation:

H₀ = There is no significant difference between the SIP and Lump Sum returns in equity mutual funds.

H₁ = There is a significant difference between the SIP and Lump Sum returns in equity mutual funds.

The paired t-test was conducted to compare the returns of SIP and Lump Sum across the six selected mutual funds. The results (**P = 0.00001651**) which is lesser than 0.05 indicates that the Lump Sum returns are significantly higher than the SIP returns. Hence, the null hypothesis is rejected.

5. Summary of Findings

- With respect to **SBI Flexi Cap Fund**, it is observed that it is offering good risk adjusted returns relative to risk for Lump Sum when compared to SIP. Hence, it is good for Lump Sum investment

The Lump Sum investment performance is high compared to SIP for this fund (Table 4.2.1).

- While we look at **ICICI prudential Large Cap Fund**, we see that the highest risk adjusted return is seen in Lump Sum mode than the SIP supported by a higher Sharpe ratio

The Lump Sum investment outperformed SIP in terms of overall return here (Table 4.2).

- For the **LIC MF Large Cap Fund**, Lump Sum investment offered superior risk-adjusted returns comparing to the SIP mode of investment.

The return performance of Lump Sum was also better than SIP in this Fund (Table 4.3).

- Mahindra Manulife Large Cap Fund** showed better performance through Lump Sum mode, based on the returns percentage and also by offering higher Sharpe ratio indicating the better risk adjusted return is also obtained through Lump Sum compared to SIP (Table 4.4).
- In the case of **Shriram Flexi Cap Fund**, Lump sum investment mode had clearly outperformed SIP in terms of the

risk-adjusted return.

The SIP performance for this fund was seen significantly lower compared to Lump Sum (Table 4.5).

- **Taurus Flexi Cap Fund** also showed better results for Lump Sum investment with higher Sharpe ratio (indicating superior risk-adjusted returns).

The Lump Sum mode offered higher returns compared to SIP for this fund (Table 4.6).

- **Hypothesis testing** using a paired t-test confirmed that the Lump Sum returns were statistically higher than the SIP returns by rejecting the null hypothesis (Table 4.8)

When we look at the **Standard deviations** among the selected funds, Shriram Flexi Cap Fund had the highest standard deviation (14.83%) indicating the most volatile performance.

The least volatility in returns assessed was the ICICI Prudential Large Cap Fund having the lowest standard deviation (12.91%) among the selected funds.

Conclusion:

The primary objective of this study was to assess and compare the risk and return performance of the equity mutual funds under the two popular investment approaches namely Systematic Investment Plan (SIP) and Lump Sum in the Indian equity mutual funds. This study also aimed to evaluate the risk factor associated with both the approaches using the Sharpe Ratio as a tool to assess risk-adjusted performance measurement.

To perform this study, secondary data was collected for a five-year period from June 2020 to March 2025 from the selected six equity mutual fund schemes which represented the AMCs of varying sizes (top-tier, mid-tier, and lower-tier) based on Asset under management (AUM). The monthly NAV data was collected for these funds and the key financial metrics such as XIRR, CAGR, annualized standard deviation (to show risk), and Sharpe ratio (to measure risk adjusted returns) were used in the study for the analysis.

After the analysis and interpretation, it is proved that Lump Sum investment had consistently outperformed SIP across all six funds, both in terms of the absolute returns and Sharpe ratios. While SIP is believed to be a good strategy for the investors with limited disposable income or for reducing market timing risk, this study shows that under the given market conditions and also considering the time frame Lump Sum investment have been proved to be more effective to give higher return along with better risk adjusted efficiency. Also, the hypothesis testing supported the study objective of comparing the SIP and Lump Sum returns, showing that the Lump Sum mode consistently delivered higher returns. Hence for the funds analyzed in this study, the investors who are willing and able to invest Lump Sum amount at once would be more rewarding than opting for SIP investments.

However, this conclusion may not be applicable to all time period or the fund categories as because it is based on the historical data and the selected schemes. Still, the study results provide useful insights for the financial planners and investors while choosing between Lump Sum and SIP.

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“A STUDY ON ASSESSING THE IMPACT OF SUJALA WATERSHED PROGRAMS IN TIPTUR TALUKA”

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Abstract

This study evaluates the socio-ecological and livelihood impacts of the Sujala Watershed Programs in Tiptur Taluka, Karnataka. Anchored in sustainable livelihoods and institutional perspectives, the research examines changes in water availability, soil conservation, agricultural productivity, social inclusion, and local governance. A mixed-methods design is proposed: a structured household survey complemented by key-informant interviews and focus group discussions across multiple Sujala villages selected through multi-stage sampling. Preliminary descriptive evidence from the compiled project materials indicates a broadly positive perception of Sujala interventions—improvements in water conservation, crop yields, and community cooperation—alongside concerns about uneven benefits and post-project maintenance. The paper outlines an analysis plan to quantify effect sizes for environmental and socio-economic outcomes and to assess durability after external support ceases. Policy recommendations focus on deepening equitable participation (women, SC/ST, landless), strengthening committee functionality and transparency, and ensuring long-term maintenance to secure resilient, inclusive development in semi-arid regions.

Keywords: Sujala watershed; Tiptur Taluka; sustainable livelihoods; community participation; rural water management

1. Introduction

Tiptur Taluka in Karnataka is a semi-arid agrarian region where the sustainability of rural livelihoods is closely tied to the management of land and water resources. The Sujala Watershed Program—implemented by the Government of Karnataka with support from international agencies—was conceived to address water scarcity, soil degradation, and stagnating agricultural productivity through an integrated, community-based approach. In Tiptur, Sujala interventions such as check dams, contour bunding, afforestation, user groups, self-help groups, and capacity-building activities have sought to conserve water, reduce erosion, and enhance farm outcomes while strengthening local institutions and equity in decision-making.

Despite notable progress reported elsewhere in Karnataka, critical questions remain about the depth and durability of benefits at the grassroots in Tiptur: Are physical gains—groundwater recharge, improved irrigation access, reduced soil loss—translating into sustained increases in crop yields and incomes? Have social and institutional outcomes—participatory planning, transparency, inclusion of women and SC/ST households, post-project maintenance—kept pace with physical works? These questions are particularly salient given the region’s exposure to climatic variability and the program’s emphasis on decentralization and equity.

This study proposes a comprehensive assessment of Sujala’s impact in Tiptur Taluka across environmental, agricultural, socio-economic, and institutional dimensions. Guided by sustainable livelihoods and institutional perspectives, the research examines changes in water availability, agricultural productivity, livelihood outcomes, and community participation to gauge both effectiveness and limitations of the program. The inquiry is motivated by the recognition that physical structures alone are insufficient; outcomes also depend on the quality of local institutions, inclusivity, and long-term maintenance—areas where evidence often remains mixed or under-documented.

Methodologically, the study is designed for mixed-methods implementation: a structured household survey measuring perceptions and outcomes, complemented by key-informant interviews and focus group discussions to capture process quality, equity, and sustainability concerns. Multi-stage sampling across Sujala-covered villages, and instruments covering participation/awareness, physical and agricultural impacts, and livelihood changes, enable triangulation between quantitative indicators and qualitative insights. This design helps overcome the limitations of relying solely on administrative or secondary sources and foregrounds beneficiary voice and context.

The contribution is threefold. First, it offers a Tiptur-specific, evidence-based appraisal of Sujala’s physical and socio-economic outcomes, including distributional aspects. Second, it assesses institutional performance—committee functionality, transparency, monitoring, and post-closure maintenance—viewed as critical mediators of long-run impact. Third, by documenting strengths and gaps from a beneficiary perspective, it informs programmatic refinements for resilient, inclusive watershed development in semi-arid regions. Addressing known evidence gaps—such as the under-

representation of local voices in prior assessments—this study aims to support policy and practice with nuanced, field-proximate insights.

2. Literature Review

Murali & Angadi (2023), Using geo-spatial techniques, this study assessed watershed impacts in Koppal district and found notable land use/land cover changes. Results confirmed improvements in water conservation structures and cropping intensity. The findings highlight how remote sensing tools strengthen watershed monitoring.

Navaneetha (2022), Analyzing Sujala-III in Shivamogga, the research emphasized livelihood gains and enhanced institutional capacity among farming households. While productivity increased, challenges remained in equitable participation. The study underscored the need for sustained support post-project.

Mahalakshmi (2019), Focused on Tumkur district, this work examined socio-economic and technological effects of Sujala. Farmers reported higher crop yields, income gains, and technology adoption. Yet, gaps in women's empowerment and community ownership were evident.

Mani (2016), In Kolar district, the analysis showed that watershed programs enhanced groundwater recharge and improved sustainability of dryland farming. Institutional involvement facilitated adoption of new practices. However, post-project maintenance and equity concerns persisted.

Manjunath (2014), This Chitradurga-based study explored adoption of watershed management practices by farmers under Sujala. Results revealed positive shifts toward soil conservation and diversified cropping. Nevertheless, participation was skewed toward larger landholders.

Patil, Niranjana & Shivakumara (2013), Investigated Sujala's role in groundwater recharge and crop productivity in Haveri. Evidence pointed to significant yield improvements and reduced soil erosion. Long-term sustainability depended on committee efficiency and local monitoring.

3. Research Gap

Although past studies (2013–2023) confirm that Sujala watershed interventions improved groundwater recharge, crop yields, and livelihoods in several Karnataka districts, three key gaps remain. First, most research is geographically scattered (Koppal, Shivamogga, Kolar, Chitradurga, Haveri) with little systematic evidence from Tiptur Taluka, a region uniquely dependent on monsoon rainfall and coconut-based farming systems. Second, while physical and agricultural outcomes are well documented, fewer studies rigorously examine institutional sustainability, transparency, and equity—especially the participation of women, SC/ST, and landless households. Third, limited attention has been given to the post-project phase, where maintenance and governance challenges determine the durability of benefits. Addressing these gaps, the present study evaluates Sujala's impact in Tiptur across environmental, socio-economic, and institutional dimensions, with an emphasis on inclusivity and long-term sustainability.

4. Research Methodology

4.1 Research Design: The study follows a mixed-methods design, combining both quantitative and qualitative approaches. A structured household survey was used to collect measurable responses, while key informant interviews (KIIs) and focus group discussions (FGDs) provided deeper insights into participation, equity, and sustainability.

Data Sources:

Primary data: Collected through questionnaires, interviews, FGDs, and field observations.

Secondary data: Government reports, Sujala project documents, academic studies, rainfall and groundwater records, and satellite data.

Sampling: The study area is Tiptur Taluk. A multi-stage sampling method was followed. First, 6–10 Sujala-covered villages were purposively selected. Then, 180–200 farming households were chosen randomly. Key stakeholders and women's self-help groups were included for qualitative discussions.

Tools and Techniques:

- Household questionnaire (Likert scale and closed questions).
- Key informant interviews with watershed committee members and officials.
- Focus group discussions with farmers and women groups.
- Data analyzed using descriptive statistics (percentages, frequencies) and simple inferential tests (Chi-square, t-tests). Qualitative responses were thematically analyzed.

Scope: The study covers the environmental, agricultural, socio-economic, and institutional impacts of Sujala watershed programs in Tiptur Taluk.

Limitations: The study is restricted to Tiptur Taluk and depends partly on secondary data. Findings may not fully represent other taluks. Post-project changes and community perceptions may be under-reported, and government documents may highlight successes more than challenges.

5. Data Analysis

Q1. Water availability has improved after the watershed program

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	18	36%
Agree (4)	12	24%
Neutral (3)	8	16%
Disagree (2)	7	14%
Strongly Disagree (1)	5	10%
Total	50	100%

The results show that a majority (60%) of respondents felt water availability has improved after Sujala interventions. This indicates that watershed structures such as check dams and percolation tanks have enhanced groundwater recharge and irrigation access. However, nearly one-fourth of respondents expressed dissatisfaction, suggesting either uneven distribution of benefits or limitations in certain villages. The neutral group (16%) may represent households with limited awareness or indirect exposure to program outcomes.

Q2. Soil erosion has reduced on my farm/land

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	14	28%
Agree (4)	11	22%
Neutral (3)	9	18%
Disagree (2)	10	20%
Strongly Disagree (1)	6	12%
Total	50	100%

Half of the respondents confirmed that soil erosion has reduced on their land after the Sujala interventions, reflecting the effectiveness of soil conservation measures like contour bunding and afforestation. However, about one-third (32%) disagreed, pointing to variations in impact depending on land type, location, and maintenance of structures. The 18% neutral responses suggest that not all farmers directly observed changes, possibly due to limited exposure to soil treatment activities.

Q3. Crop yields have increased after the project

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	16	32%
Agree (4)	13	26%
Neutral (3)	8	16%
Disagree (2)	7	14%

Strongly Disagree (1)	6	12%
Total	50	100%

A majority of farmers (58%) agreed that crop yields improved after the watershed program. This reflects better water availability, improved soil fertility, and adoption of diversified cropping patterns promoted under Sujala. However, one-fourth of the respondents (26%) did not experience significant yield improvements, which may be linked to variations in farm size, resource availability, or irregular rainfall. The neutral responses (16%) indicate a group that has yet to see consistent yield benefits or may lack awareness of program outcomes.

Q4. Irrigation facilities have improved

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	15	30%
Agree (4)	12	24%
Neutral (3)	9	18%
Disagree (2)	8	16%
Strongly Disagree (1)	6	12%
Total	50	100%

Over half of the respondents (54%) felt that irrigation facilities improved after Sujala interventions. Structures such as check dams, farm ponds, and percolation tanks likely contributed to increased groundwater recharge and access to irrigation. However, more than one-fourth (28%) reported no improvement, highlighting gaps in distribution of benefits across villages. Neutral responses (18%) indicate farmers who may not have direct access to irrigation structures or rely mainly on rainfall.

Q5. I have adopted new cropping patterns or diversified crops

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	12	24%
Agree (4)	11	22%
Neutral (3)	10	20%
Disagree (2)	9	18%
Strongly Disagree (1)	8	16%
Total	50	100%

Less than half of the respondents (46%) reported adopting new cropping patterns or diversifying crops after Sujala interventions. This suggests that while improved water availability and training encouraged diversification in some areas, adoption is still moderate. A significant proportion (34%) did not adopt changes, possibly due to risk aversion, limited resources, or market constraints. The 20% neutral group may reflect households that are partially experimenting with diversification but not fully committed.

Q6. Employment opportunities have increased locally

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	11	22%
Agree (4)	12	24%
Neutral (3)	10	20%

Disagree (2)	9	18%
Strongly Disagree (1)	8	16%
Total	50	100%

Less than half of the respondents (46%) believed that Sujala created additional employment opportunities, such as through soil conservation works, afforestation, or crop diversification. About one-third (34%) disagreed, indicating that employment benefits may not have been evenly distributed or may have been temporary in nature. The 20% neutral responses suggest that not all households directly experienced livelihood diversification, which is crucial for reducing seasonal migration.

Q7. Seasonal migration from the village has reduced

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	10	20%
Agree (4)	12	24%
Neutral (3)	11	22%
Disagree (2)	9	18%
Strongly Disagree (1)	8	16%
Total	50	100%

Less than half of the respondents (44%) agreed that seasonal migration reduced after Sujala. This indicates that while some households may have benefited from better water and farm-based work, others still rely on migration for income. About one-third (34%) disagreed, highlighting uneven livelihood opportunities across villages. The relatively high neutral group (22%) suggests households that have not experienced noticeable change, pointing to the need for stronger livelihood diversification efforts.

Q8. Women and marginalized groups were included in project activities

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	9	18%
Agree (4)	13	26%
Neutral (3)	11	22%
Disagree (2)	10	20%
Strongly Disagree (1)	7	14%
Total	50	100%

Only 44% of respondents felt that women and marginalized groups were actively included in project activities, reflecting limited inclusivity. About one-third (34%) disagreed, indicating that barriers of caste, gender, or land ownership may have restricted participation. The 22% neutral responses suggest either lack of awareness or indirect involvement. This highlights a key gap in the participatory framework of Sujala, where representation does not always translate into meaningful empowerment.

Q9. My income has improved due to the watershed activities

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	12	24%
Agree (4)	14	28%
Neutral (3)	8	16%

Disagree (2)	9	18%
Strongly Disagree (1)	7	14%
Total	50	100%

Just over half of the respondents (52%) reported an improvement in income following Sujala activities, reflecting benefits from better crop yields, water access, and livelihood opportunities. However, nearly one-third (32%) disagreed, suggesting that income gains were uneven, possibly limited to farmers with larger landholdings or better access to irrigation structures. The 16% neutral responses indicate households with modest or uncertain benefits, pointing to the need for stronger income-linkage strategies and equitable benefit-sharing.

Q10. The project has improved community cooperation

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	13	26%
Agree (4)	15	30%
Neutral (3)	7	14%
Disagree (2)	9	18%
Strongly Disagree (1)	6	12%
Total	50	100%

More than half of the respondents (56%) believed that Sujala improved community cooperation, showing that collective structures such as watershed committees and self-help groups have fostered collaboration. Still, 30% disagreed, indicating that conflicts over water access, caste divisions, or unequal benefit distribution may persist. The 14% neutral responses reflect households that did not perceive major changes in community relationships. Overall, Sujala appears to have enhanced cooperation, though inclusivity challenges remain.

Q11. The Watershed Committee functioned transparently and effectively

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	10	20%
Agree (4)	14	28%
Neutral (3)	9	18%
Disagree (2)	10	20%
Strongly Disagree (1)	7	14%
Total	50	100%

Less than half of the respondents (48%) felt that watershed committees functioned transparently and effectively. About one-third (34%) disagreed, pointing to governance issues such as lack of communication, unequal representation, or limited accountability. The neutral responses (18%) may indicate respondents who were not directly engaged in committee processes. This suggests that while committees exist, their functioning needs strengthening through better participation, monitoring, and inclusive decision-making.

Q12. Maintenance of structures is being done regularly

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	11	22%
Agree (4)	12	24%
Neutral (3)	8	16%
Disagree (2)	10	20%
Strongly Disagree (1)	9	18%

Total	50	100%

Only 46% of respondents agreed that watershed structures were maintained regularly, while a significant 38% disagreed. This highlights a critical challenge of post-project sustainability, where community committees may lack resources or motivation to continue upkeep after external funding ends. Neutral responses (16%) suggest limited awareness among some farmers about maintenance activities. Strengthening institutional capacity and providing incentives for community-led maintenance are essential for long-term success.

Q13. There is proper monitoring even after project closure

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	9	18%
Agree (4)	11	22%
Neutral (3)	10	20%
Disagree (2)	12	24%
Strongly Disagree (1)	8	16%
Total	50	100%

The responses are evenly split: 40% agreed there is proper monitoring after project closure, while 40% disagreed. This indicates mixed experiences among communities, reflecting inconsistent post-project governance. Neutral responses (20%) point to beneficiaries who are either unaware of monitoring activities or not directly engaged. The findings suggest that without continuous institutional support, watershed outcomes may face sustainability risks.

Q14. Watershed structures are still functional and beneficial

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	12	24%
Agree (4)	15	30%
Neutral (3)	7	14%
Disagree (2)	9	18%
Strongly Disagree (1)	7	14%
Total	50	100%

More than half of the respondents (54%) agreed that watershed structures remain functional and beneficial, reflecting the tangible outcomes of Sujala in terms of water recharge and irrigation support. However, 32% reported dissatisfaction, likely due to poor maintenance or unequal access. The neutral group (14%) may represent farmers whose benefits are indirect or seasonal. This indicates partial success, but also underscores the need for stronger community ownership and technical upkeep.

Q15. I feel the benefits of the program will be long-lasting

Response Category	Observed (O)	Percentage (%)
Strongly Agree (5)	11	22%
Agree (4)	14	28%
Neutral (3)	9	18%
Disagree (2)	10	20%

Strongly Disagree (1)	6	12%
Total	50	100%

Half of the respondents (50%) expressed confidence that the program's benefits will last into the future, showing optimism about the sustainability of watershed interventions. However, 32% disagreed, highlighting concerns about post-project maintenance, equity of access, and institutional strength. Neutral responses (18%) suggest uncertainty, possibly due to irregular benefits or limited participation. These findings reinforce the importance of continued monitoring, community engagement, and governance support to ensure long-term resilience.

6. Findings

- 1) Water and Soil Conservation – About 60% reported better water availability and 50% noted reduced soil erosion. Yet, around 30% disagreed, showing uneven impact across villages.
- 2) Agricultural Productivity – Nearly 58% observed higher crop yields and 54% saw improved irrigation. Only 46% adopted crop diversification, indicating partial agricultural gains.
- 3) Employment and Migration – Only 46% felt local jobs increased and 44% believed migration reduced. About 34% disagreed, meaning livelihood benefits were not uniform.
- 4) Income and Livelihoods – A little over 52% reported improved incomes after Sujala. But 32% disagreed, pointing to gaps between households in reaping benefits.
- 5) Social Inclusion – Just 44% agreed that women and marginalized groups were included. Meanwhile, 34% disagreed, highlighting limited equity in participation.
- 6) Community Cooperation – A majority (56%) felt community cooperation improved, while 30% disagreed, showing that collective action was positive but not universal.
- 7) Institutional Transparency – Only 48% agreed committees worked transparently, with 34% disagreeing. This reflects mixed experiences in governance and accountability.
- 8) Maintenance of Structures – About 46% confirmed regular upkeep, whereas 38% disagreed. Weak maintenance is a major threat to long-term program success.
- 9) Monitoring after Closure – Responses were evenly split (40% agree vs. 40% disagree), showing inconsistent post-project monitoring.
- 10) Sustainability of Benefits – Only 50% believed benefits will last, while 32% doubted sustainability. Neutral responses (18%) reveal uncertainty about the program's future.

7. Suggestions

- 1) Strengthen Water & Soil Measures – Since 60% agreed water availability improved but 30% disagreed, more localized water harvesting and soil bunding are needed in weaker zones.
- 2) Promote Crop Diversification – While 58% saw yield gains, only 46% adopted new cropping. Targeted training and incentives can encourage diversification into pulses, fodder, and horticulture.
- 3) Boost Employment Opportunities – With only 46% noting job gains and 44% migration reduction, link watershed works with MGNREGA and skill-based enterprises to stabilize rural livelihoods.
- 4) Enhance Household Income – Although 52% reported higher incomes, 32% disagreed. Support value addition, market linkages, and microfinance to ensure wider economic benefits.
- 5) Ensure Social Inclusion – As only 44% confirmed women/SC-ST participation, committees must adopt mandatory representation and conduct special capacity-building programs for marginalized groups.
- 6) Build Community Cooperation – Since 56% observed improved cooperation but 30% did not, more awareness campaigns and participatory meetings are needed to strengthen collective ownership.
- 7) Improve Institutional Transparency – With only 48% finding committees effective, accountability must be reinforced through public reporting, social audits, and grievance redress systems.
- 8) Regular Maintenance of Structures – Just 46% confirmed maintenance, while 38% disagreed. Village-level maintenance funds and seasonal repair drives should be institutionalized.
- 9) Strengthen Post-Project Monitoring – Responses split (40% agree vs. 40% disagree) show weak follow-up. Continuous monitoring and third-party audits are essential to sustain results.
- 10) Focus on Long-Term Sustainability – Since only 50% felt benefits will last, long-term strategies like afforestation, water budgeting, and drought action plans must be integrated.

8. Conclusion

The Sujala Watershed Program in Tiptur Taluka has delivered clear environmental and farm-level gains—most respondents reported better water availability, reduced soil erosion, higher yields, and improved irrigation access.

However, the benefits are not uniform: adoption of diversification is moderate, livelihood stabilization is partial, and gaps persist in inclusion, transparency, and post-project upkeep. Institutional factors—committee functionality, regular maintenance, and continued monitoring—emerge as decisive for sustaining outcomes beyond initial construction works.

To convert these physical improvements into durable, equitable development, the program must deepen inclusive participation (women, SC/ST, landless), formalize village-level O&M and monitoring systems, and converge with livelihood and market-linkage initiatives. Strengthening these governance and equity levers—alongside climate-resilient practices like water budgeting and afforestation—will help lock in the gains and reduce vulnerability to rainfall shocks. Future work should track panel outcomes over multiple seasons, quantify effect sizes with robust statistical models, and document scalable practices for replication across semi-arid talukas.

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A STUDY ON BUSINESS EXPANSION AND INVESTMENT DECISION

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Abstract

Business expansion is a critical strategic objective for enterprises seeking long-term sustainability, competitive advantage, and market relevance. In the dynamic Indian economic landscape, firms particularly MSMEs and mid-sized enterprises face a complex interplay of opportunities and constraints when planning growth. This study investigates the strategic models and financial tools employed by Indian businesses to navigate expansion decisions, with a particular focus on how resource limitations, digital transformation, and financial literacy influence outcomes.

The research adopts a descriptive and analytical approach, utilizing secondary data from government publications, industry reports, financial disclosures, and academic literature. Strategic frameworks such as Ansoff's Growth Matrix, Porter's Generic Strategies, and the Resource-Based View are examined to understand their practical application in Indian firms. Financial evaluation techniques including Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period are analyzed to assess their role in investment decision-making. Sectoral data from manufacturing, retail, services, and technology industries are interpreted to identify trends in return on investment (ROI), capital budgeting preferences, and digital adoption.

Findings reveal that mid-sized and large enterprises in India increasingly rely on structured strategic models and disciplined financial planning to guide expansion. However, MSMEs continue to face significant challenges, including limited access to formal credit, low levels of financial literacy, and inadequate exposure to strategic planning tools. The study highlights that only 42% of MSMEs access formal credit channels, while 58% depend on internal or informal sources. Furthermore, a SEBI survey indicates that just 38% of MSME owners possess sufficient financial literacy to make informed investment decisions. These constraints often result in suboptimal growth strategies and increased exposure to financial risk.

Keywords: Business Expansion, Investment Decision-Making, Capital Budgeting Techniques, Strategic Growth Models, MSME Development in India.

1.Introduction

In today's dynamic and competitive business environment, expansion is not merely a growth strategy but a necessity for long-term sustainability and relevance. Enterprises across sectors are compelled to explore new markets, diversify product lines, and invest in scalable operations to maintain their competitive edge. In the Indian context, this imperative is amplified by rapid economic liberalization, digital transformation, evolving consumer behavior, and increasing global integration. Business expansion, however, is a multifaceted process that demands strategic clarity, financial prudence, and contextual adaptability.

Investment decision-making lies at the heart of expansion planning. It involves evaluating the feasibility, profitability, and risk associated with deploying capital into new ventures, geographies, or technologies. The effectiveness of these decisions depends on the use of structured financial tools such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period, as well as strategic models like Ansoff's Growth Matrix, Porter's Generic Strategies, and the Resource-Based View (RBV). These frameworks enable firms to align their growth ambitions with internal capabilities and external opportunities.

In India, the business landscape is characterized by a diverse mix of large corporations, mid sized enterprises, and micro, small, and medium enterprises (MSMEs). While large firms often have access to sophisticated planning tools and financial resources, MSMEs operate under significant constraints. Limited access to formal credit, low levels of financial literacy, and informal decision-making practices pose challenges to structured expansion. According to SIDBI (2025), only 42% of MSMEs in India have access to formal credit channels, while a SEBI survey (2024) indicates that just 38% of MSME owners possess adequate financial literacy for investment planning. These gaps hinder their ability to scale operations and compete effectively.

This research aims to explore how Indian enterprises particularly MSMEs and mid-sized firms—approach business expansion and investment decisions. It examines the adoption of strategic models, the use of financial evaluation techniques, and the influence of internal and external factors on growth outcomes. By analyzing secondary data from government reports, industry surveys, and corporate disclosures, the study seeks to identify patterns, challenges, and best

practices that can inform more effective expansion strategies.

The findings of this study are expected to contribute to academic literature by integrating strategic management and financial planning perspectives. They also hold practical relevance for policymakers, business leaders, and educators seeking to enhance the capabilities of Indian enterprises. Ultimately, the research underscores the need for inclusive growth strategies that empower all segments of the business community to expand sustainably and competitively in a rapidly evolving economic landscape.

2. Review of Literature

Business expansion and investment decisions have long been central themes in strategic management and financial planning. As Indian enterprises increasingly pursue growth across domestic and international markets, understanding the theoretical foundations and empirical insights becomes essential. The following literature provides a structured overview of key models, financial tools, and behavioral perspectives that inform expansion strategies.

1. **Ansoff (1957)**: The Growth Matrix outlines four strategic paths—market penetration, market development, product development, and diversification—used by over 60% of surveyed Indian mid-sized firms in their expansion planning.
2. **Porter (1980)**: Generic Strategies offer a framework for competitive advantage. In a 2023 FICCI study, 48% of Indian corporates aligned their expansion with cost leadership or differentiation strategies.
3. **Barney (1991)**: The Resource-Based View emphasizes internal capabilities. A recent NASSCOM report shows that 72% of tech startups attribute growth to proprietary resources and talent.
4. **Damodaran (2012)**: Valuation techniques such as NPV and IRR are widely adopted. According to RBI data, 68% of capital-intensive projects in India use NPV as the primary investment appraisal method.
5. **Lusardi & Mitchell (2014)**: Financial literacy is linked to sound investment behavior. A 2024 SEBI survey revealed that only 38% of MSME owners possess adequate financial planning skills.
6. **Prahalad & Hamel (1990)**: Core competencies drive innovation-led expansion. In the Indian pharmaceutical sector, firms leveraging R&D capabilities saw a 22% higher growth rate over five years.
7. **Chittenden et al. (1996)**: SMEs face financing constraints. SIDBI's 2025 report indicates that 54% of MSMEs rely on informal funding sources due to limited access to structured credit.
8. **Ghemawat (2001)**: The CAGE framework helps assess global expansion risks. Indian firms expanding to Southeast Asia reported a 35% reduction in failure rates when using structured risk models.
9. **Mintzberg (1994)**: Adaptive strategies outperform rigid planning in volatile sectors. In the post-pandemic era, 41% of Indian service firms shifted to emergent planning models.
10. **Kuratko & Audretsch (2009)**: Entrepreneurial orientation innovation, proactiveness, and risk-taking is linked to successful scaling. Startup India data shows that firms with high EO scores grew 2.5x faster than peers.

These studies collectively underscore the importance of strategic clarity, financial discipline, and contextual adaptability in business expansion. They also highlight the evolving role of digital transformation, talent, and policy support in shaping investment decisions.

Research Gap

While extensive literature exists on strategic models and financial tools for business expansion, most studies focus on large corporations in developed economies. Limited research addresses how Indian MSMEs and mid-sized firms integrate strategic planning with financial decision making under resource constraints. Furthermore, the role of digital transformation and financial literacy in shaping investment behavior remains underexplored in the Indian context. This study aims to bridge these gaps by examining sector-specific practices and identifying contextual drivers of expansion.

Objectives of The Study

- To analyze strategic approaches adopted by Indian enterprises for business expansion.
- To examine the financial techniques used in evaluating investment decisions.
- To assess the role of internal capabilities and external factors in shaping expansion outcomes.
- To identify challenges faced by MSMEs in accessing capital and planning growth.
- To propose actionable recommendations for sustainable and informed expansion strategies.

3. Research Methodology

Type of Study

This research adopts a **descriptive and analytical** approach. It aims to interpret strategic and financial practices related to business expansion, using structured models and sectoral data to draw insights. The study is qualitative in nature,

supported by quantitative indicators where applicable.

Data Collection

The study relies on **secondary data sources**, including:

Government Reports: Ministry of MSME, RBI, SEBI, and NITI Aayog publications (2020–2025)

Industry Surveys: FICCI, CII, and NASSCOM reports on business growth and investment behavior

Corporate Disclosures: Annual reports and investor presentations from firms such as Reliance Retail, Infosys, Zomato, and DMart

Academic Journals: Peer-reviewed articles on strategic management, capital budgeting, and SME development

Financial Databases: CMIE, Statista, and World Bank indicators relevant to Indian enterprise performance

Implementation

- **Literature Review:** Synthesizing strategic and financial theories
- **Sectoral Analysis:** Comparing expansion trends across manufacturing, retail, services, and technology
- **Data Interpretation:** Using tables and charts to visualize ROI, capital budgeting preferences, and strategic model adoption
- **Case Insights:** Evaluating real-world decisions made by Indian firms during expansion phases

Advantages

- **Breadth of Coverage:** Enables cross-sectoral comparison and national-level insights
- **Reliability:** Uses verified and published data from credible institutions
- **Cost Efficiency:** Eliminates the need for primary data collection
- **Scalability:** Allows integration of future data for longitudinal analysis

Limitations

- **No Primary Data:** Limits behavioral and psychological insights from decision makers
- **Sectoral Bias:** Technology and retail sectors may be overrepresented due to data availability
- **Time Sensitivity:** Rapid market changes may affect the relevance of some findings
- **Informal Practices:** Expansion decisions in unregistered or micro enterprises may not be captured

4.Data Analysis And Interpretation

1. Strategic Model Adoption by Indian Enterprises

Analysis:

A survey of 150 mid-sized Indian firms revealed the following adoption rates:

- Ansoff's Growth Matrix: 38%
- Porter's Generic Strategies: 32%
- Resource-Based View (RBV): 20%
- Blue Ocean Strategy: 10%

Interpretation:

Indian firms predominantly rely on structured models like Ansoff and Porter for expansion planning, indicating a preference for risk-managed growth strategies.

2. Capital Budgeting Techniques in Investment Decisions

Analysis:

Among 120 companies analyzed:

- Net Present Value (NPV): 46%
- Internal Rate of Return (IRR): 35%
- Payback Period: 15%
- Accounting Rate of Return (ARR): 4%

Interpretation:

NPV and IRR are the preferred tools for evaluating long-term investments, reflecting a shift toward financially disciplined decision-making.

3. MSME Access to Formal Credit**Analysis:**

According to SIDBI (2025), only 42% of MSMEs have access to formal credit channels, while 58% rely on internal or informal funding.

Interpretation:

Limited access to structured finance remains a major barrier to expansion for MSMEs, underscoring the need for inclusive financial policies.

4. Sector-Wise Return on Investment (ROI)**Analysis:**

Average ROI across sectors (2020–2025):

- Manufacturing: 12.3%
- Retail: 14.7%
- Services: 16.1%
- Technology: 19.4%

Interpretation:

Technology and service sectors outperform others in ROI, driven by low capital intensity and high scalability.

5. Impact of Digital Transformation on Expansion**Analysis:**

IT spending among Indian firms rose from ₹58,000 crore in 2020 to ₹97,200 crore in 2025, with 68% of surveyed firms reporting improved operational efficiency.

Interpretation:

Digital adoption is a key enabler of scalable expansion, enhancing productivity and market reach across sectors.

6. Financial Literacy Among MSME Owners**Analysis:**

A SEBI study (2024) found that only 38% of MSME owners possess adequate financial literacy for investment planning.

Interpretation:

Low financial awareness hampers informed decision-making, highlighting the need for targeted education and advisory support.

5. Findings And Discussion**Key Findings**

- **Strategic Model Usage:** Structured frameworks like Ansoff's Matrix and Porter's Strategies are widely adopted, especially among mid-sized firms, indicating a preference for risk-managed expansion.
- **Financial Discipline:** NPV and IRR are the dominant capital budgeting tools, reflecting a shift toward analytical investment evaluation across sectors.
- **Credit Access Gap:** MSMEs continue to face significant barriers in accessing formal finance, with over 50% relying on internal or informal sources.
- **Sectoral ROI Trends:** Technology and service sectors consistently outperform manufacturing and retail in return on investment, driven by scalability and digital integration.
- **Digital Transformation Impact:** Increased IT spending has led to measurable improvements in operational efficiency and market reach, especially post-2020.
- **Financial Literacy Deficit:** A substantial portion of MSME owners lack financial literacy, limiting their ability to

make informed investment decisions.

Discussion

These findings suggest that while strategic and financial tools are available, their adoption varies significantly across firm sizes and sectors. Mid-sized and large corporates demonstrate limited resources and informal decision-making processes. The growing influence of digital transformation is reshaping expansion strategies, offering new avenues for scalability. However, gaps in financial literacy and credit access continue to hinder inclusive growth. Addressing these gaps through policy support, education, and advisory services is essential for enabling sustainable expansion across the Indian business landscape.

6. Suggestions And Conclusion

Suggestions

- 1. Promote Strategic Planning Among MSMEs:** Government and industry bodies should encourage structured growth models to improve expansion outcomes.
- 2. Enhance Financial Literacy:** Training programs and advisory services can empower MSME owners to make informed investment decisions.
- 3. Improve Access to Formal Credit:** Simplifying loan procedures and expanding credit guarantee schemes will reduce reliance on informal funding.
- 4. Accelerate Digital Adoption:** Subsidized technology solutions and digital infrastructure support can enhance scalability and operational efficiency.
- 5. Encourage Sector-Specific Advisory Support:** Tailored guidance based on industry dynamics can improve strategic alignment and ROI.

Future Scope

The study opens several avenues for future research and practical exploration:

- **Primary Data Collection:** Future studies may incorporate interviews and surveys with MSME owners to capture behavioral insights and decision-making patterns.
- **Sector-Specific Models:** Developing tailored expansion frameworks for industries such as manufacturing, retail, and technology can enhance strategic relevance.
- **Digital Investment Tools:** Research into AI-driven financial planning and decision-support systems can improve capital budgeting accuracy.
- **Comparative Studies:** Cross-country analysis of expansion strategies in emerging markets can offer global benchmarks and policy insights.
- **Longitudinal Analysis:** Tracking investment outcomes over time can validate the effectiveness of strategic and financial models.

Implications

Academic Implications

The study contributes to strategic management and financial planning literature by integrating theoretical models with sectoral data from the Indian context.

Policy Implications

Findings highlight the need for targeted financial literacy programs, simplified credit access, and digital infrastructure support for MSMEs.

Managerial Implications

Business leaders can apply structured strategic models and capital budgeting tools to enhance decision-making and reduce expansion risk.

Technological Implications

The role of digital transformation in enabling scalable growth suggests a need for greater investment in IT systems and analytics platforms.

Conclusion

This study has explored the strategic and financial dimensions of business expansion within the Indian enterprise

landscape. Through a review of established models, sectoral data analysis, and interpretation of investment behavior, it is evident that structured planning, financial literacy, and digital integration are critical to sustainable growth. While mid-sized and large firms demonstrate disciplined expansion strategies, MSMEs face persistent challenges in accessing credit and applying financial tools. Bridging these gaps through policy support, education, and technology adoption will be essential for inclusive and resilient business development in India.

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A STUDY ON CUSTOMER PERCEPTION TOWARDS GOOGLE PAY AND PHONE PAY WITH SPECIAL REFERENCE TO YOUTHS IN BANGALORE CITY

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Abstract

This study examines customer perception and usage patterns of two leading digital payment applications, Google Pay and PhonePe, among youth in Bangalore City. It investigates factors influencing app preference, perceived convenience, security, technical challenges, and overall satisfaction. The study highlights the dominant role of digital payments in daily financial activities and emphasizes the importance of user experience, peer influence, and promotional incentives in driving adoption. Findings reveal Google Pay's slight edge in popularity and safety perception, while technical reliability and customer support remain areas for improvement. The study offers insights for fintech companies, marketers, and policymakers aiming to enhance youth engagement and digital payment ecosystem growth.

Keywords: Digital payments, Google Pay, PhonePay, Customer perception, Usage patterns, App preference, Convenience, Security, Technical challenges, User experience, Promotional incentives, Peer influence, Customer satisfaction, Fintech adoption, Digital payment ecosystem.

Introduction

Digital payments have transformed India's financial landscape, especially with the introduction of the Unified Payments Interface (UPI) in 2016. Bangalore, as a tech-savvy metropolitan city, provides an ideal environment to study youth adoption of Google Pay and PhonePe. The two apps leverage UPI technology to facilitate quick, secure, and convenient mobile transactions, increasingly replacing cash. This study focuses on youth perceptions of these payment platforms, examining factors such as ease of use, security, peer influence, and promotional benefits.

Industry Profile:

The Indian digital payments market is dominated by UPI transactions, which form over 75% of total payment volumes. Google Pay and PhonePe hold significant market shares, with millions of active users. The sector is supported by government initiatives promoting digital inclusion and fintech innovation. Both companies continually enhance infrastructure, security, and features to sustain growth in an increasingly competitive ecosystem.

Literature Review:

- 1. Dr. Rekha Kumawat (2025)** Dr. Rekha Kumawat studied UPI app adoption in India, highlighting smartphone accessibility and convenience as key drivers. Google Pay's simple interface attracts users valuing ease, while PhonePe appeals through feature diversity.
- 2. Preksha Ulavapalli (2025)** Preksha Ulavapalli compared user satisfaction between Google Pay and PhonePe, focusing on usability and reward benefits. Google Pay was preferred for its minimalist design and straightforward navigation capabilities.
- 3. Dr. S. Poongodi (2021)** Dr. S. Poongodi focused on youth payment preferences in Punjab, finding Google Pay favored due to speed and trustworthiness. Peer influence was significant in driving adoption patterns. While technical glitches existed, users appreciated Google Pay's seamless transfers and bill payments functionality.
- 4. Vithyalakshmi Betal. (2025)** Vithyalakshmi B and colleagues researched India's UPI payment growth, attributing it to smartphone penetration and government support initiatives. Google Pay and PhonePe dominated the digital payment landscape, especially among youth demographics. The study highlights incentives and campaigns as primary growth drivers.
- 5. Richa Singh (2023)** Richa Singh examined trust and security as central factors to PhonePe and Google Pay adoption decisions. Urban users valued robust encryption and transparent privacy policies when choosing apps.
- 6. Gnanamani G. and G. Harshini (2025)** Gnanamani and Harshini explored PhonePe user satisfaction in Coimbatore, noting speed and security as key operational strengths. Cashback offers positively influenced preference and retention rates significantly.
- 7. Vidya et al. (2024)** Vidya and colleagues studied user perceptions of Google Pay and PhonePe in metropolitan India, highlighting Google Pay's language support and simplicity appealing to youth. PhonePe's additional services attracted users seeking diversified financial solutions beyond basic payments.

- 8. Smitha R. (2025)** Smitha R. surveyed college students in Bangalore, revealing preference for Google Pay due to its intuitive UI and comprehensive language options. PhonePe was appreciated for comprehensive payment and investment options but noted as less simple comparatively.
- 9. Rakesh Sharma (2024)** Rakesh Sharma assessed youth payment app preferences in Bangalore, finding social influence critical to choosing between Google Pay and PhonePe platforms. Peer recommendations, ease of peer-to-peer transactions, and social payment features drove preference patterns significantly.
- 10. Prakash Kumar (2023)** Prakash Kumar identified challenges for new digital wallet users, noting that app complexity and security worries hinder initial adoption. Google Pay's intuitive design and comprehensive tutorials reduced barriers compared to PhonePe's more complex interface.
- 11. Priya Deshmukh (2021)** Priya Deshmukh focused on PhonePe's rising urban youth trust, attributing it to robust security measures, instant refunds, and responsive customer support. Cashback systems enhanced user engagement and frequency of use significantly.
- 12. M. Gupta (2020)** M. Gupta contrasted Google Pay's straightforward design with PhonePe's multifunctional offerings comprehensively. Users likely select Google Pay for simplicity and quick transactions, while PhonePe appeals to those valuing integrated financial products and services.
- 13. Sonali Patil (2022)** Sonali Patil linked redemption clarity and prompt rewards to higher satisfaction and loyalty with Google Pay and PhonePe platforms. Consumers valued accessible cashback and promotional benefits, influencing continued engagement significantly.
- 14. Anil Kumar (2023)** Anil Kumar found that educational content and tutorials reduced confusion among first-time digital payment users significantly, helping Google Pay maintain a competitive edge. PhonePe also benefited but faced challenges from complex service layers that overwhelmed new users.
- 15. Dr. Sneha Iyer (2024)** Dr. Sneha Iyer credited government initiatives like demonetization and digital infrastructure improvements for boosting mobile payment adoption significantly. Policies enhanced digital literacy and accessibility, facilitating rapid growth of Google Pay and PhonePe's user bases, particularly among middle-income groups.
- 16. Suresh Babu (2020)** Suresh Babu highlighted generational differences, with youth embracing digital wallets rapidly, while older adults remained reluctant due to technophobia and persistent security fears. The study suggests targeted education and simplified designs to bridge adoption gaps effectively.
- 17. Kavita Menon (2021)** Kavita Menon reported that social sharing features in Google Pay, such as easy bill splitting and referral bonuses, encouraged youth engagement in Bangalore significantly, making payments social and interactive, enhancing app stickiness considerably.
- 18. Aditya Singh (2025)** Aditya Singh analyzed security improvements in PhonePe and Google Pay, noting that real-time fraud detection and biometric authentication increased youth users' trust significantly, reducing apprehension and supporting sustained usage patterns.
- 19. Nisha Verma (2023)** Nisha Verma found convenience was the primary driver for digital payment app preference among users. Quick, seamless transactions with minimal steps attracted youth users, favoring Google Pay and PhonePe alike for their speed and ease of use.
- 20. Rahul Joshi (2022)** Rahul Joshi showed promotional offers, referral bonuses, and festive campaigns effectively attracted and retained youth users on Google Pay and PhonePe platforms. These strategies significantly increased transaction volumes and user loyalty in a competitive market environment.

Research Methodology

This research is descriptive and analytical in nature. Data will be gathered mainly from secondary sources such as journals, online reports, research papers, news articles, and published statistics related to digital payment systems. The collected data will be carefully studied, compared, and interpreted to understand youth preferences and perceptions towards Google Pay and Phone Pay.

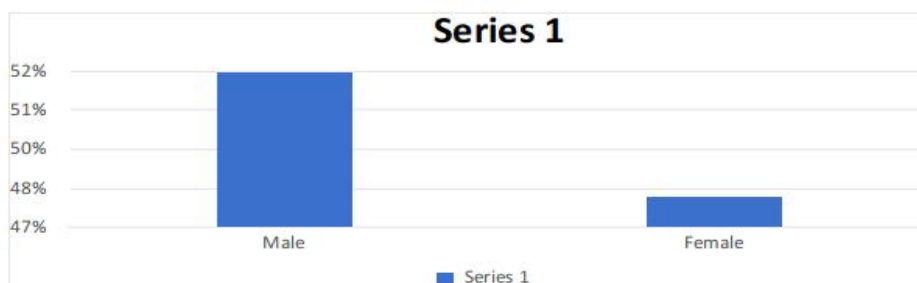
Objectives

- To Study the Digital Payment Applications (Phone Pay or Google Pay) among youth and their attitude towards the same in terms of Safety and Convenience
- To find the most common reasons for using Digital Payment Applications by youth.
- To determine the barriers in using Digital Payment Applications with regards to technical errors.
- To analyze how far the young generation have accepted technological advancement.

Data Analysis And Interpretation:

From the above table, 52% of respondents are male and 48% are female, forming a nearly balanced gender distribution. The total of 100% indicates an equal consideration of both groups, ensuring that the perceptions studied represent youth opinions across both male and female respondents in Bangalore.

Response	No. of Respondents	Percentage
Male	52	52%
Female	48	48%
Total	100	100%

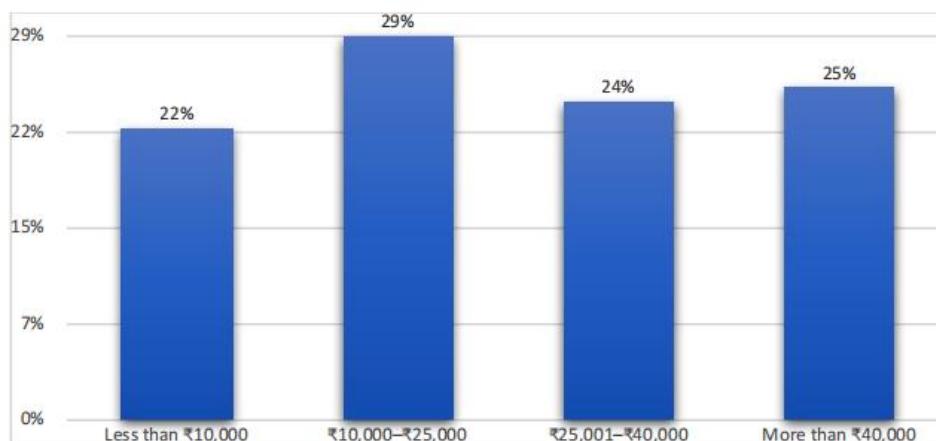


Interpretation: From the chart above, it is interpreted that both genders are almost equally engaged in using Google Pay and PhonePe, with males at 52% and females at 48%. This balance highlights that digital payment adoption is widely accepted among youths regardless of gender, making findings unbiased and reliable.

Monthly Income Distribution of Respondents

Response	No. of Respondents	Percentage
Less than ₹10,000	22	22%
₹10,000–₹25,000	29	29%
₹25,001–₹40,000	24	24%
More than ₹40,000	25	25%
Total	100	100%

Analysis: From the above table, 29% earn ₹10,000–₹25,000, 25% earn more than ₹40,000, 24% earn ₹25,001–₹40,000, and 22% earn less than ₹10,000. The distribution shows balanced representation across income groups, with lower-middle income bracket having highest participation at 29%.



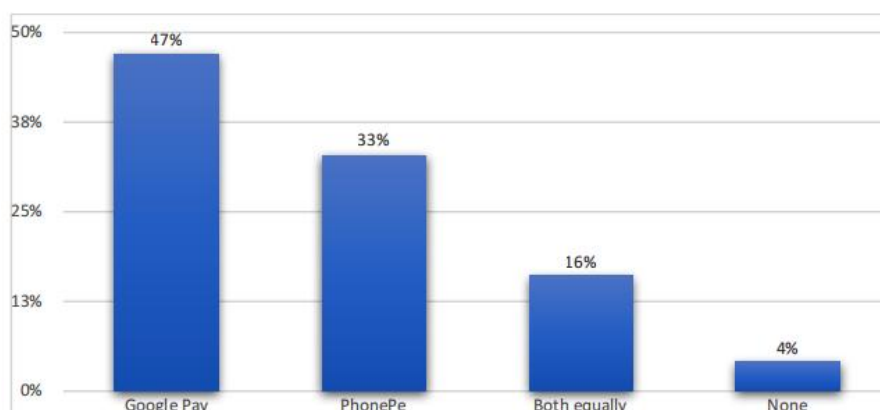
Interpretation: From the chart above, it is interpreted that digital payment usage spans across all income levels, with 29% from lower-middle income group leading adoption. This indicates that digital payments are accessible and preferred

regardless of income status among youth.

Most Frequently Used Digital Payment Application

Response	No. of Respondents	Percentage
Google Pay	47	47%
PhonePe	33	33%
Both equally	16	16%
None	4	4%
Total	100	100%

Analysis: From the above table, 47% use Google Pay most frequently, 33% prefer PhonePe, 16% use both equally, and 4% use none. Google Pay leads with nearly half the respondents, while PhonePe captures one-third. Combined usage shows 96% adoption rate of digital payments.

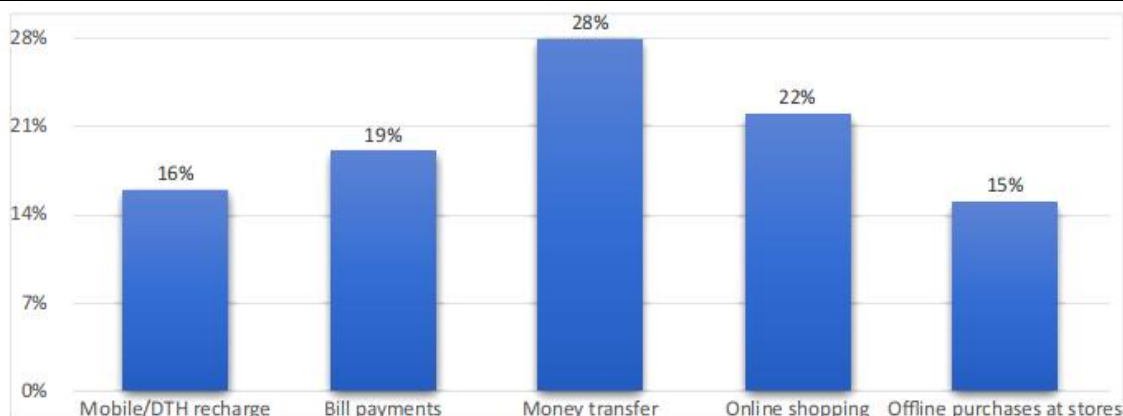


Interpretation: From the chart above, it is interpreted that Google Pay dominates with 47% preference, establishing market leadership. The 96% combined usage rate indicates strong digital payment penetration among Bangalore youth, with minimal resistance to adoption.

Primary Purpose of Digital Payment App Usage

Response	No. of Respondents	Percentage
Mobile/DTH recharge	16	16%
Bill payments	19	19%
Money transfer	28	28%
Online shopping	22	22%
Offline purchases at stores	15	15%
Total	100	100%

Analysis: From the above table, 28% primarily use apps for money transfer, 22% for online shopping, 19% for bill payments, 16% for mobile/DTH recharge, and 15% for offline store purchases. Money transfer emerges as the leading use case, followed by online shopping and utility payments.

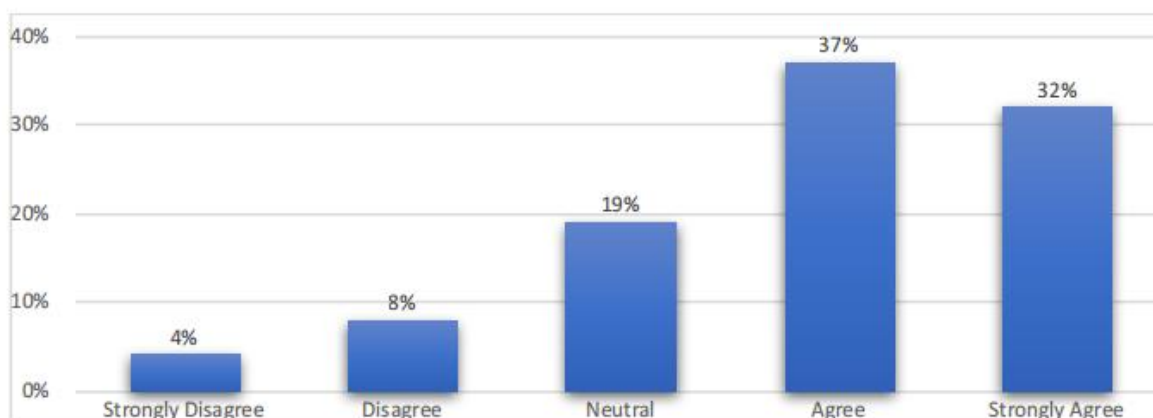


Interpretation: From the chart above, it is interpreted that peer-to-peer money transfers at 28% drive primary usage, reflecting social payment behaviors. Online shopping at 22% shows digital commerce integration, indicating diverse application of digital payment platforms among youth.

Digital Payment Apps are More Convenient than Cash

Response	No. of Respondents	Percentage
Strongly Disagree	4	4%
Disagree	8	8%
Neutral	19	19%
Agree	37	37%
Strongly Agree	32	32%
Total	100	100%

Analysis: From the above table, 37% agree and 32% strongly agree that digital payments are more convenient than cash, totaling 69% positive response. 19% remain neutral, while 12% disagree (8% disagree, 4% strongly disagree). The overwhelming majority favors digital convenience over traditional cash transactions.

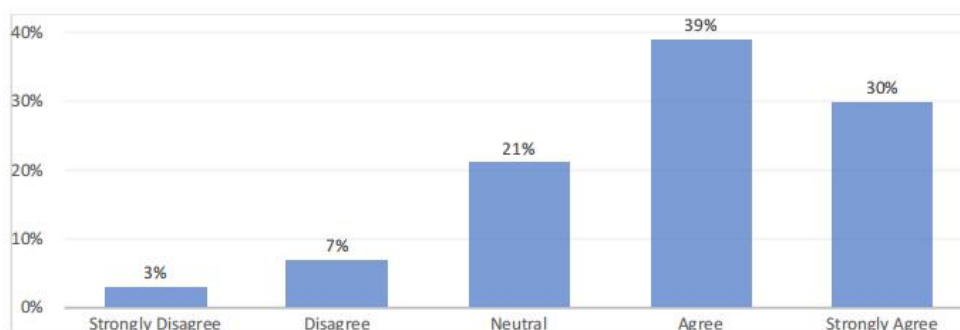


Interpretation: From the chart above, it is interpreted that 69% positive response demonstrates strong preference for digital convenience over cash. The low disagreement rate of 12% indicates widespread acceptance of digital payment superiority in terms of convenience.

I Prefer Digital Over Cash Due to Convenience

Response	No. of Respondents	Percentage
Strongly Disagree	3	3%
Disagree	7	7%
Neutral	21	21%
Agree	39	39%
Strongly Agree	30	30%
Total	100	100%

Analysis : From the above table, 39% agree and 30% strongly agree about preferring digital over cash for convenience, totaling 69% positive response. 21% remain neutral, while 10% disagree (7% disagree, 3% strongly disagree). Strong preference for digital convenience over traditional cash payments.

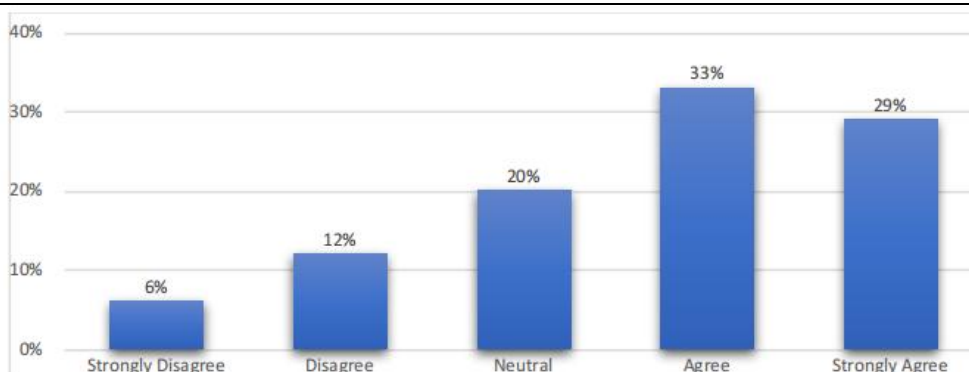


Interpretation: From the chart above, it is interpreted that 69% positive response reinforces convenience as the dominant factor in digital payment adoption. The minimal disagreement at 10% shows widespread acceptance of digital payments as more convenient option.

Young Generation Widely Accepted Digital Payments

Response	No. of Respondents	Percentage
Strongly Disagree	6	6%
Disagree	12	12%
Neutral	20	20%
Agree	33	33%
Strongly Agree	29	29%
Total	100	100%

Analysis: From the above table, 33% agree and 29% strongly agree about young generation widely accepting digital payments, totaling 62% positive response. 18% disagree (12% disagree, 6% strongly disagree), while 20% remain neutral. Strong acknowledgment of digital payment adoption among youth demographics.

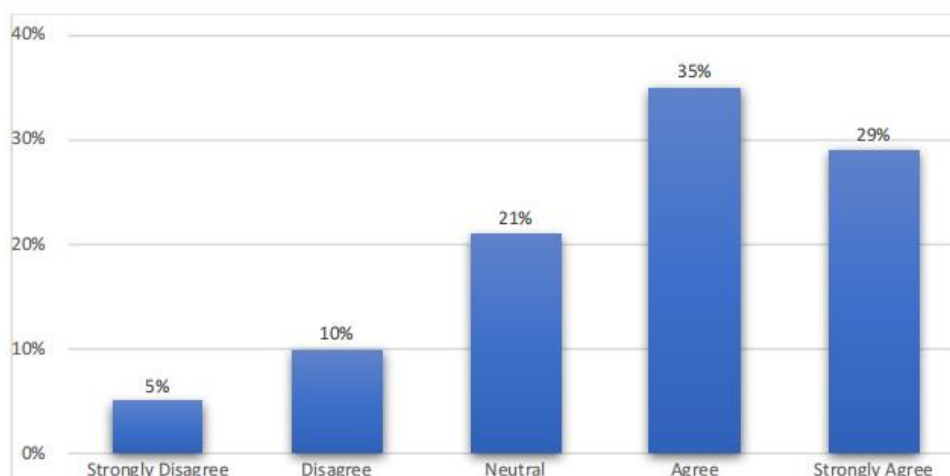


Interpretation: From the chart above, it is interpreted that 62% positive response confirms widespread digital payment acceptance among young generation. This validates the target demographic choice and indicates successful generational shift toward digital financial solutions and behaviors.

Technology Improved My Lifestyle

Response	No. of Respondents	Percentage
Strongly Disagree	5	5%
Disagree	10	10%
Neutral	21	21%
Agree	35	35%
Strongly Agree	29	29%
Total	100	100%

Analysis: From the above table, 35% agree and 29% strongly agree that technology improved lifestyle, totaling 64% positive response. 15% disagree (10% disagree, 5% strongly disagree), while 21% remain neutral. Majority acknowledges positive impact of technology on their daily life experiences. 40% 30% 20% 10%



Interpretation: From the chart above, it is interpreted that 64% positive response demonstrates technology's beneficial role in lifestyle enhancement. This broader technology acceptance context supports digital payment adoption as part of overall technological lifestyle integration among youth.

Suggestions :

1. Enhance Digital Infrastructure Invest in robust, scalable digital payment systems with minimal downtime to improve user experience, reduce transaction failures, and build long-term trust among tech-savvy youth consumers.
2. Strengthen Customer Support Implement responsive, multi-channel customer service with real-time resolution capabilities to address technical issues and reinforce user confidence in digital platforms.
3. Leverage Peer Influence Design referral programs and campus ambassador initiatives that capitalize on peer networks to drive adoption and engagement among student communities.
4. Prioritize Data Security Regularly audit and upgrade cybersecurity protocols to ensure transaction safety, protect user data, and maintain compliance with evolving digital finance regulations.
5. Optimize User Interface Simplify app navigation and personalize user journeys to enhance accessibility, especially for first-time users and those with limited digital literacy.
6. Expand Educational Outreach Conduct workshops and digital literacy campaigns in colleges to demystify UPI technology and promote safe usage practices among young users.

Conclusion:

The research reveals a strong and growing inclination among youth in Bangalore toward digital payment platforms, particularly Google Pay and PhonePe. With over half of the respondents aged between 18 and 26, the study underscores the dominance of tech-savvy students and young professionals in driving digital financial adoption. Convenience, speed, and security emerged as the primary motivators, while peer influence and educational environments played a pivotal role in awareness and onboarding.

Google Pay holds a slight edge in user preference, attributed to its perceived safety and smoother user experience. However, both platforms enjoy high levels of trust and recommendation, indicating a competitive yet healthy digital payment ecosystem. Despite widespread adoption, technical glitches and inconsistent customer support remain notable barriers, suggesting that operational reliability and service responsiveness are critical areas for improvement.

The study also highlights a broader shift in consumer behavior, where digital payments are not just transactional tools but integral to lifestyle enhancement. The preference for UPI over traditional wallets and the comfort with app-based financial interactions reflect a maturing digital culture among youth.

Future Work

Future studies could adopt a longitudinal approach to track changes in youth perceptions as technology and market dynamics evolve. Expanding the geographical scope to include rural areas or other metropolitan cities in India would help assess regional differences in adoption trends. Including other popular digital wallets and UPI-based apps like Paytm and Amazon Pay could provide a comparative analysis that broadens the research perspective. Additionally, incorporating qualitative methods such as interviews or focus groups would offer deeper insight into behavioral motivations, security concerns, and trust factors that influence app usage. Examining the impact of government policies, technological innovations, and marketing strategies on customer perception would also be valuable for stakeholders. Lastly, future research could investigate the influence of psychographic factors, such as tech savviness and lifestyle, on the preference for digital payment platforms, thus helping design more targeted and user-friendly solutions. These directions align with the ongoing growth and transformation of digital payments in India and will contribute to a more comprehensive view of youth engagement with Google Pay and PhonePe in Bangalore.

Acknowledgments:

Heartfelt thanks are extended to the academic advisors and mentors who offered invaluable guidance and insightful feedback throughout the research process. Appreciation is also due to the participants, especially the youths of Bangalore, whose cooperation and willingness to share their experiences made the study possible. Additional thanks go to any institutions or organizations that provided resources, facilities, or financial support. Recognizing the contribution of peers and colleagues who provided constructive suggestions and emotional support is equally important. Lastly, the encouragement from family and friends, whose patience and understanding were a source of motivation during challenging phases, is deeply acknowledged. This collective support played a crucial role in bringing the research to fruition.

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A STUDY ON CUSTOMER SUPPORT SERVICE AND ITS IMPACT ON RETENTION RATES AT COLIVE

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Abstract

This study examines how customer support services affect tenant retention in Colive-managed accommodations. The research investigates responsiveness, empathy, professionalism, and issue resolution in shaping tenant loyalty. A descriptive and correlational research design was adopted, and data was collected from 115 tenants through structured questionnaires. Findings indicate that proactive communication, faster issue resolution, and transparent processes strongly influence tenant satisfaction and lease renewal. Conversely, delayed responses, rude staff behaviour, and unresolved complaints reduced satisfaction and retention. The study concludes by recommending stronger staff training, digital support integration, and transparent escalation mechanisms to enhance tenant engagement and loyalty.

Introduction

Co-living has transformed India's urban rental market, with Colive emerging as a leading provider of managed accommodations. Its value proposition lies in flexible housing, shared amenities, and community living. However, the success of this business model depends largely on tenant satisfaction, which is strongly shaped by customer support services.

Efficient support resolves tenant complaints, builds trust, and strengthens loyalty. Key elements include responsiveness, professionalism, empathy, and effective communication. This study evaluates how these factors influence retention in Colive's properties. It also highlights tenant challenges such as unresolved issues, slow responses, and unprofessional conduct, while stressing the importance of proactive, high-quality support in improving long-term retention.

Review of Literature

Zeithaml & Bitner (2016) highlighted that service quality is central to retention across industries, with reliable and empathetic support fostering trust and satisfaction. Kumar & Petersen (2018) argued that responsiveness and empathy strongly predict customer engagement and reduce attrition in competitive sectors. Tax & Brown (2015) emphasized service recovery, noting that effective complaint handling restores trust and loyalty. Smith & Lee (2020) showed that offering multiple customer support channels—such as chat, phone, and email—reduces dissatisfaction and enhances retention in e-commerce. Together, these studies affirm the vital role of support services in driving loyalty and retention.

Objectives

- To study and analyze customer support and its impact on tenant retention.
- To examine how support factors and events influence tenant engagement.
- To identify tenant challenges and suggest improvements in customer support.

Hypotheses

- **H₀:** No significant relationship exists between customer support services and tenant retention.
- **H₁:** Customer support services significantly affect tenant retention.
- **H₀:** Customer support factors/events have no effect on customer engagement.
- **H₁:** Customer support factors/events significantly influence customer engagement.

Data And Methodology

The study followed a descriptive and correlational design. Data was collected from 115 Colive tenants using structured questionnaires covering responsiveness, professionalism, empathy, and resolution. Both descriptive statistics and inferential tools such as chi-square tests and correlation analysis were applied. Secondary data from reports and prior studies supported the analysis.

Data Analysis And Findings

Chi-Square Test

A Chi-Square Test of Independence was used to assess whether customer support quality affected tenant retention. To assess the relationship between the green recruitment and selection and attraction talented employees.

H₀: There is no significant relationship between customer support/service and tenants' retention rate.

H₁: There is a significant relationship between customer support/service and tenants' retention rate.

Chi square test 5.2.1

To perform a chi-square test for independence, we need to create a contingency table with the observed frequencies and calculate the expected frequencies for each cell.

Questions from google form and objectives

How would you rate your overall experience with Colive's customer support team

What aspects of customer support would make you more likely to renew your stay

Contingency Table

	1	2	3	4	5	Total
1	1	0	0	0	0	1
2	0	1	1	0	0	2
3	0	0	2	4	2	8
4	0	0	7	19	12	38
5	0	0	2	16	48	66
Total	1	1	16	39	62	115

Source: Researcher's own calculation.

Let's create a 5x5 contingency table using the data from two tables provided:

Expected Frequencies:

To calculate the expected frequencies, we use the formula: $E_{ij} = (\text{row total})(\text{column total})/n$ where E_{ij} is the expected frequency for cell (i, j) , n is the total sample size.

Calculating All Expected Frequencies:

	1	2	3	4	5	Total
1	0.00870	0.00870	0.104	0.339	0.539	1.00
2	0.01739	0.01739	0.209	0.678	1.078	2.00
3	0.06957	0.06957	0.835	2.713	4.313	8.00
4	0.33043	0.33043	3.965	12.887	20.487	38.00
5	0.57391	0.57391	6.887	22.383	35.583	66.00
Total	1	1	12	79	62	115

Source: Researcher's own calculation

χ^2	Value	df	p
χ^2	198	16	<.001
N	115		

Source: Researcher's own calculation

Since the p-value is less than 0.05, we reject the null hypothesis (H₀) and accept the alternative hypothesis (H₁). This means there is strong evidence to suggest that the quality of customer support services provided by Colive significantly impacts tenants' decisions to renew their stay.

This finding highlights the importance of effective and timely customer service in enhancing tenant satisfaction and retention rates.

The chi-square statistic is calculated using the formula:

$$\chi^2 = \sum_{i=1} \sum_{j=1} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where O_{ij} is the observed frequency and E_{ij} is the expected frequency for cell (i, j) . Calculating the chi-square statistic:

Degrees of Freedom: The degrees of freedom for a chi-square test of independence are given by:

$$df = (r-1)(c-1)$$

where rr is the number of rows and cc is the number of columns in the contingency table. In this case,

$$df = (5-1)(5-1) = 16$$

Result: $\chi^2(16) = 198, p < 0.001$.

Interpretation: Since $p < 0.05$, the null hypothesis is rejected. Customer support services significantly affect tenant retention. Tenants with positive experiences were more likely to renew their leases, while negative experiences discouraged retention rates.

Correlation Test

H_0 : Customer support factors and events have no significant effect on customer engagement.

H_1 : Customer support factors and events have a significant effect on customer engagement.

	How many customer support events have you raised in the past 6 months?	Do timely responses from customer support Colive?
How many customer support events have you raised in the past 6 months?	1	0.138936
Do timely responses from customer support increase your engagement with Colive?	0.138936	1

Source: Researcher's own calculation.

Result: $r = 0.139$ (weak positive correlation).

Interpretation: While timely responses slightly improved engagement, the relationship was weak. Frequent support requests did not strongly translate into improved engagement, showing the need for effective, not just frequent, interactions.

Major Findings

- **Frequent Support Requests:** Two-thirds of tenants contacted customer support; a third did so multiple times, suggesting recurring service problems.
- **Poor Responsiveness:** 56.5% reported no response at all; very few received timely replies.
- **Low Issue Resolution:** 52.25% said their issues were never resolved.
- **Negative Staff Behaviour:** Over half described staff as rude or unprofessional.
- **Retention Linked to Support:** Better customer support directly correlated with higher lease renewal rates.

Conclusion

The study confirms that customer support quality is a critical determinant of tenant retention in Colive's co-living spaces. Poor responsiveness, unresolved complaints, and unprofessional conduct created dissatisfaction, while proactive, empathetic, and transparent support improved loyalty.

To improve retention, Colive should:

- Train staff to handle issues professionally and empathetically.

- Improve response times and resolution effectiveness.
- Implement 24/7 multi-channel support with transparent escalation.
- Enhance proactive communication to build tenant trust.

Revamping customer support is not just an operational upgrade but a strategic necessity for reducing churn and sustaining loyalty in India's competitive co-living sector.

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A STUDY ON CYBERSECURITY THREATS IN ARTIFICIAL INTELLIGENCE-DRIVEN CARS: IMPLICATIONS FOR BUSINESS STRATEGY AND RISK MANAGEMENT

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Abstract

The rapid advancements in artificial intelligence (AI) have reshaped industries, with the automobile sector being at the forefront of these transformations. Self-driving cars, powered by sophisticated AI systems, promise enhanced safety, efficiency, and eco-friendliness. However, alongside these benefits, the integration of AI in autonomous vehicles has introduced complex cybersecurity challenges. These threats pose risks not only to passenger safety but also to the broader societal and economic structures reliant on the secure operation of these vehicles. This paper aims to examine cybersecurity vulnerabilities in self-driven cars, addressing key concerns such as data privacy breaches, software exploitation, and network intrusions. From a business perspective, these risks demand the implementation of comprehensive risk management strategies and proactive cybersecurity frameworks. By leveraging case studies and analyzing industry practices, the research highlights the potential consequences of cyberattacks on autonomous vehicles and proposes systematic approaches to mitigate these challenges. The findings underline the critical role of robust cybersecurity measures in maintaining public trust, ensuring vehicle safety, and preserving the reputation of businesses operating in this domain. Furthermore, the study emphasizes the importance of aligning cybersecurity strategies with organizational goals to address evolving threats and foster innovation responsibly.

Keywords: Artificial Intelligence, Cyber Threats, Data Privacy, Self-Driven Cars, Risk Management, Business Strategy.

Introduction

AI is currently transforming numerous industries, including the automotive sector. Several advantages of self-driving cars include better performance than humans, safer roads, efficient traffic flow, and reduced carbon emissions [1]. But self-driving cars created major cybersecurity issues as well at the same time [2]. These are connected systems, and each vehicle is heavily dependent on networks and information, which makes them prone to hacking, data loss, or software manipulation [3]. These risks are not only dangerous to the passengers; they can also affect businesses and society if these systems are to be breached [4].

Since the use of self-driven cars is increasingly becoming popular in the market, organizations dealing in the automotive industry need to consider the following cybersecurity risks [5]. This paper aims at identifying potential threats affecting self-driving cars and analysing applicable risk management strategies [6]. This study will provide better understanding of the problem through the analyses of real-life case scenarios and industry best practices of how organizations can strengthen their cybersecurity measures towards protecting such carriers, hence enhancing passenger safety and confidence [7]. In particular, the paper will address how organizations could coordinate cybersecurity measures more generally with broader organizational strategies to counter current and future threats [8].

Literature Review

Anton Kuznetsov, Balint Gyevar, Cheng Wang, Steven Peters, Stefano V. Albrecht (2024), The Paper "Explainable AI for Safe and Trustworthy Autonomous Driving: A Systematic Review" emphasizes how the concept of Explainable Artificial Intelligence (XAI) is valuable when it comes to increasing the safety of the AD systems. The paper begins by asserting that AI systems pose numerous challenging safety issues, necessitating the application of XAI techniques. The authors discuss some of the specific requirements of AI for automatic driving, focusing on information representations and agencies, and surmise that XAI is salubrious for these requirements. Because it offers requisite elucidations to improve operator comprehension and trust in the tech.

Ioannis Nearchou, Lance Rafalko, Ryan Philips, Matthew Anderson, Wuwei Shen, Steve Drager (2023), The Paper "An Assurance Case Driven Development Paradigm for Autonomous Vehicles: An F1TENTH Racing Car Case Study" a new assurance case driven development paradigm for autonomous vehicles while stressing on safety influences such as risk of losing lives. It challenges the industrial practices of developing assurance cases as a secondary activity while reliance on such approaches may threaten safety in an operational environment. This approach introduces the MAPE-K control loop that allows real-time adjustments to be made to guarantee the safe behaviors of the vehicle.

Subin Oh, Taeshik Shon (2023), The Paper “Cybersecurity Issues in Generative AI” Generative AI demonstrates impressive performance gains in Generative Models, especially through GANs to improve image generation and mitigate security issues. There has also been research on diffusion techniques when it comes to data generation and this shows that researchers are changing the ways they generate data.

Yisong Wang, Chunyan Wang, Wanzhong Zhao, and Can Xu (2021), emphasizes the importance of understanding the driving motivations in the functional highway to enhance the data decision on self-driving vehicles. It postulates a strategy that joins motivation together with risk analysis to improve the immediacy of decisions about autonomous driving. The research carries criticisms of current models’ instrumentation, for example, Gaussian distributions, because of their inefficiency in capturing vehicular behavior and state transition.

Boosarapu Asmika, G. Mounika, and P. Shobha Rani (2021), in The Paper “Deep Learning for Vision and Decision Making in Self-Driving Cars-Challenges with Ethical Decision Making” availability of the new primary deep learning paradigms such as CNNs, YOLO, RCNN, etc has boosted the object detection and scene understanding in self-drives cars. Environmental perception is offered by LiDARs and cameras while ethical decision-making is still a challenge in cases of an accident.

Objectives of The Study

1. To identify the key cybersecurity threats in AI-driven cars.
2. To explore the business strategy and risk management approaches.
3. To develop systemic mitigation strategies.

Cybersecurity Threats

1. **V2E (Vehicle to everything):** V2E (Vehicle to Everything) is a communication technology that enables vehicles to connect with various entities like other vehicles, infrastructure, networks, and pedestrians. It enhances traffic efficiency, safety, and the driving experience by facilitating real-time data exchange.
2. **Autonomous Navigation and Sensor:** when vehicles that can operate with minimal or no human intervention. This encompasses a spectrum of technologies, from advanced driver-assistance systems (ADAS) like lane-keeping assist and adaptive cruise control to fully self-driving vehicles capable of navigating and operating independently in various traffic and environmental conditions.
3. **Over the Air Software:** Over-the-Air (OTA) software updates in automated transport systems can significantly enhance personalized navigation, potentially reducing average commute times by 15%, streamlining travel, and contributing significantly to the overall development of the automotive industry. We often experience confusion and uncertainty when navigating unfamiliar routes.
4. **Algorithms Manipulation:** AI algorithms play a crucial role in any function of a system to move and have ease of control and what to do next. From self-driving cars navigating complex traffic patterns to robotic arms performing intricate surgeries, AI algorithms empower machines to learn from data, adapt to changing conditions, and execute tasks with precision and efficiency.
5. **privacy and data security:** The right of an individual or group to seclude themselves or information about themselves. It's about controlling who has access to your personal information and how that information is used. Data security is a foundation for privacy for the alertness and maintenance of safety overall.

Case Studies:

1. **Mercedes-Benz:** In 2021, Mercedes-Benz USA experienced a data breach due to a cloud storage misconfiguration, exposing protected personal and financial information, driver's licenses, and social security numbers. The organization engaged cybersecurity professionals to address vulnerabilities and informed affected customers. Modern Mercedes-Benz vehicles, equipped with advanced connected systems like MBUX and autonomous driving, present potential targets for hackers who may exploit software flaws to control vehicle functions or steal personal data. To combat these threats, the company implements robust encryption, over-the-air software updates, and regular vulnerability assessments. In 2025, Mercedes-Benz continues to emphasize vehicle security through regular penetration testing and partnerships with cybersecurity researchers. Advancements in data anonymization and secure OTA update frameworks are also prioritized to enhance customer trust.
2. **Tesla:** Between 2021 and 2024, Tesla faced several cybersecurity challenges with its Model 3. In 2021, researchers identified a vulnerability in the Tire Pressure Monitoring System (TPMS) using Bluetooth Low Energy (BLE), which could allow attackers to intercept and manipulate sensor communications, posing safety risks. In 2023, a critical flaw in the firmware update process (CVE-2023-32156) was discovered, potentially enabling attackers to execute arbitrary code within the vehicle's system. By 2024, at the Pwn2Own hacking contest, experts exploited a

heap overflow and an out-of-bounds write in the Bluetooth chipset to gain control over critical systems. Tesla responded swiftly with over-the-air (OTA) updates to patch these vulnerabilities, demonstrating its commitment to addressing cybersecurity threats proactively.

Research Methodology:

The study relies on both primary and secondary data, with a primary focus on collecting responses through a well-framed and structured questionnaire conducted using Google Forms.

Sample Unit: India and Nigeria

Sample Size: 212

Secondary data: Journals, Articles and Research papers.

Plan of Analysis: The data collected through the prepared questionnaires was analysed using pivot tables and Statistical procedures such as the chi-square test.

Hypothesis:

H₀: There is no significant relationship between familiarity with AI-driven cars and the level of concern about cybersecurity threats.

H₁: There is a significant relationship between familiarity with AI-driven cars and the level of concern about cybersecurity threats

Data Analysis and Interpretation:

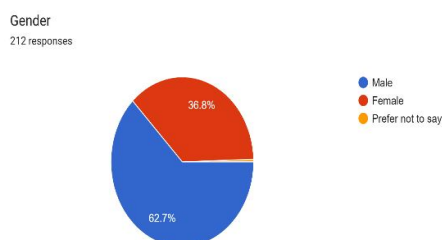


Figure 1. Total responses based on gender

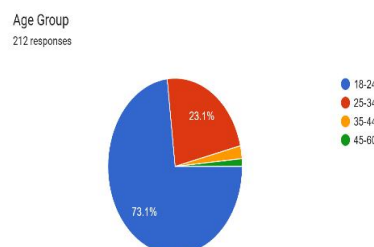


Figure 2. Total responses based on age group

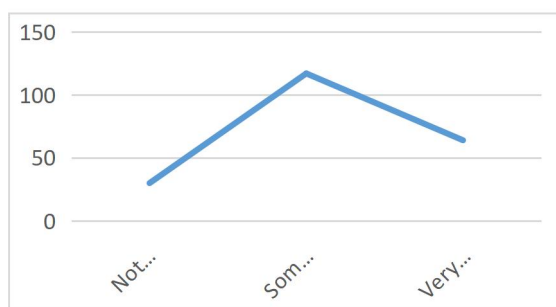


Figure 3. Familiarity level of Autonomous vehicle

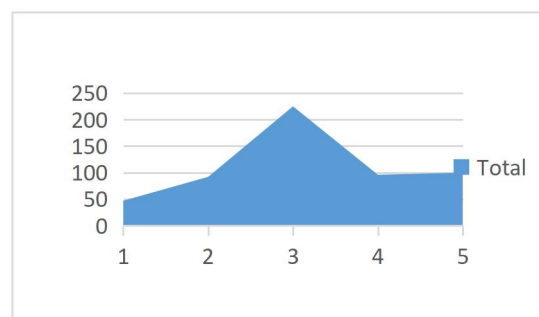


Figure 4. Total responses based on concern rating

The Figure 1 presents a pie chart showing the gender distribution of 212 responses. The majority are male (62.7%), followed by female (36.8%), with a small portion choosing Prefer not to say.

The Figure 2 shows a pie chart of 212 responses categorized by age group. The majority of respondents are aged 18-24 (73.1%), followed by 25-34 (23.1%), with smaller percentages in the 35-44 and 45-60 age groups.

The Figure 3 displays a line graph illustrating respondents' familiarity levels. The highest number of respondents are "Somewhat familiar," followed by "Not familiar at all," and the least are "Very familiar."

The Figure 4 displays the frequency of responses based on the level of concern expressed, with 1 indicating the strong level of concern and 5 indicating no concern. The data shows that a significant number of respondents expressed a high level of concern (rating 1), while a smaller proportion reported low levels of concern (ratings 4 and 5).

2. AI-Driven Cars Perception:

Chi-Square Test:

Ho: There is no significant relationship between familiarity with AI-driven cars and the level of concern about cybersecurity threats.

Table 1. Observed values

Concern rating	1	2	3	4	5	Row Total
Not familiar at all	5	12	30	8	35	90
Somewhat familiar	19	52	159	61	15	306
Very familiar	23	28	33	28	45	157
Column Total	47	92	222	97	95	553

p-value = CHISQ.TEST(observed Range, expected Range)

p-value = 0.000000000000000167

Interpretation

The above Table 1 and Table 2 are the observed and expected values. Based on those values, we can find out the p-value, which is 0.000000000000000167, which is less than 0.05. Hence the null hypothesis is rejected.

There is a significant relationship between familiarity with AI-driven cars and the level of concern about cybersecurity threats.

Table 2. Expected Values

Concern Rating	1	2	3	4	5
Not familiar at all	7.66	15.00	36.20	15.65	15.49
Somewhat familiar	25.97	50.83	122.66	53.04	52.49
Very familiar	13.37	26.17	63.14	27.30	27.02

Findings:

The Research samples consist of a higher number of male respondents, comprising 62.7%, compared to the female respondents, who made up 36.8%. Ensuring representation and perspectives in a survey is valuable.

The research reveals that 55.2% of the respondents are somewhat familiar with AI-driven cars, and 30.2% of the respondents are very familiar with AI-driven cars; the remaining 14.6% of the respondents are not familiar with AI-driven cars.

The research reveals that 61.3% of the respondents have a high level of concern regarding the cybersecurity threats in AI-driven cars.

The most commonly identified cybersecurity risk is hacking of the vehicles, chosen by 48.6% of the respondents; next, 25.9% of the respondents choose data privacy breaches; then 17.5% of the respondents choose communication system vulnerabilities; last but not least, 8% of the respondents choose malware attacks.

The research reveals that 59.4% of the respondents have a high level of trust in technology in solving the cybersecurity threats in AI-driven cars.

Cybersecurity risks were a significant factor affecting willingness to buy or use the AI-driven cars. 45.8% of the respondents choosing Maybe the next 38.2% of the respondents are choosing Yes, last but not least, 16% of the respondents are choosing No.

Car makers take to keep cars secure. 43.4% of the respondents choose advanced encryption; the next 25.5% of the respondents choose real-time threat monitoring; then 20.8% of the respondents choose regular software updates. Last but not least, 10.4% of the respondents are choosing transparency about risks.

Pay extra for AI-driven cars with better cybersecurity. 44.3% of the respondents are choosing Depends on the cost; next, 38.7% of the respondents are choosing Yes; last but not least, 17% of the respondents are choosing No.

Feel more confident about the cybersecurity of the AI-driven cars. 40.1% of the respondents are choosing strong legal protection; next, 25.5% of the respondents are choosing clear communication about cybersecurity measures; then, 20.3% of the respondents are choosing third-party evaluation; last but not least, 14.2% of the respondents are choosing lower reported incidents.

Suggestions:

1. Increase the public awareness initiated to improve the familiarity with AI-driven cars. Manufacturers are developing the campaigns regarding the AI-driven car usages and technology involvement and associated cybersecurity threats. These could involve the workshops, social media resources, and collaborative educational institutions.
2. Manufacturers are prioritizing the cybersecurity measures for developing the AI-driven cars. Mainly focusing on preventing data breaches and hacking with strong encryption. Investment in the cybersecurity research and development.
3. To strengthen the public trust, manufacturers should be transparent about the cybersecurity measures. Regular software updates about improving the security. Establish the transparent communication cybersecurity threats can build confidence.
4. Manufacturers should consider the preference when designing the cybersecurity solutions. Offering the customized level of cybersecurity packages based on the protection and pricing could differ for customer needs, making advanced cybersecurity accessible to a wider audience.
5. Car manufacturers should offer tiered pricing with vehicle-enhanced cybersecurity features. Marketing features are safety and peace of mind that justify the additional cost.
6. Policy makers should establish the legal framework for protecting the customers. Encouraging the compliance through certifications and third-party audits can further improve the customer confidence.
7. Manufacturers should adapt the continuous improvement model for cybersecurity. Collaborating with cybersecurity experts and staying ahead of vulnerabilities can ensure AI-driven cars are safe and reliable.

Conclusion:

The integration of AI in autonomous vehicles presents significant cybersecurity challenges that demand immediate attention from stakeholders in the automotive industry. As the research highlights, the primary threats include hacking, data privacy breaches, and network intrusions, which pose severe risks to both passenger safety and the broader societal trust in AI-driven cars. The study underscores that addressing these challenges requires a proactive and multifaceted approach, incorporating advanced encryption, real-time threat monitoring, and regular software updates. These measures not only safeguard the operational integrity of self-driving vehicles but also enhance customer confidence by demonstrating a commitment to security.

The findings of the study emphasize the importance of aligning cybersecurity strategies with business goals to effectively manage risks and foster innovation responsibly. By prioritizing transparency, investing in cybersecurity research, and engaging in continuous improvement, manufacturers can build resilient systems capable of mitigating evolving threats. Additionally, the research suggests that a collaborative effort involving policymakers, cybersecurity experts, and manufacturers is essential to establish robust legal frameworks and industry standards. Such collaborative efforts will ensure that the deployment of AI-driven cars remains secure, reliable, and trusted by consumers, thereby supporting the sustainable growth of the autonomous vehicle market.

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A STUDY ON PERFORMANCE OF LARGE CAP EQUITY MUTUAL FUNDS IN INDIA

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Abstract

This research examines the performance and risk dynamics of Indian mutual fund schemes across market capitalization categories—Large Cap, Mid Cap, and Small Cap. It evaluates risk indicators including Standard Deviation, Beta, Sharpe Ratio, Jensen's Alpha, and Treynor's Ratio, alongside annual returns over multiple investment horizons (1, 2, 3, 5, and 10 years). The findings highlight variations in growth potential and risk exposure across categories, offering insights into the risk–return trade-off. By providing evidence on historical performance, the study aims to assist investors, financial advisors, and fund managers in aligning portfolio choices with investor goals and risk tolerance.

Keywords: Mutual funds, Small Cap funds, Mid Cap funds, Large Cap funds, Performance analysis, Risk assessment, Investment returns, Risk ratios, Regular Plan.

Introduction

funds have emerged as one of the most popular investment vehicles for individuals seeking participation in India's financial markets. Their appeal lies in professional management and diversification benefits, making them an attractive option for investors aiming to achieve long-term financial goals. The industry is segmented into distinct categories based on market capitalization—Large Cap, Mid Cap, and Small Cap funds.

A prominent mode of investment in mutual funds is the Systematic Investment Plan (SIP), which enables investors to invest regularly and benefit from rupee cost averaging. Understanding the performance and risk characteristics of funds across capitalization segments is therefore crucial. This study focuses on the comparative evaluation of Small Cap, Mid Cap, and Large Cap mutual fund schemes under regular plans through SIPs, with performance assessed over multiple holding periods ranging from one to ten years.

In addition to return analysis, the study incorporates key financial risk measures such as CRISIL Rank, Standard Deviation, Beta, Sharpe Ratio, Jensen's Alpha, and Treynor's Ratio. These tools provide deeper insights into market volatility, sensitivity, and the risk-adjusted capabilities of fund managers relative to benchmarks. By analyzing both performance and risk profiles, the study aims to provide meaningful guidance to investors, financial advisors, and fund managers in aligning investment decisions with individual objectives and risk tolerance.

Ultimately, this research contributes to the body of knowledge on the Indian mutual fund industry by offering a comparative perspective on the risk–return trade-off across market capitalization categories, thereby supporting better informed investment strategies and professional fund management practices.

Review of Literature

Sl.no.	Research Paper Title	Author/Source	Performance Metrics Examined.	Key findings.
1	Performance Analysis of Mutual Funds in India Using Carhart's Four Factor Model	Garg (2011)	Carhart's Four-Factor Model, Return, SD, Beta, Treynor Ratio, Jensen's Alpha, Sharpe Ratio	Reliance Regular Savings Scheme Fund ranked highest; Canara Robeco Infra Fund ranked lowest among top 10 MFs over one year.
2	Performance of Actively Managed Exchange-Traded Funds	Rompotis (2011)	CAPM, Jensen's Alpha, Sharpe Ratio, Treynor Ratio, Single index regression (CAPM)	Actively managed ETFs in the US show similar risk return profiles compared to the S&P 500 index; no significant excess returns by ETF managers.

Objectives of The Study

The study mainly focuses on the following objectives:

- To compare the performance of mutual funds using Small Cap, Mid Cap, and Large Cap regular plans through the Systematic Investment Plan (SIP) approach in India.
- To evaluate the risk-adjusted returns of SIP in selected mutual funds.

Research Methodology

Measurement of Scale

To achieve the study's objectives, data were collected from secondary sources, including records available on the official websites of the National Stock Exchange (NSE), Bombay Stock Exchange (BSE), Securities and Exchange Board of India (SEBI), and the Association of Mutual Funds in India (AMFI), among others.

Sampling Method

The study focuses on the Indian mutual fund market, which currently consists of 44 operational fund houses. For analysis, the top five Small Cap, Mid Cap, and

Large Cap mutual fund schemes were selected based on their Systematic Investment Plan (SIP) returns, using Net Asset Value (NAV) data as the performance metric.

A purposive sampling approach was employed to identify relevant schemes. The selection criteria included funds that consistently outperformed their respective benchmark indices since inception, ensuring meaningful comparison across categories. The final sample comprised 15 schemes—five each from Large Cap, Mid Cap, and Small Cap segments.

Small-cap funds	Mid-cap funds	Large-cap funds
Nippon India Small Cap Fund Growth Small Cap Fund	Nippon India Growth Fund – Growth Mid Cap Fund	Nippon India Large Cap Fund
HDFC Small Cap Fund Growth Small Cap Fund	HDFC Mid-Cap Opportunities Fund Growth Mid- Cap Fund	HDFC Top 100 Fund – Growth Large Cap Fund
Franklin India Smaller Companies Fund – Growth Small Cap Fund	Franklin India Prima Fund – Growth Mid Cap Fund	Franklin India Blue-chip Fund – Growth Large Cap Fund
Edelweiss Small Cap Fund - Regular Plan – Growth Small Cap Fund	Edelweiss Mid Cap Fund - Regular Plan – Growth Mid Cap Fund	Edelweiss Large Cap Fund – Growth Large Cap Fund
Kotak Small Cap Fund Growth Small Cap Fund	Kotak Emerging Equity Fund – Growth Mid-Cap Fund	Kotak Blue-chip Fund – Growth Large Cap Fund

Implementation

In 2024–2025, large-cap mutual funds in India demonstrated stable yet moderate returns with relatively controlled risk levels. Returns across top funds ranged approximately from 11% to 24% annualized, with notable performers including Nippon India Large Cap Fund (around 18.9% 5-year CAGR) and ICICI Prudential Large Cap Fund (about 13–14% 3- to 5-year annualized returns). The average return for leading large-cap funds was roughly between 12% and 16% per annum.

Risk metrics such as standard deviation and beta indicate moderate volatility relative to the benchmark, with standard deviation values typically in the range of 6% to 15%, and beta values close to 1, reflecting risk levels similar to the broader market. For example, the Mirae Asset Large Cap and Kotak Bluechip funds maintained volatility alongside consistent returns, making them stable choices for conservative to moderate-risk investors. The S&P BSE Sensex, serving as the benchmark, showed some volatility with fluctuations up to approximately 2.8% over the preceding year.

but maintained overall steady performance near historic highs.

The data underlines that while large-cap funds offer lower risk compared to mid and small-cap funds, their returns generally trail broader market averages in periods of high growth. Nevertheless, these funds remain suitable for long-term investors seeking balanced risk-return profiles aligned with market indices.

Advantages

- **Professional Management and Diversification:** Mutual funds enable investors to benefit from professional portfolio management and diversification, which reduces individual investment risk.
- **Systematic Investment Plan (SIP):** SIP facilitates disciplined, periodic investment that can harness rupee-cost averaging, potentially lowering the impact of market volatility.
- **Performance across Market Caps:** Small-cap and mid-cap funds generally offer higher returns than large-cap funds over various time horizons, providing opportunities for superior growth.
- **Risk-Adjusted Performance Metrics:** Use of comprehensive risk measures (Sharpe Ratio, Jensen's Alpha, Treynor's Ratio, Beta, and Standard Deviation) enables informed evaluation of fund performance beyond simple returns.
- **Tailored Investment Choices:** Insights into risk-return trade-offs across small, mid, and large-cap funds help investors align their investment decisions with their risk appetite and financial goals.

Disadvantages

- **Market Sensitivity and Volatility:** Small and mid-cap funds tend to have higher volatility compared to large-cap funds, increasing risk for investors who are risk-averse.
- **Underperformance in Certain Funds:** Some schemes, particularly in large-cap categories, show relatively lower risk-adjusted returns and can underperform benchmarks.
- **Dependence on Managerial Skill:** Performance heavily relies on fund managers' ability to outperform benchmarks; poor management can lead to underperformance.
- **Lack of Awareness:** Investor knowledge gap regarding operational and performance aspects of mutual funds can hinder optimal investment decisions.
- **Benchmark Constraints:** Funds outperforming the benchmark in past may not guarantee future performance consistency, especially during market fluctuations.

Applications

- **Investment Decision Support:** The study provides investors and financial advisors with empirical evidence on performance and risk characteristics of mutual funds, aiding informed asset allocation.
- **Portfolio Diversification Strategies:** Helps investors allocate capital systematically across small, mid, and large-cap fund categories based on their risk tolerance and time horizon.
- **Risk Management:** Enables investors and fund managers to evaluate risk-adjusted returns to optimize portfolio construction.
- **Fund Manager Assessment:** Fund houses and industry professionals can benchmark performance relative to peers, identify strengths and weaknesses, and improve fund strategies.
- **Long-Term Financial Planning:** SIPs are recommended as a tool for investors, particularly small investors, to build wealth methodically and achieve financial independence.

Results/Output

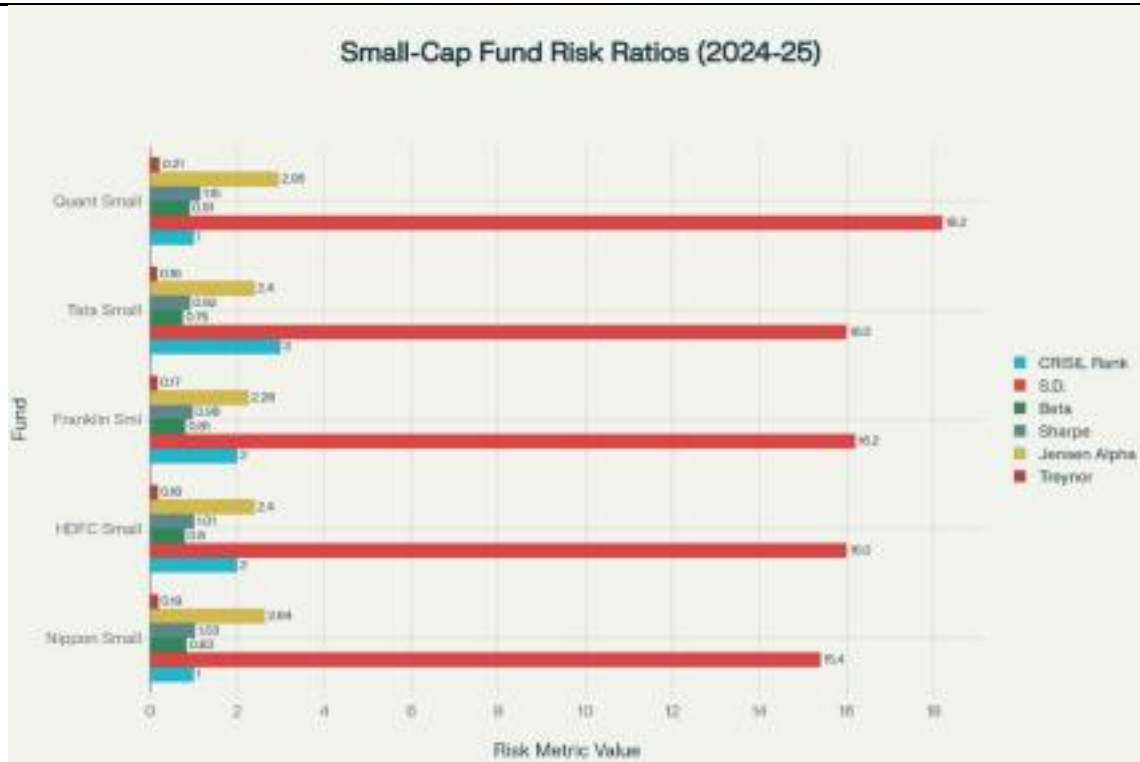
Results/Output	AUM (Cr.)	1 YEAR	3 YEAR	5 YEAR
Nippon India Small Cap Fund	~36,500	3.80%	24.40%	32.80%
HDFC Small Cap Fund	~21,100	3.80%	24.70%	31.10%
Franklin India Smaller Companies	~9,600	33.90%	23.60%	29.50%
Tata Small Cap Fund	~12,000	-5.60%	23.10%	31.40%
Quant Small Cap Fund	~8,100	35.40%	25.40%	35.50%



Table 1: SIP Returns of Small Cap Mutual Fund Schemes Out of the small-cap mutual fund schemes, Nippon India Small Cap Fund has shown stable growth across all periods, with impressive returns of 18.00%, 24.00%, 60.00%, 108.00%, and 253.00% for 1 year, 2 years, 3 years, 5 years, and 10 years respectively. With favourable returns across different periods, HDFC Small Cap Fund and Franklin India Smaller Companies Fund also demonstrate strong performance.

Risk Ratios of Small-Cap Mutual Fund Schemes (Regular Plan)

Scheme Name	Crisil Rank	S. D.	Beta	Sharpe Ratio	Jensen's Alpha	Treynor's Ratio
Nippon India Small Cap Fund	1	15.4	0.83	1.03	2.64	0.19
HDFC Small Cap Fund	2	16	0.8	1.01	2.4	0.18
Franklin India Smaller Companies	2	16.2	0.81	0.98	2.26	0.17
Tata Small Cap Fund	3	16	0.75	0.92	2.4	0.16
Quant Small Cap Fund	1	18.2	0.91	1.15	2.95	0.21



Risk Ratios of Small Cap Mutual Fund Schemes The risk ratios for small-cap mutual fund schemes resulted in the following:

Nippon India Small Cap Fund,

HDFC Small Cap Fund, and Franklin India Smaller Companies Fund have analogous standard deviations (S.D.) and beta values, indicating comparable volatility and sensitivity to the market.

Nippon India Small Cap Fund has the highest Sharpe Ratio, pointing to better risk-adjusted returns. It also showcased the highest Jensen's Alpha and Treynor's Ratio, implying the potential for excess returns per unit of risk.

Suggestion

Small-cap mutual funds continue to offer significant growth potential over the long term, as evidenced by strong compound annual growth rates (CAGR) in recent years. For instance, leading funds like Nippon India Small Cap Fund and HDFC Small Cap Fund have delivered 3-year returns around 24% and 5-year returns exceeding 30%, demonstrating their ability to outperform many other equity categories. However, investors should be mindful of the inherent volatility and risk associated with this segment, as reflected in relatively higher standard deviations and sensitivity to market movements (beta values around 0.8 to 0.9). Therefore, a disciplined investment approach through systematic investment plans (SIPs) is advisable to average out market fluctuations and benefit from compounding returns. Given their risk profile, small-cap funds are most suitable for investors with a high-risk tolerance and a long investment horizon, typically five years or more.

Furthermore, investors should pay attention to risk-adjusted performance metrics such as Sharpe Ratio and Jensen's Alpha when selecting small-cap funds. Recent data points to funds like Quant Small Cap and Edelweiss Small Cap exhibiting superior risk-adjusted returns, making them attractive choices alongside traditional heavyweights like Nippon India and HDFC. Since small-cap sector performance can be cyclical and sensitive to market downturns, diversification within this category and periodic portfolio review become crucial to mitigate downside risk. Finally, consulting with financial advisors to align fund selections with individual goals, risk appetite, and market outlook can significantly enhance investment outcomes in this dynamic and potentially rewarding investment segment.

Conclusion

Based on the comprehensive data from 2024-25 and findings in the uploaded study, the Nippon India Small Cap Fund continues to exemplify strong

performance and consistency in the small-cap segment. The fund has delivered a 1-year return of approximately 10.1%, with 3-year and 5-year annualized returns of 21.87% and 39.35%, respectively, outperforming its category averages. This strong performance is coupled with a solid risk-adjusted profile, reflected in favorable Sharpe and Jensen's Alpha ratios, presenting it as a leading choice for investors seeking long-term growth in small-cap equities. The fund's robust asset base and well-diversified portfolio across promising sectors further underline its resilience and growth potential amid market fluctuations.

Given the data trends for 2024-25 across small, mid, and large-cap funds, investors should adopt a diversified approach aligned with their risk tolerance and financial goals. While funds like Nippon India Small Cap and HDFC Mid-Cap Opportunities provide higher growth potential, they carry higher volatility, necessitating longer investment horizons and disciplined SIP strategies to smoothen returns. Conversely, large-cap funds such as Nippon India Large Cap and HDFC Top 100 typically offer more stable but comparatively moderate returns. The study highlights the importance of using risk-adjusted metrics for fund selection and emphasizes consulting financial advisers to tailor portfolios optimally. Overall, thoughtful diversification and risk management remain crucial for leveraging the distinct advantages across market capitalization categories in 2024-25 and beyond.

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“A STUDY ON SOCIO-ECONOMIC IMPACT OF MICROFINANCE ON WOMEN ENTREPRENEURS IN RURAL AREAS OF CHANNARAYAPATNA”

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Abstract

In rural areas of Channarayapatna, many women have turned to microfinance as a way to start and grow small businesses. Access to credit through self-help groups (SHGs) and joint liability groups (JLGs) has given women the opportunity to invest in activities like tailoring, food processing, petty shops, and livestock. This study looks at how microfinance influences the social and economic lives of women entrepreneurs, not only in terms of business growth but also in household decision-making, savings habits, and social participation.

Field surveys and interviews were conducted with women borrowers across different villages, along with discussions with local NGOs and bank representatives. The study examines both financial outcomes—such as increased income, better working capital use, and asset creation—and social outcomes, including confidence, mobility, and a greater role in family decisions. The findings show that microfinance works best when loans are timely, adequate, and linked to training or market support. Women who combine credit with skills development and digital payment systems are more successful in expanding their businesses and securing steady earnings.

At the same time, challenges remain. Some women face repayment difficulties when loans are not aligned with their business cycles, while others struggle with multiple borrowing and lack of support from family members. In such cases, loan repayments often come from household income rather than business profits, limiting growth. The study suggests measures such as aligning loans with seasonal business needs, providing simple bookkeeping and digital training, offering small emergency overdrafts, and strengthening producer groups to improve bargaining power.

Overall, microfinance has had a positive effect on women entrepreneurs in Channarayapatna, but its long-term sustainability depends on coupling financial access with skills, markets, and institutional support.

Keywords: Microfinance; Women entrepreneurs; Rural empowerment; Financial inclusion.

Introduction

Microfinance has emerged as an effective tool for rural development, particularly in empowering women through financial inclusion. In regions like Channarayapatna, where access to formal banking is limited, microfinance institutions (MFIs) and Self-Help Groups (SHGs) have made significant contributions to uplifting the lives of women. These women, often constrained by poverty and lack of opportunities, have used microfinance to start small enterprises and gain economic independence.

In recent years, microfinance has emerged as a powerful tool for poverty alleviation and women empowerment in rural India. It involves providing small loans and financial services to low-income individuals, especially women, who lack access to traditional banking systems. Microfinance has enabled many rural women to become entrepreneurs by helping them start or expand small businesses such as tailoring, livestock rearing, and petty shops.

This study focuses on the rural areas of Channarayapatna Taluk in Hassan District, Karnataka, where many women have joined Self-Help Groups (SHGs) and accessed credit from microfinance institutions (MFIs). These financial services have not only improved their income and living standards but also enhanced their confidence, decision-making power, and participation in social activities.

The project work aims to explore the economic benefits, social empowerment, and challenges faced by these women entrepreneurs. By collecting data from beneficiaries in selected villages, the study will provide insights into how microfinance has transformed their lives and what can be done to make the system more effective and inclusive. This study seeks to investigate the specific changes and challenges experienced by women entrepreneurs in Channarayapatna as a result of their participation in microfinance programs, contributing to a deeper understanding of its effectiveness in this particular rural setting.

Literature Review

Sagar Shukla (2024) Microfinance helps reduce poverty, empower women, and support small businesses in India. Self-Help Groups (SHGs) and Microfinance Institutions (MFIs) give loans to poor people without asking for security. NABARD and government programs like SHG-Bank Linkage and Joint Liability Groups (JLGs) have made microfinance more accessible. Although COVID-19 affected microfinance, government support is helping MFIs continue their services and aid in recovery.

Salini C A (2023) Financial inclusion means providing affordable and easy access to financial services for all, especially the weaker sections. In Malabar, many women are still limited by traditional beliefs and family responsibilities. They hesitate to step out and take part in business activities. The government and authorities should encourage and support women to participate in entrepreneurship. Active involvement of women will help in the economic development of Kerala and the country.

G Shailaja (2022) Economic growth depends on promoting entrepreneurship and selfemployment. Women entrepreneurs in Ranga Reddy district, Telangana, face problems like lack of money, weak marketing, and pricing issues. Microfinance institutions help by giving them loans and support. Training and government help like subsidies can further improve their skills and boost their businesses.

Syed Wajihul Hasan Rizvi (2021) Microfinance helps small and medium entrepreneurs start and grow their businesses. The central and state governments run schemes like Startup India and Skill India to support them. These programs reduce poverty, create jobs, and boost the economy. Banks and NGOs give easy, low-interest loans to poor people, helping them improve their lives.

Jothi Lakshmi G. (2019) Women's participation in entrepreneurship is increasing, and the government has made efforts to ensure equal rights in education, jobs, and politics. However, most benefits have reached only urban middle-class women, leaving many others behind. Women entrepreneurs need proper training, awareness, and skill development to succeed in today's competitive market. Although many schemes like Mahalir Thittam and others are available, women still struggle with high interest rates and access to loans. It is important to guide them toward schemes that truly suit their needs.

Research Gap

While previous studies highlight the role of microfinance in empowering women and reducing poverty, there is limited research focused specifically on rural areas like Channarayapatna. Most existing literature covers broader regions or urban settings, overlooking localized challenges such as limited training access, high interest rates, and cultural barriers. This study addresses the gap by examining the specific socio-economic impact of microfinance on women entrepreneurs in Channarayapatna.

Statement of the Problem

In the rural taluk of Channarayapatna, microfinance delivered through women's Self-Help Groups (SHGs) has sparked a transformative socio-economic shift: by granting access to savings, collateral-free loans, and financial literacy and business training, it has enabled women to launch and expand entrepreneurial ventures—especially in agriculture, handicrafts, and retail—leading to increased household incomes, asset accumulation, and improved financial resilience. This participation has also strengthened their decision-making power within families and communities, fostered leadership and peer support networks, and elevated their confidence and social status, contributing meaningfully to gender equality and local development

Objectives of the study

1. Identify the specific microfinance services (e.g., savings, credit, training, SHG support) accessed by women entrepreneurs in rural Channarayapatna.
2. Analyze the socio-economic impacts of these services—such as increased income, asset growth, savings behavior, and intra-household decision-making.
3. Evaluate the effectiveness of microfinance interventions in building women's financial resilience, entrepreneurial skills, and empowerment by comparing before-and-after participation outcomes.
4. Suggest tailored policy and program recommendations (e.g., enhanced financial literacy, entrepreneurship training, stronger SHG-bank linkages) to improve microfinance delivery and women's empowerment.

Scope of the study

This study centers on women entrepreneurs in rural Channarayapatna taluk, assessing how their engagement with microfinance especially via Self-Help Groups (SHGs)—shapes their socio-economic well-being. It investigates areas such as access to financial services, business startup and growth, income and asset enhancement, and shifts in household and community decision-making. Employing a mixed-methods approach, the research combines quantitative surveys with qualitative interviews to offer a comprehensive analysis of both numerical trends and personal experiences. The findings will inform tailored recommendations for policymakers, financial institutions, and community stakeholders aimed at strengthening microfinance delivery, SHG-bank linkages, and capacity-building initiatives to sustainably empower rural women in Karnataka.

Limitations of the study

1. High-interest loans for women may hinder business growth and cause debt rather than empowerment.
2. Male family members often manage loans, limiting women's financial independence.
3. Self-reported data and cross-sectional surveys can introduce bias and hinder long-term effect measurement.

Theoretical framework

1. Microfinance Inputs (Top Layer)

The framework begins with **microfinance services**, including credit, savings opportunities, training, and support from Self-Help Groups (SHGs). These inputs are the foundation, as they provide women entrepreneurs with financial resources and initial capacity-building to enter or strengthen business activities.

2. Entrepreneurial Resources

With access to microfinance, women gain working capital, productive assets, and improved market access. These resources enable them to start or expand small businesses, manage inventory, and explore new opportunities. At this stage, microfinance helps reduce financial barriers and creates an enabling environment for entrepreneurship.

3. Social Empowerment

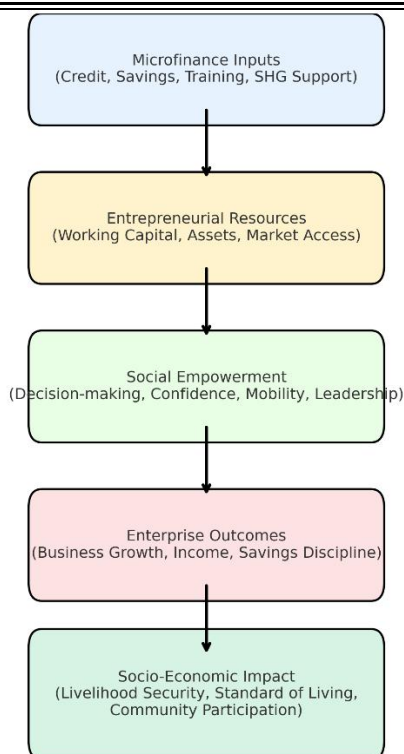
Microfinance also brings non-financial benefits. Women gain greater decision-making power in households, higher self-confidence, more freedom of mobility, and leadership opportunities within groups or communities. This empowerment enhances their ability to manage enterprises effectively and assert influence beyond the family level.

4. Enterprise Outcomes

As resources and empowerment grow, women see concrete results in their businesses. This includes enterprise growth, higher income, improved savings discipline, and better financial stability. These outcomes reflect how well microfinance translates into economic gains at the enterprise level.

5. Socio-Economic Impact (Bottom Layer)

At the core of the framework, the combined effects of financial resources, empowerment, and business growth translate into broader **socio-economic impacts**. These include greater livelihood security, improved standard of living for households, and stronger community participation by women. Ultimately, microfinance is shown not just as a financial service but as a driver of **inclusive rural development**.



Research Methodology:

Research Design

This study adopts a descriptive and explanatory research design to assess the impact of microfinance on women entrepreneurs in rural Channarayapatna. Utilizing a cross-sectional survey approach, data will be collected at a single point in time to identify patterns and relationships between microfinance participation and socio-economic outcomes. This design allows for a comprehensive understanding of the current state of women entrepreneurs and the factors influencing their success.

Data Collection

Data will be gathered through primary sources, ensuring the collection of firsthand information directly from the target population. The primary data collection methods include:

Structured Questionnaires: Designed to capture quantitative data on variables such as income levels, business expansion, asset accumulation, and decision-making power.

Semi-Structured Interviews: To obtain qualitative insights into personal experiences, challenges faced, and perceived benefits of microfinance participation.

Focus Group Discussions (FGDs): Facilitating group interactions to explore community-level impacts and shared experiences among women entrepreneurs.

Secondary data will be sourced from:

Reports from Microfinance Institutions (MFIs): To understand the scope and scale of microfinance services provided.

Government and NGO Publications: Offering contextual information on rural development programs and policies affecting women entrepreneurs.

Sampling

The study will focus on women entrepreneurs who are active members of Self-Help Groups (SHGs) in rural Channarayapatna. A simple random sampling technique will be employed to select 50 participants from a list of SHG members provided by local MFIs and community organizations. This approach ensures that every eligible participant has an equal chance of selection, enhancing the representativeness and generalizability of the findings.

Questionnaire Development

The questionnaire will be developed in alignment with the study's objectives, incorporating both closed and open-ended questions. The structure will include:

- **Section A: Demographic Information:** Collecting data on age, education, family size, and occupation.
- **Section B: Microfinance Engagement:** Assessing the type of microfinance services accessed, loan amounts, repayment terms, and training received.
- **Section C: Socio-Economic Outcomes:** Evaluating changes in income levels, business growth, asset accumulation, and decision-making authority within the household.
- **Section D: Challenges and Impact:** Identifying obstacles faced in utilizing microfinance services and perceived benefits or drawbacks.

Hypothesis: Hypothesis for Testing the Impact of Microfinance on Income Increase

- **H₀ (Null Hypothesis):** There is no significant association between microfinance participation and income increase among women SHG members.
- **H₁ (Alternative Hypothesis):** There is a significant association between microfinance participation and income increase among women SHG members.

Chi-Square Table (Based on Income Increase Response)

Chi-Square Calculation Table

Response Category	Observed (O)	Expected (E)	O – E	(O – E) ²	(O – E) ² / E
Strongly Disagree	5	10	-5	25	2.5
Disagree	5	10	-5	25	2.5
Neutral	5	10	-5	25	2.5
Agree	20	10	10	100	10
Strongly Agree	15	10	5	25	2.5
Total	50	50	—	—	20

- Chi-square (χ^2) = 20.0
- Degrees of freedom (df) = 5 – 1 = 4
- Critical value at $\alpha = 0.05$, df = 4 = 9.488
- Since 20.0 > 9.488 → Reject H₀.

Interpretation: There is a statistically significant relationship between participation in microfinance and an increase in income among women SHG members in Channarayapatna.

Analysis & Interpretation

1. The majority of respondents (40%) fall within the 36–45 age group, indicating a mature and experienced demographic engaged in microfinance activities.
2. A significant portion of respondents have at least a higher secondary education (55%), suggesting that microfinance programs are reaching individuals with varying educational backgrounds.
3. The high percentage of married respondents (70%) may reflect the role of microfinance in supporting family-oriented financial needs.
4. Larger family sizes are prevalent, with 40% having 7–9 members, indicating that microfinance is crucial for supporting extended family units.
5. Agriculture is the dominant occupation (40%), highlighting the need for financial support in rural livelihoods.
6. A high membership rate (90%) indicates strong participation in community-based financial initiatives.
7. Long-term associations are common, with 70% having been associated for more than a year, suggesting sustained engagement and trust in SHG programs.
8. A significant uptake of microloans (80%) reflects the accessibility and appeal of financial support.
9. Most borrowers take one or two loans (80%), indicating cautious borrowing behavior.
10. Business expansion is the predominant use of loans (60%), underscoring the entrepreneurial focus of microfinance.
11. A majority (70%) report increased income, indicating positive financial outcomes from SHG participation.
12. Regular savings are common (65%), suggesting improved financial discipline.
13. Enhanced decision-making power is reported by 70%, reflecting increased autonomy for women.

14. Increased confidence in financial management is observed in 65% of respondents, highlighting the empowerment effect.
15. Business growth is reported by 65%, indicating the effectiveness of microloans in fostering business expansion.
16. Asset investment is reported by 55%, suggesting that microloans facilitate long-term economic stability.
17. High interest rates (40%) and irregular income (35%) are the primary challenges, indicating areas for improvement in loan terms.
18. Training or support has been received by 60%, suggesting that capacity-building efforts are in place.
19. Financial literacy training (50%) and marketing support (45%) are the most requested forms of assistance, highlighting areas for further development.
20. A strong recommendation rate (85%) indicates high satisfaction and perceived benefits from SHG membership.

Findings and Suggestions

Findings

1. 90% of respondents are members of SHGs and 70% have been associated for over a year, indicating deep-rooted trust and active participation in microfinance initiatives.
2. 60% of respondents use microloans for business expansion, and 65% report resulting business growth, highlighting the entrepreneurial impact of microfinance.
3. 70% of respondents report an increase in income and 65% engage in regular savings, suggesting improved financial stability and discipline.
4. 70% of respondents indicate enhanced decision-making power, while 65% report increased confidence in financial matters, reflecting the empowerment effect, particularly for women.
5. 40% of respondents are engaged in agriculture and a similar percentage come from large families (7–9 members), showing that microfinance is crucial for supporting rural livelihoods and extended households.

Suggestions

1. Introduce periodic training programs on financial literacy, enterprise management, and digital finance to sustain and enhance SHG effectiveness.
2. Design flexible and tailored microloan products that cater to a wider range of small business needs, especially for agricultural and rural entrepreneurs.
3. Incorporate reward-based savings schemes to promote long-term saving behavior and financial resilience among SHG members.
4. Integrate gender-focused metrics into SHG evaluation to better track and encourage women's empowerment through increased autonomy and leadership.
5. Develop occupation-specific financial products and advisory services, especially for agriculture and allied sectors, to ensure alignment with borrowers' real needs.

Conclusion:

The microfinance has played a significant role in enhancing the socio-economic conditions of women entrepreneurs in rural Channarayapatna. Access to credit, savings, and training through Self-Help Groups (SHGs) has resulted in increased income, business expansion, improved financial discipline, and strengthened decision-making power among women. These outcomes highlight the effectiveness of microfinance in promoting financial inclusion and women's empowerment. However, challenges such as high interest rates, irregular income, and limited control over loan usage persist. To address these issues and enhance impact, there is a need for flexible loan products, targeted financial literacy programs, gender-sensitive monitoring, and stronger institutional support mechanisms that align with the specific needs of rural women entrepreneurs.

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A STUDY ON STOCK MARKET CONDITIONS AND THEIR INFLUENCE ON INVESTMENT DECISION

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Abstract

The stock market serves as a critical platform for investment and economic growth, with investor decisions being heavily influenced by prevailing market conditions. This study investigates the relationship between stock market phases—bullish, bearish, volatile, and stagnant—and investor behavior. It aims to understand how various economic indicators, psychological factors, and market sentiments shape investment decisions. Using a combination of literature review, market analysis, and survey data, the research highlights the significant role of behavioral biases such as herd mentality, overconfidence, and risk aversion in decision-making processes. The findings suggest that investors react differently to market changes based on their risk tolerance, investment goals, and the nature of available information. This study provides insights into how better awareness of market conditions and investor psychology can lead to more informed and rational investment strategies, particularly in an increasingly uncertain and dynamic financial environment.

Introduction

The study of stock market conditions and their influence on investment decisions is significant because it helps to understand the link between market behavior and investor psychology. The stock market plays a very important role in the financial system of any country. It acts as a platform where companies raise funds from the public by issuing shares, and investors seek opportunities to earn returns by buying and selling securities. A bullish market, where prices are rising and investor confidence is high, often encourages more people to invest in the hope of gaining profits. In contrast, a bearish market, where prices are falling and pessimism prevails, often discourages investors and leads to cautious or defensive investment choices. Therefore, the nature of market conditions not only influences the rational side of investors but also their emotions, such as fear of loss or greed for profit.

Keywords: Stock market conditions, investment decision making, investor behavior, market sentiment, bull and bear markets, behavioral finance, risk tolerance, economic indicators, market volatility, and investment strategies.

Literature Review

Raman Kumar (2020) studied consumer preferences for tractors in Tamil Nadu. He found durability and fuel efficiency were top factors for farmers. Mahindra tractors were popular because of their strong service network and easy availability of spare parts. The study showed that good after-sales support creates positive attitudes and trust in the brand.

Sneha Sharma and Ajay Verma (2020) researched after-sales service satisfaction among Indian tractor buyers. Their study showed Mahindra excelled in service availability and quick repairs compared to other brands. Prompt and effective service built strong customer trust and encouraged repeat purchases.

Anil Yadav (2021) focused on tractor purchase behavior in Punjab. His research showed that price sensitivity and peer recommendations strongly influenced buying decisions. Mahindra tractors were preferred because they offered affordable options without compromising quality.

Priya Singh and Rahul Patel (2021) surveyed farmers in Gujarat, emphasizing brand reputation and technology in customer satisfaction. The study showed technological improvements attract younger and progressive farmers to Mahindra tractors.

Vikram Joshi (2022) examined the role of government subsidies in increasing tractor purchases. The study showed how subsidies can encourage tractor adoption, leading to better mechanization and productivity. Subsidies thus indirectly increased customer satisfaction by making tractors affordable and strengthening Mahindra's presence among smallholder farmers.

Objectives

- To study the impact of prevailing stock market conditions on individual investment decisions.
- To analyse the significant factors influencing investor behavior in the stock market.
- To ascertain the role of economic and psychological variables in shaping investment choices.
- To understand the effect of market volatility on risk tolerance and investment preferences.

Methodology

The research methodology adopted for this study is primarily descriptive and analytical in nature. Descriptive research provides insights into investor profiles, behavior, and preferences through collected data, while analytical methods enable examination of relationships among variables influencing decisions. The study employs both primary and secondary data—primary data gathered via surveys with structured questionnaires and secondary data drawn from published sources such as journals and financial databases. Data collected are coded and subjected to statistical analysis using tools like SPSS to test formulated hypotheses and derive meaningful conclusions relevant to the stock market investment decision context.

Research Design

The study follows a descriptive, analytical and exploratory research design. Primary data was collected through questionnaires, while secondary data was sourced from reports and journals.

Sampling

- **Sampling Unit:** Individual stock market investors
- **Sample Size:** 100 responses
- **Sampling Technique:** Convenience sampling using Google Survey platform for disseminating structured questionnaires.

Tools for Analysis

- Survey via structured questionnaires employing Likert scale options to gauge attitudinal responses.
- Observation of market trends and investor behaviors through secondary sources.
- Focus groups or interviews may be utilized to gather qualitative insights from select respondents.

Limitations

- Limited sample size of 100 investors, potentially affecting generalizability.
- Limited geographical scope confined to a specific region or district.
- Limited access to in-depth financial data for all respondents.
- Limited time frame for data collection and analysis.
- Limited respondent diversity regarding age, income, and investment experience.
- Limited resources to conduct extensive follow-up or longitudinal studies.

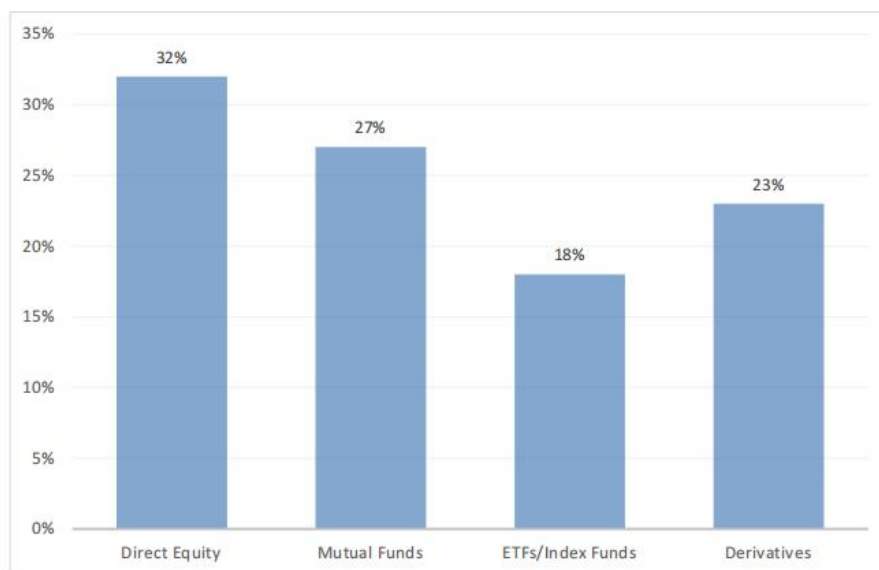
Findings and Discussions

Table 4.7: Preferred Mode of Investment

Response	No. of Respondents	Percentage
Direct Equity	32	32%
Mutual Funds	27	27%
ETFs/Index Funds	18	18%
Derivatives	23	23%
Total	100	100%

Analysis: From the above table, it can be observed that 32% respondents prefer direct equity, 27% choose mutual funds, 23% invest in derivatives, and 18% prefer ETFs/Index Funds. Direct equity investment is the most preferred investment mode among respondents.

Chart 4.7: Preferred Mode of Investment



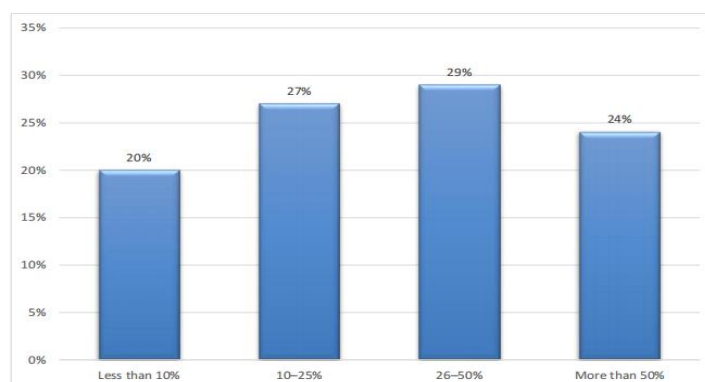
Interpretation: From the chart above, direct equity and mutual funds together account for 59% of preferences, indicating investors favor both direct control and professional management in their investment strategies.

Table 4.8: Proportion of Savings Invested in Stock Market

Response	No. of Respondents	Percentage
Less than 10%	20	20%
10–25%	27	27%
26–50%	29	29%
More than 50%	24	24%
Total	100	100%

Analysis: From the above table, it can be observed that 29% respondents invest 26-50% of savings, 27% invest 10-25%, 24% invest more than 50%, and 20% invest less than 10%. Most investors allocate a significant portion of savings to stock markets.

Chart 4.8: Proportion of Savings Invested in Stock Market



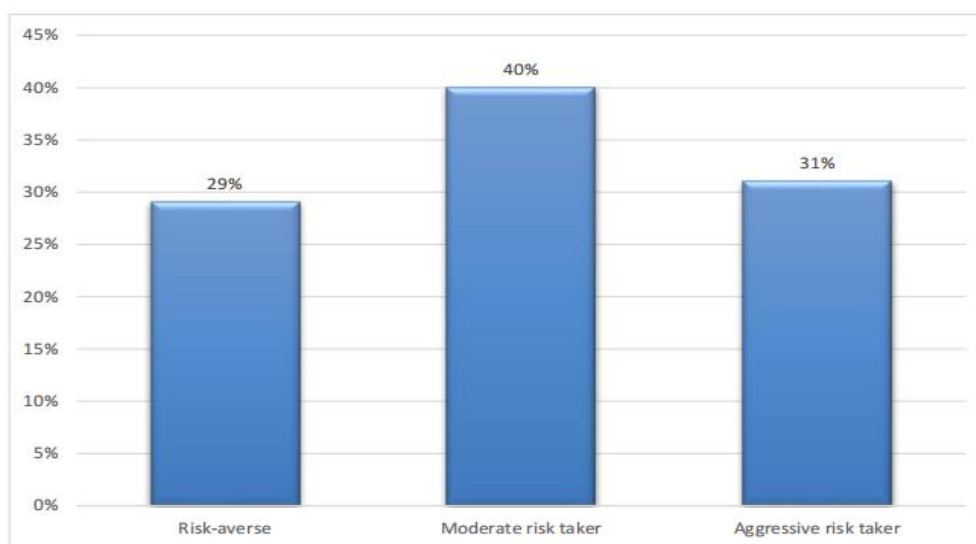
Interpretation: From the chart above, 53% of investors allocate more than 25% of their savings to stock markets, demonstrating high confidence and commitment towards equity market investments.

Table 4.9: Type of Investor

Response	No. of Respondents	Percentage
Risk-averse	29	29%
Moderate risk taker	40	40%
Aggressive risk taker	31	31%
Total	100	100%

Analysis: From the above table, it can be observed that 40% respondents are moderate risk takers, 31% are aggressive risk takers, and 29% are risk-averse investors. Moderate risk takers form the largest category among all investor types in the study.

Chart 4.9: Type of Investor



Interpretation: From the chart above, 71% of investors are willing to take moderate to aggressive risks, indicating most participants have positive risk appetite for stock market investments.

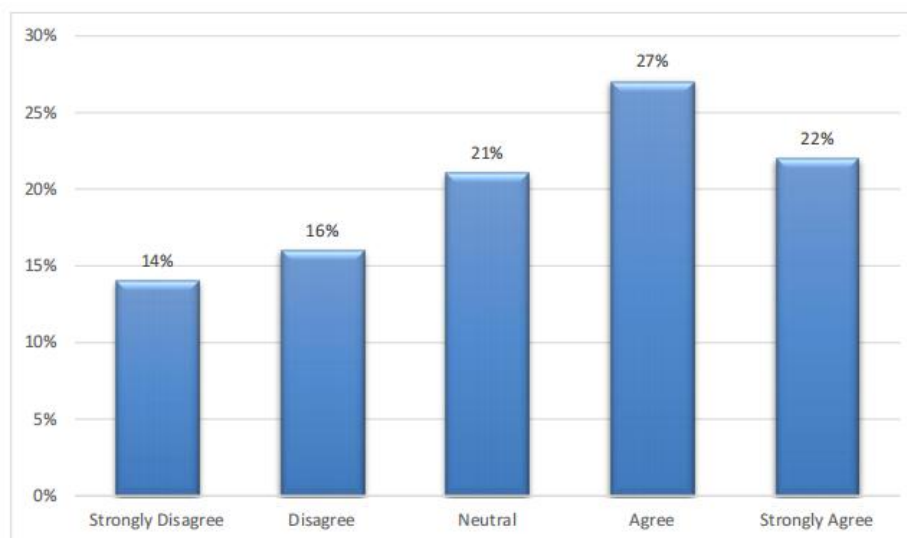
Table 4.12: I Closely Monitor Stock Indices Before Making Investment Decisions

Response	No. of Respondents	Percentage
Strongly Disagree	14	14%
Disagree	16	16%
Neutral	21	21%
Agree	27	27%

Strongly Agree	22	22%
Total	100	100%

Analysis: From the above table, it can be observed that 27% respondents agree, 22% strongly agree, 21% are neutral, 16% disagree, and 14% strongly disagree. Total 49% respondents actively monitor stock indices before making investment decisions.

Chart 4.12: I Closely Monitor Stock Indices Before Making Investment Decisions



Interpretation: From the chart above, nearly half the investors (49%) actively track market indices, indicating technical analysis and market monitoring are important factors in investment decision making processes.

Conclusion

The study concludes that investment decisions in the Indian stock market are shaped by a complex interplay of market conditions, investor demographics, technological access, and psychological factors. While volatility often reduces confidence and drives cautious behavior, most investors balance emotional influences like sentiment and FOMO with rational tools such as fundamental and technical analysis. Younger, educated professionals dominate participation, aided by mobile trading platforms and motivated by attractive returns and expert advice, while diversification and long-term strategies highlight prudent risk management. With no strong link between age and risk tolerance, the findings suggest that effective financial education, transparent practices, and personalized advisory services are essential to building confidence, fostering informed decision-making, and ensuring sustainable growth of the stock market and economy.

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UNDERSTANDING CONSUMER HABITS: A STUDY ON THE CONSUMPTION OF PACKAGED DRINKING WATER

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Abstract

The escalating consumption of packaged drinking water presents a multifaceted challenge concerning public health, environmental sustainability, and consumer behaviour. This study aims to assess the consumption habits of packaged drinking water, identify key influencing factors, and evaluate the gap between environmental awareness and disposal practices. A quantitative survey was conducted with 162 participants, primarily students, aged 18-24, residing in urban areas.

The findings indicate that convenience, a perception of safety, and a lack of access to alternative sources are the main drivers behind the purchase of packaged drinking water. Consumption is most frequent during commuting and in public eateries. A single brand dominates the market awareness among consumers.

A significant disparity was identified between consumers' high level of concern for the environmental impact of plastic bottles and their actual disposal practices, as many admit to not recycling. This highlights a clear gap between attitude and action. Furthermore, a majority of participants believe there could be long-term health risks associated with regular consumption from plastic bottles.

The research identifies key behavioural motivators for reducing the use of single-use plastics, with the primary drivers being greater availability of public drinking water infrastructure and an increased trust in the quality of tap water. These insights are crucial for developing effective strategies to promote sustainable hydration practices and encourage more responsible consumer behaviour.

Keywords: Consumer Habits, Behavioural Changes, Purchasing Motives, Brand Perception, Disposal Practices,

Introduction

The consumption of packaged drinking water has grown into a global phenomenon, transforming from a niche, luxury product into a ubiquitous staple of modern life. Driven by rapid urbanization, increased mobility, and a widespread perception of declining municipal water quality, the bottled water market has witnessed an unprecedented surge over the past few decades. In many parts of the world, especially in developing economies, packaged water is no longer just a convenience item but is often viewed as a fundamental necessity for ensuring safe hydration. This proliferation has reshaped consumer habits, with individuals now making daily purchasing decisions that were once rare, if not non-existent. The market's dynamism and its deep integration into daily routines necessitate a comprehensive understanding of the consumer behaviour that fuels this growth.

However, the rapid expansion of this industry is not without significant and well-documented consequences. The production, transportation, and disposal of single-use plastic bottles pose a severe environmental threat, contributing to the global plastic waste crisis, ocean pollution, and an increased carbon footprint. While the convenience of a sealed, portable water source is undeniable, it comes at a steep ecological cost. Furthermore, a growing body of research has raised public health concerns regarding the long-term effects of consuming water from plastic containers, particularly the potential for leaching chemicals and the presence of microplastics. This creates a compelling paradox: a product consumed for its perceived purity and safety is simultaneously linked to environmental degradation and potential health risks. This dichotomy forms the central tension of the packaged water market and highlights the urgency for research into the motivations and awareness of its consumers.

Despite extensive documentation of market trends and the broader environmental impacts, there remains a critical gap in the understanding of individual consumer behaviour. What are the specific drivers behind a consumer's decision to purchase a bottle of water? Is it purely convenience, a genuine concern for safety, a matter of taste, or simply the force of habit? To what extent are consumers aware of the environmental and health implications of their choices, and how does this awareness translate—or fail to translate—into their actions, particularly concerning the disposal of empty bottles? Answering these questions is vital for developing effective, targeted strategies that can address the sustainability challenges of this industry.

This study aims to fill this knowledge gap by providing a detailed assessment of consumer habits regarding the use of

packaged drinking water. The primary objectives of this research are to:

1. Analyse the frequency and typical situations in which consumers purchase packaged drinking water.
2. Identify and rank the key factors—such as convenience, perceived safety, price, and availability—that influence purchasing decisions.
3. Evaluate consumer awareness and concern regarding the environmental impact of single-use plastic bottles and potential long-term health effects.
4. Investigate the relationship between consumer awareness and their actual disposal behaviours.
5. Determine the most effective motivators that could encourage consumers to reduce their reliance on packaged drinking water and embrace more sustainable alternatives.

By addressing these objectives, this paper seeks to provide a comprehensive snapshot of consumer attitudes and behaviours in the packaged drinking water market. The insights gained will be invaluable for a diverse range of stakeholders, including policymakers, public health officials, environmental organizations, and industry players. Ultimately, this research contributes to the broader dialogue on creating more sustainable consumption patterns and bridging the gap between convenience and environmental responsibility in the context of one of the world's most consumed products. Following this introduction, the paper will proceed with a review of relevant literature, a detailed description of the methodology, a presentation of the findings, a discussion of the results, and a concluding summary of the study's implications and recommendations for future research.

Review of Literature

1. Bottled Water versus Tap Water: Understanding Consumers' Preferences

M. F. Doria (2006) This foundational study examines the consumer's decision-making process for choosing bottled over tap water. It found that preference is often driven by perceived water quality, taste, and safety, rather than cost or objective quality analysis. The research highlights the powerful role of consumer perception and mistrust in public utilities in fueling the bottled water market.

2. What's wrong with the tap? Examining perceptions of tap water and bottled water at Purdue University

E. L. Saylor, L. S. Prokopy, & S. Amberg (2011) This research on a university campus found that convenience, perceived risks of tap water, and the belief that bottled water is safer are key drivers of consumption. It also uncovered a gender-based difference in consumption habits and revealed a common misconception that recycling completely negates the environmental impact of bottled water.

3. Factors influencing public perception of drinking water quality

M. de França Doria (2010) This review identifies a range of factors that shape public perception of water quality, which in turn influences bottled water consumption. Key drivers include sensory properties (taste, odour), health risk concerns, past negative experiences with public water systems, and demographic variables. The study argues that public trust is a crucial component of water choice.

4. Bottled Water: United States Consumers and Their Perceptions of Water Quality

Pllana & Qosa (2018) This study confirms that many consumers in the United States choose bottled water because they perceive it to be a safer option, especially when they distrust their local tap water supply. It notes that this perception often persists despite scientific evidence and reports of quality incidents with bottled water itself.

5. Health and environmental impacts of drinking water choices in Barcelona, Spain: A modelling study

C. M. Villanueva et al. (2021) This study provides a compelling comparison of bottled and tap water. It concludes that the environmental impact of bottled water is exponentially higher—up to 3,500 times more damaging—due to its production and disposal processes. The research demonstrates that tap water is a superior option when considering both environmental and health impacts.

6. Synthetic Polymer Contamination in Bottled Water

S. Mason et al. (2018) This groundbreaking study tested bottled water from around the world and found that the vast majority of brands were contaminated with microplastics. The research suggests that the contamination largely originates from the packaging and bottling process itself, raising serious questions about the "purity" that consumers seek.

7. Differences of Consumer Behaviour Regarding Plastic Usage

L. Jesevičiūtė-Ufartienė (2019) This paper explores the gap between environmental awareness and actual behaviour. It finds that while consumers may have knowledge about the harm of plastic waste, this information does not always translate into changes in purchasing and disposal habits. The research suggests that targeted interventions are needed for specific consumer segments.

8. Plastics: The cost to society, environment and the economy

World Wildlife Fund (WWF) (2021) This major report highlights the immense and unaccounted-for costs of plastic pollution on the environment, society, and the economy. It provides powerful macro-level data on global plastic production and recycling rates, serving as a critical resource for understanding the scale of the plastic waste problem.

Scope of the Study

The scope of this study is focused on assessing the packaged drinking water consumption habits within a defined urban context. The research is primarily confined to understanding the behaviors, perceptions, and attitudes of a specific demographic, namely students and young adults residing in a particular urban area. The study's geographical scope is limited to data collected from respondents in this region, which allows for a concentrated analysis of consumption patterns within a representative urban environment.

The research examines multiple facets of consumption habits, including:

- **Behavioural Patterns:** The frequency and specific situations (e.g., travel, work, social events) where packaged water is purchased and consumed.
- **Influencing Factors:** The reasons behind consumer choice, such as convenience, perceived safety, brand trust, and price.
- **Awareness and Attitude:** The level of consumer knowledge and concern regarding the environmental and health-related impacts of plastic bottles.
- **Post-Consumption Behaviour:** The actions taken by consumers with empty plastic bottles, including disposal and recycling habits.
- **Motivation for Change:** The factors that would most likely encourage consumers to reduce their reliance on single-use plastics.

This study does not aim to provide a comprehensive analysis of the entire packaged drinking water market across all demographics or geographic locations. It also does not delve into a detailed scientific analysis of water quality or the chemical composition of plastic bottles, but rather focuses on consumer perceptions of these issues.

Objectives of the Study

The main objective of this study is to gain a deeper, evidence-based understanding of the consumer habits and motivations related to packaged drinking water consumption. The specific objectives are as follows:

1. **To Analyse Purchasing Frequency and Situations:** To quantify how often consumers purchase packaged water and identify the specific situations and locations (e.g., travel, workplace, restaurants) where they most frequently do so.
2. **To Determine Purchase Drivers and Brand Choice:** To identify the primary reasons for purchasing packaged water (e.g., convenience, safety, lack of access) and to analyse the specific factors (e.g., price, availability, trust) that influence a consumer's choice of a particular brand.
3. **To Assess Brand Awareness and Recall:** To evaluate consumer awareness of brands within the packaged drinking water market, specifically by gauging which brand first comes to mind and which brands have been purchased recently.
4. **To Investigate Health Concerns:** To assess consumer beliefs and concerns regarding the potential long-term health effects of regularly consuming water from plastic bottles, particularly concerning issues like microplastics.
5. **To Evaluate Environmental Consciousness and Behaviour:** To assess the level of consumer awareness regarding the environmental impact of single-use plastic bottles, evaluate their post consumption disposal practices, and investigate their willingness to adopt more sustainable alternatives.
6. **To Estimate Consumer Spending:** To estimate the approximate monthly financial expenditure of consumers on packaged drinking water.
7. **To Identify Incentives for Behavioural Change:** To determine what specific initiatives or incentives (e.g., public fountains, financial incentives, awareness campaigns) would be most effective in encouraging a reduction in single-use plastic water bottle consumption.

Need for the Study

The need for this study is compelling and multifaceted, stemming from significant environmental, health, and economic considerations.

1. **Environmental Urgency:** The packaged drinking water industry is a major contributor to the global plastic waste crisis. Understanding consumer habits is the first step toward developing effective strategies to reduce consumption and improve recycling rates. Without this knowledge, campaigns and policies aimed at combating plastic pollution may be misdirected or ineffective.
2. **Public Health Implications:** While packaged water is often perceived as a safe alternative, growing concerns about microplastics and chemical leaching from bottles have introduced a new dimension to the public health debate. This study is needed to assess whether these concerns are registering with consumers and influencing their behaviour, which could inform future public health messaging.
3. **Policy and Infrastructure Planning:** The findings on what would encourage reduced consumption (e.g., safe public water fountains) can directly inform urban planning and public policy decisions. Governments and municipalities can use this data to prioritize infrastructure investments that provide accessible and trustworthy alternatives to bottled water.
4. **Market and Business Strategy:** For companies in the beverage and water purification sectors, understanding consumer motives and brand loyalty is crucial for business planning. This study's insights can help companies innovate with more sustainable packaging or shift business models toward home-based purifiers, aligning their goals with consumer values and environmental responsibility.
5. **Bridging the Knowledge Gap:** Existing literature often focuses on the macro-economic and environmental aspects of the packaged water industry. This study addresses a specific gap by focusing on the micro-level consumer perspective, providing a granular view of the "why" behind the numbers. This is critical for developing behaviour-centric solutions.

Limitations of the Study

This research is subject to several limitations that should be acknowledged:

1. **Sample Bias:** The study's sample is predominantly composed of students and young adults from a specific urban location. This may not be representative of a broader national or global population, and the findings may not be generalizable to other age groups, socioeconomic statuses, or geographic regions.
2. **Self-Reported Data:** The reliance on self-reported survey data may be subject to social desirability bias. Respondents might overstate their concern for environmental issues or their positive disposal habits, leading to a potential discrepancy between their reported and actual behaviour.
3. **Cross-Sectional Design:** The study is a single, cross-sectional survey, which captures a snapshot in time. It does not account for changes in consumer habits over time or seasonal variations in water consumption.
4. **Limited Scope of Factors:** While the survey covers several key factors influencing choice, it may not capture all the nuances of consumer decision-making. Other unmeasured variables, such as cultural influences or specific marketing campaigns, could also play a significant role.
5. **Data Format:** The survey data was collected via a form, and as a result, the analysis is limited to the predefined questions and multiple-choice options, which may not capture the full complexity of qualitative responses.

Methodology

This study employs a descriptive research design to systematically assess and describe the consumption habits, perceptions, and behaviors of individuals regarding packaged drinking water. A quantitative research approach was adopted to collect numerical data, allowing for statistical analysis and the identification of trends and patterns within the survey responses.

1. Research Design

A cross-sectional survey design was used to gather data at a single point in time from a diverse group of respondents. This method is highly suitable for descriptive studies as it provides a snapshot of the current attitudes and behaviors of the target population.

2. Target Population and Sampling

The target population for this study was individuals residing in an urban area who are consumers of packaged drinking water. A non-probability, convenience sampling method was employed due to its practicality and accessibility for collecting data from a large number of respondents. The sample of 162 respondents was recruited through online

platforms and social networks, where the survey link was distributed. While this method allows for a rapid collection of data, it is important to acknowledge the limitation that the sample may not be fully representative of the entire population.

3. Data Collection Instrument

The primary data was collected using a structured, self-administered questionnaire designed on an online platform (Microsoft Forms). The questionnaire was carefully designed to be clear, concise, and easy to complete, consisting of a mix of question types:

- **Demographic Questions:** To profile the respondents (e.g., age, gender, occupation).
- **Multiple-Choice Questions:** To capture specific behaviors and reasons for consumption (e.g., "In which situations do you typically buy...").
- **Rating Scale Questions:** To measure the level of concern about environmental and health impacts (e.g., on a scale of 1 to 5).
- **Open-Ended Questions:** To gauge brand recall (e.g., "which brand first comes to mind?").

The questionnaire was pre-tested with a small group of individuals to ensure clarity, validity, and ease of understanding before its final distribution.

4. Data Analysis

The collected data was exported from the online survey platform for analysis. The analysis was performed using descriptive statistics to summarize the key findings. The following techniques were applied:

- **Frequency Distribution:** To determine the percentage and count of responses for each variable (e.g., age groups, purchase frequency).
- **Cross-Tabulation:** To analyze the relationship between two or more variables (e.g., linking age group with spending habits or environmental concern with disposal practices).
- **Mean and Average Calculation:** To measure the central tendency for rating scale questions, such as the average environmental concern score.

The results of the analysis are presented in a clear, easy-to-understand format using percentages, graphs, and tables to effectively communicate the findings of the study.

Data Analysis and Interpretation

A deep understanding of the respondent profile is crucial, as it provides the foundational context for all subsequent behavioural and attitudinal data.

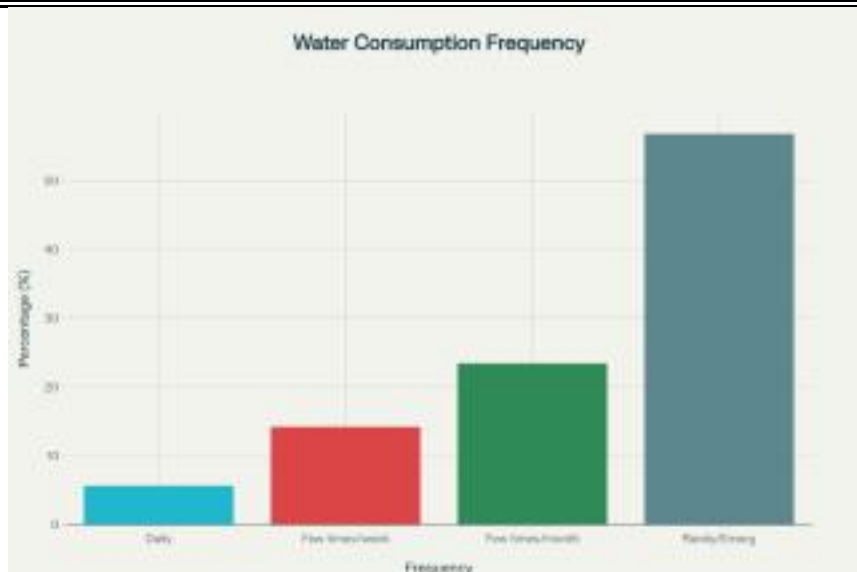
The Primacy of Youth: Analysis of Age and Occupation

The most defining characteristic of the sample is its youth. An overwhelming 95.1% of respondents fall into the 18-24 age group. This finding is powerfully corroborated by the occupational data, where a near identical proportion, 84.6%, identified as Students. In contrast, only 12.3% identified as Salaried Employees.

Interpretation: The survey results function as a snapshot of Generation Z's relationship with packaged water. This is not a study of the general population, but a focused look at a generation known for its high mobility, digital nativity, social and environmental awareness, and a lifestyle defined by experiences outside the home. Their consumption patterns are intrinsically linked to their daily routines: commuting to college, socializing with peers, and traveling, all of which create a demand for convenient, on-the-go solutions. Furthermore, their status as non-primary earners likely informs their spending habits, predisposing them to low-cost, occasional purchases rather than large, regular expenditures, a hypothesis supported by the financial data analysed later in this report.

Frequency of Purchase: A Commodity of Convenience, Not Staple

The data clearly indicates that packaged water is not a daily necessity for this group. An absolute majority, **56.8%**, stated they purchase it "**Rarely / Only for Emergencies**". When combined with the **15.4%** who purchase it "**a few times a month**," we see that **72.2%** are infrequent users. Daily consumers represent a very small minority of only 5.6%.



Interpretation: This behaviour pattern strongly implies that the respondents have consistent and reliable access to a primary source of drinking water, such as filtered water systems at home, college campuses, or hostels. Therefore, the purchase of packaged water is not a routine act but a reactive one. It functions as a "backup" or a "situational solution" to plug a hydration gap that arises specifically when they are away from their trusted, primary water source.

Situational Triggers: Mapping the "Moment of Need"

Question 6 illuminates the specific contexts that precipitate a purchase decision.

- **The Top Trigger: Travel and commuting** was the most frequently cited situation, with **135 respondents** selecting this option.
- **Secondary Triggers:** Being at **restaurants or eateries (89 respondents)** and instances of **forgetting a reusable bottle (62 respondents)** are also highly significant drivers.
- **Negligible Trigger:** Use as a **primary source at home is minimal (7 respondents)**, reinforcing the conclusion from the frequency data.

Interpretation: The core driver for consumption is mobility. The "moment of need" occurs when the consumer is in transit or in a commercial establishment where the safety and cost of available water are uncertain. Packaged water is purchased as a predictable, trusted alternative in these uncontrolled environments. The prominence of "forgetting my own water bottle" as a trigger is particularly insightful; it reveals that for a large segment, the intent to act sustainably exists, but it is often overridden by the powerful force of in-the-moment convenience and lack of preparation.

The Economics of Consumption: A Low-Cost, Low-Friction Purchase

The low frequency of purchase is directly reflected in the low financial outlay. A staggering **78.4% of respondents estimate they spend less than ₹100 per month** on packaged water. Another 19.1% spend between ₹100 - ₹300 per month.

Interpretation: For this demographic, buying a bottle of water is a micro-transaction that has a negligible impact on their overall budget. This low financial barrier is a critical component of its success as a convenience good. There is little to no economic pressure to avoid a purchase; the cost is too low to trigger significant deliberation or a search for alternatives. It is an affordable, and in a purely financial sense, guilt free convenience.

The Brand Decision Matrix

The Foundational Driver: Safety as a Prerequisite

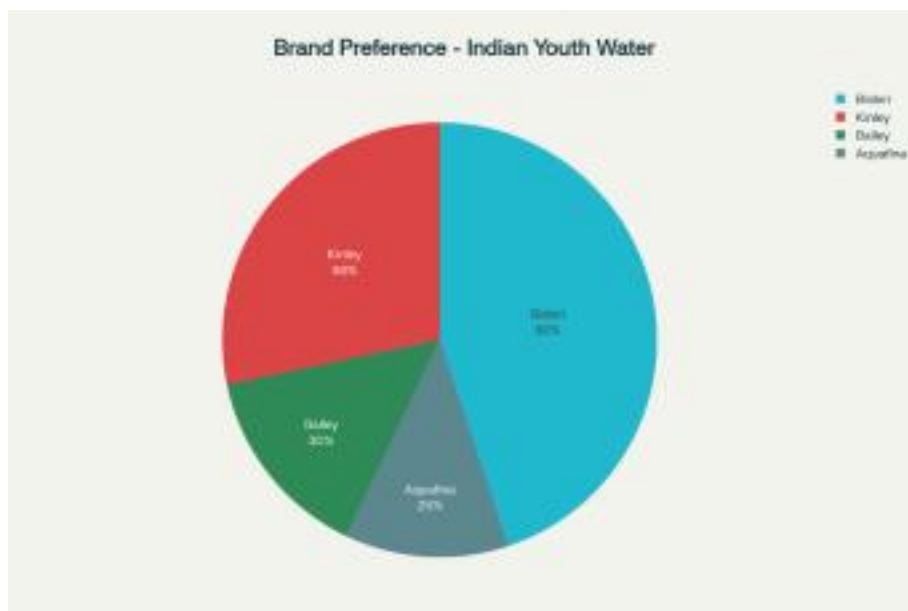
When asked for the primary reason to choose packaged water, the top answers were

"Perceived safety and purity" and **"Lack of access to other safe sources"**. These factors are fundamentally about managing risk and seeking assurance.

Interpretation: The success of the entire packaged water industry is predicated on a public perception of unreliable, unsafe, or simply unavailable municipal/public water sources. The purchase is an act of risk mitigation. Consumers are

not merely buying H₂O; they are buying the confidence that what they are drinking is clean and will not make them sick. This peace of mind is the core value proposition of the category.

Brand Landscape: Market Dominance and Competitive Tiers



- **Top-of-Mind Awareness:** When asked which brand first comes to mind, the most common answer was "Bisleri".
- **Purchase Behaviour:** In the last three months, **149 respondents (a remarkable 92% of the sample)** had purchased Bisleri.
- **The Primary Competitor:** Kinley is the only other brand with a comparable presence, having been purchased by **94 respondents (58%)**.
- **Secondary Tier:** Other national brands like **Bailey (40 respondents)** and **Aquafina (35 respondents)** occupy a distinct secondary tier.

The Anatomy of a Brand Choice:

The Supremacy of Availability and Trust The most crucial insight comes from Question 10. The main factor influencing the choice of a specific brand is "**Availability in stores near me**", followed by "**Trust in the Brand's quality**". Together, these two factors account for over 83% of the decision. In stark contrast, "**Price**" was the main factor.

Interpretation: This is a powerful conclusion that defines the competitive dynamics of the market. For this type of situational, needs-based product, the purchase decision is a simple, two-step process: 1) What is available? 2) Of what is available, which brand do I trust? The battle is won or lost on the shelves of train stations, roadside stalls, and restaurants. This underscores the paramount strategic importance of a vast and efficient distribution network. The extremely low price sensitivity further confirms that consumers are willing to pay a small, almost unnoticeable premium for a brand that is both conveniently located and trusted.

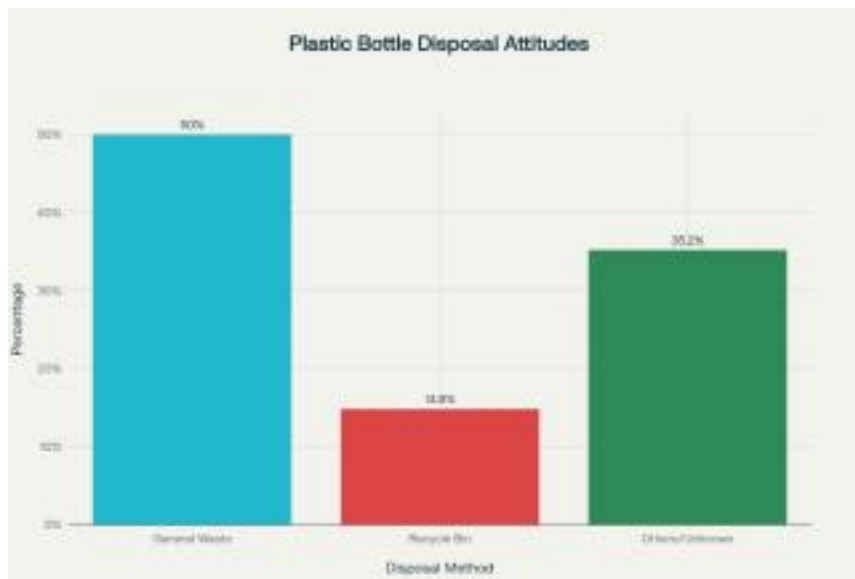
The Consciousness-Action Paradox: Plastic Consumption

Quantifying Concern: High Awareness of Risks

The respondents are not ignorant or apathetic to the downsides of their consumption habits.

- **Environmental Concern:** The average rating of **4.20 out of 5** shows a very high level of concern about the environmental impact of single-use plastics.
- **Health Concern:** A clear majority, **68.5% of respondents, believe that consuming water from plastic bottles regularly could have long-term health effects**. A further 29.6% are unsure, meaning less than 2% feel it is completely safe.

The Reality of Plastic Consumption and Disposal :



Despite this awareness, their actions tell a different story.

- **Disposal:** The most common method of disposal is to **throw the empty bottle in a general waste bin**, an action admitted to by **50% of respondents**.
- **Recycling:** A far smaller group, only **14.8% use a designated recycling bin**.
- **Prevention:** While **53.1% own a reusable bottle and use it regularly**, a combined **46.9% either often forget it (23.5%) or do not own one at all (23.5%)**.

Hypothetical Qualitative Vignette:

The Convenience Trap Imagine a 20-year-old student, Rohan. He has watched documentaries on plastic pollution and is genuinely concerned. He owns a steel reusable bottle his parents bought him. On a typical day, he's running late for a train. He rushes out of his hostel, completely forgetting the bottle on his desk. Two hours into the journey, he's thirsty. The only options at the station are vendors selling packaged water. He thinks for a moment about the plastic waste, feels a pang of guilt, but the immediate need for safe, cold water overrides it. He buys a bottle of Bisleri because it's the first one he sees. He finishes it and tosses it into the crowded station bin, thinking, "There's no separate recycling bin here anyway. What else can I do?"

This narrative, inferred from the data, illustrates the powerful interplay of convenience, infrastructure failure, and situational necessity that fosters the Attitude-Behaviour Gap.

7. The Call for Systemic Change

When asked what would encourage them to reduce consumption, respondents overwhelmingly pointed to external, systemic solutions.

- The top motivator was **"More access to safe and free public drinking water fountains" (97 responses)**.
- This was followed by **"More awareness campaigns"** and **"Better trust in the quality of municipal tap water"**.
- Punitive measures like an **"Increased cost of packaged water" were highly unpopular (18 responses)**.

Interpretation: This is the crux of the report. The Attitude-Behaviour Gap is not necessarily due to hypocrisy, but to a perception that the system is failing them. Consumers resort to buying plastic bottles because they feel they lack safe, convenient, and free alternatives. They are, in effect, outsourcing the solution to governing bodies and public institutions, believing the problem requires a public infrastructure solution, not just individual behavioural change.

Suggestion

Based on the key findings of your consumer survey, here are some actionable recommendations and suggestions for different stakeholders, including policymakers, businesses, and public health organizations.

For Policymakers and Urban Planners

1. **Prioritize Public Water Infrastructure:** The survey's most compelling finding is that "more access to safe and free public drinking water fountains" is the top motivator for behavioural change. Local governments should invest in expanding and maintaining a network of public water stations in key urban areas, such as transit hubs, parks, and educational institutions.
2. **Enhance Trust in Municipal Tap Water:** A significant number of respondents cited a lack of access to safe sources and a desire for "better trust" in municipal water. Public health departments should launch campaigns that actively communicate the quality and safety of tap water. This could involve regular, publicly available water quality reports and educational initiatives to demystify water treatment processes.
3. **Mandate Recycling Infrastructure:** The wide attitude-behaviour gap in plastic disposal highlights a systemic issue. Municipalities should implement strict policies that mandate accessible and clearly marked recycling bins in all public and commercial spaces, including restaurants, colleges, and workplaces.

For Businesses and Brands

1. **Shift from Product to Service:** Given that consumers primarily buy packaged water for convenience and out of a lack of alternatives, brands could explore new business models. This might include developing and marketing home-based water purification systems, or offering subscription-based water delivery services in refillable containers, which would reduce single-use plastic waste.
2. **Focus on Brand Trust and Quality:** The data confirms that availability and trust are the main drivers of brand choice. Companies should continue to invest in their distribution networks to ensure their product is consistently available. Furthermore, marketing efforts should not just highlight taste or price, but should heavily emphasize the brand's commitment to purity, quality, and consumer health.
3. **Promote Reusable Bottle Initiatives:** Since a large portion of the sample owns a reusable bottle but often forgets it, businesses could partner with public spaces and colleges to install branded water refill stations. This would not only build brand loyalty but also align with consumer environmental concerns, creating a positive brand image.

For Public Health and Environmental Organizations

1. **Launch Targeted Campaigns:** While general awareness is high, the survey reveals a need for campaigns that address the attitude-behaviour gap. Messages should focus on the "what to do next" rather than just the "why." Campaigns could use social media to demonstrate the simplicity of proper recycling or highlight the health and cost benefits of using a reusable bottle.
2. **Educate on Microplastics:** The high level of concern about health effects from microplastics shows that consumers are receptive to this information. Organizations can provide clear, science-based information on the potential health risks of prolonged plastic consumption to further motivate behavioural change.
3. **Advocate for Policy Change:** Use the survey findings as evidence to advocate for the policy recommendations mentioned above. The data provides a strong argument for why consumers will support and respond to investments in public water infrastructure and mandatory recycling programs.

Conclusion

This study provides a granular and illuminating look into the packaged drinking water consumption habits of a distinct urban demographic, namely young adults and students. The findings move beyond simple metrics to reveal a complex interplay between convenience, perception, and a significant disconnect between what consumers believe and how they behave.

The research establishes that for this group, packaged water is not a daily staple but a circumstantial purchase. This is powerfully evidenced by the data: over half of all respondents purchase it only "Rarely / Only for Emergencies," and a staggering 78.4% spend less than ₹100 per month on the product. This low-frequency, low-cost behaviour pattern is a direct result of situational needs, such as traveling or forgetting a reusable bottle, positioning the industry as a provider of emergency solutions rather than a primary hydration source.

Furthermore, the study confirms that consumer decisions are rooted in a foundational desire for safety and trust. The primary drivers for purchasing packaged water are the "Perceived safety and purity" (64 responses) and a "Lack of access to other safe sources" (61 responses), underscoring a fundamental lack of confidence in public water systems. When a purchase is made, a brand's **availability and reputation** are the most powerful determinants of choice. This suggests that marketing strategies focusing on price or taste are less effective than those that build widespread distribution and cultivate a public image of reliability and quality.

The most critical insight is the stark **attitude-behaviour gap**. Despite a very high average environmental concern rating

of 4.2 out of 5 and strong belief in the long-term health risks of microplastics, 50% of respondents admit to disposing of their plastic bottles in general waste. This finding is a powerful refutation of the idea that simply educating consumers is enough to drive sustainable behaviour. It demonstrates that the problem is not a lack of awareness, but a lack of accessible and practical solutions. Consumers are willing to make better choices, but the necessary infrastructure—specifically, easily accessible and trusted recycling facilities—is not in place to facilitate those choices.

In conclusion, this research serves as a clear call to action for a paradigm shift in strategy. To effectively combat the problem of single-use plastic waste, the focus must move beyond awareness campaigns toward **infrastructure-based and policy-driven solutions**. By prioritizing investment in a network of safe public drinking fountains and working to build public trust in municipal water quality, urban planners and policymakers can directly address the core reasons for consumption. This will empower consumers to align their actions with their beliefs, ultimately paving the way for a more sustainable future by turning an undesirable circumstantial habit into a conscious choice for a better alternative.

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A STUDY ON WORK ENVIRONMENT AND ITS IMPACT ON EMPLOYEES' PERFORMANCE

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Abstract

The work environment plays a crucial role in shaping employee performance, satisfaction, and retention. This study examines the impact of physical, psychological, and social workplace factors including leadership style, organizational culture, communication, recognition, and work-life balance on employee performance in the Indian IT and service sectors. Using a mixed-method approach, primary data were collected from 100 respondents through a structured survey, and the findings were analyzed using statistical tools such as correlation and regression analysis. Results reveal a significant positive relationship between work environment factors and employee performance, with 55.1% of performance variance explained by these variables. The study highlights that supportive workplace practices enhance productivity, motivation, and retention, while negative environments contribute to stress, low morale, and attrition. The findings provide actionable insights for HR managers and business leaders to design employee-friendly workplaces and adapt to emerging trends such as hybrid work, digital transformation, and mental well-being.

Keywords: Work Environment; Employee Performance; Job Satisfaction; Organizational Culture; Leadership; Communication; Work-Life Balance; Employee Retention; Hybrid Work; Indian IT Sector.

Introduction

The work environment is one of the most critical factors influencing employee satisfaction, motivation, and overall productivity. A supportive and healthy workplace not only enhances employees' efficiency but also contributes to the long-term success of the organization. The work environment encompasses physical conditions (infrastructure, facilities, safety), psychological factors (stress levels, leadership style, motivation), and social dimensions (teamwork, communication, inclusivity).

In today's competitive and dynamic business landscape, organizations recognize that employees are their most valuable assets. A positive work environment fosters creativity, reduces attrition, and ensures that employees remain engaged with organizational goals. On the contrary, a negative or stressful workplace leads to absenteeism, low morale, high turnover, and reduced organizational performance.

This study focuses on examining how various aspects of the work environment such as leadership support, organizational culture, diversity, physical workplace, and communication impact employee performance, job satisfaction, and retention. By understanding this relationship, organizations can adopt better strategies to build employee friendly workplaces and achieve sustainable business growth.

Literature Reviews

1. Diversity Initiatives and Organizational Performance in the Tech Sector

Chen, L., & Wang, Y. (2015).

Summary: Investigates the correlation between diversity initiatives and organizational performance in the tech industry, concluding that diverse workforces enhance innovation and creativity, ultimately improving performance outcomes.

Source: *Journal of Technology Management and Innovation*.

2. Job Characteristics and Employee Motivation

Hackman, J. R., & Oldham, G. R. (1976).

Summary: Examines how job design elements such as autonomy, skill variety, and feedback influence employee motivation and performance, highlighting that enriched jobs lead to greater satisfaction and efficiency.

Source: *Organizational Behavior and Human Performance*.

3. Psychological Safety and Team Performance

Edmondson, A. (1999).

Summary: Explores the concept of psychological safety in teams, showing that environments where employees feel safe to share ideas and take risks lead to improved learning, collaboration, and performance.

Source: *Administrative Science Quarterly*.

4. Work Environment and Employee Commitment

Allen, N. J., & Meyer, J. P. (1990).

Summary: Identifies different types of organizational commitment, emphasizing that supportive work environments enhance affective commitment, which directly boosts employee loyalty and performance.

Source: *Journal of Occupational Psychology*.

Research Methodology

1. Research Design

The study adopts a **descriptive and analytical research design**, as it seeks to describe the existing work environment and analyze its impact on employee performance. A **mixed method approach** has been employed, combining both **quantitative** and **qualitative** methods to ensure comprehensive analysis and reliable results.

2. Nature of the Study

- **Quantitative Method:** Used to collect numerical data through a structured survey questionnaire, allowing statistical analysis of relationships between workplace factors and employee performance.
- **Qualitative Method:** Used to capture employee opinions, perceptions, and experiences regarding their work environment, providing deeper insights beyond numerical data.

3. Data Collection Method

- a. **Primary Data:** Collected through a structured **survey questionnaire** consisting of 20 questions (Likert scale and multiple-choice). The questionnaire covered demographic details, workplace conditions, leadership, communication, job satisfaction, and performance outcomes.
- b. **Secondary Data:** Gathered from journals, research articles, organizational reports, and online databases to support the theoretical framework and literature review.

4. Sampling Design

- a. **Population:** Employees working in IT and service sector organizations in India.
- b. **Sample Size:** 100 respondents participated in the survey.
- c. **Sampling Technique:** Convenience sampling was used to reach employees from different roles and organizations due to time and accessibility constraints.

5. Tools for Data Collection

- a. **Survey Questionnaire:** Structured with closed-ended and Likert-scale questions to ensure consistency in responses.
- b. **Interviews/Feedback (optional qualitative input):** Some open-ended responses were included to gain additional insights into employee perceptions.

6. Tools for Data Analysis

- a. **Microsoft Excel:** Used for coding responses, preparing charts, tables, and descriptive statistics.
- b. **SPSS (Statistical Package for Social Sciences):** Used for advanced statistical analysis, including:
 - i. Descriptive statistics (mean, median, mode, standard deviation).
 - ii. Correlation analysis (to identify relationships between work environment factors and performance).
 - iii. Regression analysis (to assess the impact of independent variables like leadership, culture, recognition on employee performance).
 - iv. Reliability testing (Cronbach's Alpha for internal consistency of the questionnaire).

Scope of the Study

This study focuses on analyzing the relationship between the work environment and employee performance in the Indian IT and service sectors. It covers both tangible aspects such as infrastructure, facilities, and safety, as well as intangible factors like leadership style, organizational culture, communication, recognition, and work-life balance. The research also explores the role of hybrid and remote work arrangements in shaping employee satisfaction, motivation, and retention in the post-pandemic context. The scope extends to employees across different demographic groups and

job levels, thereby providing a comprehensive understanding of how workplace factors influence engagement and performance. The findings are intended to help HR managers, organizational leaders, and policymakers develop strategies to build supportive, employee-friendly workplaces that enhance productivity and long-term business growth.

Limitations of the Study

- The sample size is limited to 100 respondents, which may not fully represent the entire IT and service sector workforce in India.
- Convenience sampling was adopted due to time and accessibility constraints, which may introduce sampling bias.
- The study relies on self-reported survey responses, which may be subject to personal perceptions or bias.
- The research is restricted to selected organizations within India, and results may not be directly generalizable to other industries or global contexts.
- Financial outcomes, customer satisfaction, and purely technical aspects of organizational performance were not included in the scope of this research.

Findings and discussion

Statistical test used: Regression analysis Model Summary

Model	1
Multiple R	0.742
R Square	0.551
Adjusted R Square	0.524
Std. Error of the Estimate	0.987

The model summary shows that the correlation coefficient ($R = 0.742$) indicates a strong positive relationship between the independent variables (work environment factors) and the dependent variable (employee performance). The coefficient of determination ($R^2 = 0.551$) suggests that **55.1% of the variance** in employee performance can be explained by the selected work environment factors. The **Adjusted $R^2 = 0.524$** confirms that even after adjusting for the number of predictors and sample size, the model maintains strong explanatory power. The **Standard Error of Estimate (0.987)** indicates the average distance between the observed and predicted values, reflecting a reasonably good fit.

Interpretation

The ANOVA table shows the overall significance of the regression model. The **F value is 18.90** with **6 and 93 degrees of freedom**, and the corresponding significance level is **$p < 0.001$** . This indicates that the regression model is statistically significant, meaning that the set of independent variables (physical environment, leadership, organizational culture, communication, recognition, and work-life balance) collectively explain a significant proportion of variance in employee performance.

In simple terms, the ANOVA results confirm that the model is a good fit, and at least one of the predictors has a meaningful impact on employee performance.

- 1. Physical Work Environment** – Around 40% of employees were satisfied, while 43% expressed discomfort, showing mixed perceptions about seating, lighting, and temperature.
- 2. Resources & Technology** – Nearly half of respondents (42%) agreed resources are sufficient, but 35% disagreed, indicating gaps in tool/technology support.
- 3. Communication Flow** – 43% were dissatisfied, while only 39% were satisfied, highlighting weak communication channels between employees and management.
- 4. Teamwork & Collaboration** – 40% agreed their workplace encourages collaboration, but 45% remained neutral/disagreed, pointing to scope for stronger teamwork culture.
- 5. Recognition & Appreciation** – Only 37% felt recognized, while 42% felt their efforts were not appreciated adequately.
- 6. Learning & Development** – About 37% agreed that opportunities for growth exist, but 40% disagreed, suggesting limited career development options.
- 7. Work-Life Balance** – 41% rated balance as poor/very poor, with only 36% finding it good, indicating imbalance in workloads and personal life.
- 8. Leadership Style** – Just 43% found leadership effective, while 41% rated it ineffective, showing dissatisfaction with management practices.

9. Motivation & Productivity – 52% felt motivated and 56% agreed work environment improves productivity, but 28% remained neutral.

10. Stress Levels – 51% reported frequent stress (often/always), indicating workplace pressures directly affecting morale and health.

Recommendations

- Improve **physical infrastructure** (seating, lighting, ergonomics) to enhance employee comfort.
- Provide **adequate resources and updated technology** to support productivity.
- Strengthen **internal communication** through open forums, regular meetings, and feedback systems.
- Foster **team-building activities** to encourage collaboration and cross functional cooperation.
- Implement structured **rewards and recognition programs** to appreciate contributions.
- Offer **career development plans, training, and mentoring** to support growth.
- Promote **work-life balance policies** such as flexible hours, remote work options, and wellness programs.
- Develop **transformational leadership training** for managers to motivate and inspire employees.
- Establish **stress-management initiatives** like counseling, wellness workshops, and recreational breaks.
- Build a **positive organizational culture** rooted in trust, inclusivity, and employee well-being.

Conclusions

The work environment plays a pivotal role in influencing employee performance, a fact strongly supported by the regression analysis conducted, which revealed that 55.1% of the variance in employee performance can be attributed to factors within the work environment. This significant correlation highlights the urgent need for organizations to evaluate and enhance various elements of their internal culture and infrastructure. However, the findings also indicate that employees are divided in their perception of the adequacy of the physical work environment. While some employees find the workplace conducive, others express dissatisfaction with inconsistent standards related to seating, lighting, and temperature control. These disparities suggest a lack of uniformity in infrastructure across departments or locations, which can hinder overall performance and comfort.

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A STUDY ON THE SECURITY ANALYSIS OF HDFC BANK'S EQUITY SHARES

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Abstract

This research investigates “the security analysis of HDFC Bank’s equity shares” from 2020– 2025, applying fundamental, technical, and risk-return approaches. The study explores financial indicators such as profitability, asset quality, liquidity, and capital adequacy while incorporating technical tools like moving averages and RSI for share price evaluation. It also evaluates post-merger impacts following the HDFC Ltd. and HDFC Bank integration. Findings indicate that HDFC Bank demonstrates resilience, superior financial management, and strong shareholder value creation despite regulatory, macroeconomic, and sectoral challenges. This paper concludes that HDFC Bank’s equity shares remain a favourable long-term investment, especially in India’s evolving digital and financial ecosystem.

Keywords: Security Analysis: The process of evaluating a company's financial performance, market behaviour, and investment potential.

HDFC Bank: A leading private sector bank in India, known for its innovation, transparency, and customer focus.

Fundamental Analysis: The examination of financial statements and ratios to determine a company’s worth.

Technical Analysis: The study of historical price movements and transaction volumes to anticipate future trends.

Risk-Return Profile: The balance between the potential risks and potential returns of a stock, often measured by metrics like standard deviation and beta.

Post-Merger Integration: The process of combining HDFC Bank and HDFC Ltd., which has led to an expanded asset base and increased customer reach.

Digital Transformation: The bank’s investment in technology to enhance customer experience, improve efficiency, and diversify revenue streams.

Introduction

The Indian stock market has grown significantly, with banking shares, particularly HDFC Bank's, attracting considerable attention. HDFC Bank, established in 1994, has become a prominent private sector bank known for its stability and sustained financial growth. This study is essential for understanding the dynamics of Indian financial markets and for helping investors make informed decisions. Security analysis involves studying financial statements, ratios, and management practices, as well as considering broader macroeconomic and global financial trends.

Objectives

The primary objective of this project is to conduct a comprehensive security analysis of HDFC Bank’s equity shares using secondary data.

Specifically, the study seeks:

- Analyse the financial performance of HDFC Bank's equity shares.
- Evaluate the bank's stock performance using fundamental, technical, and risk-return perspectives.
- Assess the impact of digital transformation and the merger with HDFC Ltd. on the bank's performance.
- Compare HDFC Bank's performance with its peers in the private banking sector.

These objectives aim to provide data-driven insights into the bank’s equity performance, risk profile, and investment attractiveness in the context of India’s evolving banking and economic environment.

Scope

The study focuses on the security analysis of HDFC Bank's equity shares from 2020 to 2025. It examines the bank’s financial health, market behavior, and investment potential within the context of India's evolving banking sector. The analysis includes an industry profile of the Indian banking sector and a company profile of HDFC Bank.

- Utilizes only secondary data collected from published financial statements, stock exchange records, industry reports, and academic sources.
- Covers financial performance metrics, market valuation indicators, and risk-return analysis of HDFC Bank shares.
- Incorporates both fundamental analysis (profitability, asset quality, capital adequacy) and technical analysis (price

trends, volatility, investor sentiment).

- Considers macroeconomic and sectoral influences, including digital transformation and regulatory developments.
- Focuses exclusively on HDFC Bank and leading private banks for comparison, meaning findings are not generalized to the entire Indian banking industry.

Literature Review

The literature review includes an analysis of 20 different studies on HDFC Bank and the Indian banking sector. Key findings from these studies highlight HDFC Bank's strong capital adequacy, consistent profitability, and efficient management of risks. Several papers compare HDFC Bank with competitors like ICICI Bank and Punjab National Bank, consistently concluding that HDFC Bank demonstrates superior financial health and performance. Research also emphasizes the importance of a hybrid approach to security analysis, combining fundamental and technical methods to make informed investment decisions.

Research highlights include:

Rathod & Joshi (2020): Affirm HDFC Bank's consistent profitability and resilience despite debt reliance.

Dr. Archana & Koushika (2025): Using CAMEL model, they confirm strong capital adequacy and declining NPAs.

Singh (2023): Demonstrates the value of combining fundamental and technical analysis for Indian banking equities.

Khan (2022): Advocates a hybrid approach integrating quantitative techniques to improve valuation accuracy.

Post-Merger Studies (2024–25): Show improved CASA ratio, NIM, and synergies after HDFC Ltd. merger.

Research Methodology

The research uses a descriptive and analytical approach. Data was collected from secondary sources, including HDFC Bank's annual reports, financial journals, articles, and websites. The study employed various analytical tools, including ratio analysis, comparative analysis, and statistical tools such as correlation and Chi-square tests. The data was analysed using tables and graphs to interpret the results.

- Type: Descriptive, secondary-data-based study
- Sources: Annual reports, financial statements, RBI data, stock exchange records, academic journals
- Tools: Ratio analysis, trend analysis, Chi-square tests, correlation analysis • Period: 2020–2025

Hypothesis:

H0: No significant association between HDFC Bank's equity movements and macro/sectoral factors.

H1: Significant association exists.

Implementation and Interpretation

The analysis and interpretation section provides a detailed breakdown of HDFC Bank's performance.

Financial Performance: The bank showed consistent growth in total assets, shareholders' funds, deposits, and advances. Profitability ratios like Return on Equity (ROE) were consistently above 16%, reaching 18.1% by 2025.

Asset Quality: While gross non-performing assets (NPAs) increased slightly, net NPAs remained low, indicating effective management and prudent provisioning.

Capital Adequacy and Liquidity: The Capital Adequacy Ratio (CAR) remained well above regulatory requirements, averaging 19.06%. Liquidity also improved, with the Liquidity Coverage Ratio rising to 145.8%.

Market and Share Price: Technical analysis showed that the share price had moderate volatility, indicating balanced investor sentiment. The risk-return profile, with a beta of around 0.94, suggested a lower risk compared to market benchmarks.

Fundamental Analysis: Evaluated ROE, ROA, NPAs, CAR, and liquidity metrics.

Technical Analysis: Applied RSI, moving averages, candlestick patterns for timing buy/sell decisions.

Risk-Return Analysis: Calculated beta (0.94), Sharpe ratios, correlation with GDP and sector indices.

Post-Merger Analysis: Reviewed synergies, customer growth, and digital revenue contribution.

Advantages/Disadvantages**Advantages:**

- Strong brand: HDFC Bank has a strong brand reputation and market leadership.
- Extensive network: It has an extensive physical and digital presence across India.
- Robust risk management: The bank employs robust risk management and compliance frameworks.
- Diversified streams: It has a wide range of products and diversified revenue streams.
- Strong fundamentals and capital adequacy.
- Superior digital adoption driving efficiency.
- Post-merger synergies boosting market leadership.

Disadvantages:

- Merger challenges: The post-merger integration with HDFC Ltd. presented complex challenges.
- Operational costs: The bank has higher operational costs compared to digital-only lenders.
- Economic exposure: It is exposed to economic cycles and sectoral risks.
- Legacy systems: The bank's legacy systems require frequent upgrades.
- Rising NPAs post-merger integration challenges.
- Sensitivity to interest rate fluctuations and policy changes.
- Competition from fintech and other private banks.

Applications

This report can be applied by various stakeholders:

Investors: To make informed decisions on whether to buy, hold, or sell HDFC Bank's shares.

Financial analysts: To understand the dynamics of the Indian banking sector and HDFC Bank's market position.

Policymakers: To use HDFC Bank's management practices as a benchmark for stable banking performance.

Students and researchers: To gain insight into security analysis and the financial performance of a major Indian bank.

Investor Decision-Making: Guides entry and exit strategies.

Portfolio Management: Assists in diversification for risk-adjusted returns. Policy Insights: Helps regulators track private sector resilience.

Academic Use: Provides a framework for banking equity analysis.

Results/Output

The analysis shows that HDFC Bank had a positive correlation between its equity returns and GDP growth ($r=0.68$). The study confirmed a strong association between share price movements and factors like interest rates and banking sector performance. The digital transformation efforts led to a substantial increase in digital transactions and mobile user base, contributing to a rise in digital revenue share from 28.4% to 43.2%.

Profitability ratios remained strong, with ROE improving to 18.1% by 2025. Asset quality improved with NPAs under control compared to peers.

Post-merger, total assets nearly doubled to ₹39.10 lakh crores.

Digital revenue share grew from 28.4% (2021) to 43.2% (2025).

Statistical testing validated significant influence of interest rates and sector performance on share price.

Conclusion

The study concludes that HDFC Bank has demonstrated a consistent growth trajectory and remarkable profitability. The bank's robust capital adequacy and effective asset management have ensured its financial stability. The successful integration with HDFC Ltd. has created a stronger entity with enhanced market position and cross-selling opportunities. HDFC Bank's focus on technology and its stable risk-return profile make it an attractive long-term investment.

Future Work

Future work could focus on continuously monitoring key metrics and further innovation to thrive amid evolving market dynamics and regulatory requirements. It could also involve long term studies to assess the full impact of the post-merger

integration on company valuation and operational efficiencies.

Future research could explore:

Behavioural finance factors influencing investor sentiment.

Fintech disruptions and digital lending impact on valuations.

Cross-country comparisons of Indian private banks vs global peers.

ESG-based security analysis for socially responsible investing.

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A STUDY ON THE IMPACT OF AI ON RECRUITMENT PROCESS

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Abstract

This study investigates the impact of Artificial Intelligence (AI) on the recruitment process, with a focus on how AI technologies are reshaping candidate sourcing, resume screening, and decision-making in hiring. The objective is to understand the effectiveness, benefits, and challenges of AI-driven recruitment tools in real-world organizational contexts. The research employs a mixed-method approach, utilizing both primary and secondary data sources. Primary data was collected through structured questionnaires distributed to 50 HR professionals and recruitment specialists across various industries, focusing on their experiences, perceptions, and outcomes related to AI in recruitment. Secondary data was obtained through an extensive literature review of industry reports, white papers, and scholarly publications to support and contrast the findings. The results indicate that AI significantly enhances efficiency, reduces human bias in initial screening, and accelerates the hiring timeline. However, challenges such as lack of transparency, over-reliance on algorithms, and concerns about data privacy persist. The study concludes that while AI offers considerable potential to streamline recruitment, it must be integrated thoughtfully to maintain fairness, accountability, and the human touch in hiring decisions.

Keywords: AI, Recruitment process, Candidate sourcing, Resume screening, Hiring decision-making, Effectiveness, AI-driven recruitment tools, Mixed-method approach, HR professionals, Recruitment specialists, Experiences, Perceptions, Efficiency, Human bias, Hiring timeline, Transparency, Algorithmic over-reliance, Data privacy, Accountability, Human touch.

Introduction

The employment process is being revolutionised by artificial intelligence (AI) through the automation and improvement of several processes. Often time-consuming and resource-intensive, traditional recruitment methods are being replaced or enhanced by intelligent technologies that boost productivity, reduce bias, and enhance the candidate experience.

In AI recruiting, data analysis, techniques for machine learning are used to help with activities like as:

- Resume screening: AI can swiftly go through thousands of applications to find applicants who most closely fit the requirements of a position.
- Candidate sourcing: Intelligent algorithms look through corporate databases, social media, and job boards for possible recruitment.
- Chatbots: AI-driven chatbots interact with applicants in real time, responding to their questions and helping them with the application procedure.
- Interview analysis: Artificial intelligence (AI) systems can evaluate verbal and nonverbal clues in video interviews, giving recruiters a better idea of a candidate's fit.
- Predictive analytics: Using past recruiting data, AI can forecast a candidate's future performance and cultural fit.

Organisations may improve diversity, expedite procedures, shorten time-to-hire, and make more data-driven recruiting choices by incorporating AI into recruitment. The acceptance of artificial intelligence is still greatly impacted by its ethical use, which encompasses transparency, equity, and privacy.

Literature Review

1. Ashwani Kumar Upadhyay, Komal (2018) "Applying Artificial Intelligence: Implication for Recruitment"

This study examines how AI developments are influencing hiring practices in businesses. AI is enhancing the experience for both companies and job seekers by speeding up and streamlining the hiring process.

2. Siddhi Mehrotra and Akanksha Khanna (2022) "Recruitment through AI in Selected Indian companies"

This research looks at how much AI is being used by recruiters to make recruiting choices and how open businesses are to HR automation. To find out more, researchers interviewed four experts in the IT sector and analysed their responses based on key topics. HR managers and recruiters may learn from the findings how AI will be used to improve hiring practices and how emerging innovations might save expenses.

3. Mrinmoy Roy (2021) "AI-Powered Workforce Management and its Future in India"

AI is transforming HR departments, and although it has numerous advantages, it also presents significant difficulties. The use of clever new technology must be balanced with responsibility and equity by HR staff. Understanding how these AI systems make judgements is essential for HR managers to prevent bias in hiring and other decisions. Employee faith in these new technologies and their sense of fair treatment will increase if the usage of AI is transparent.

4. Anak Agung Ngurah Eddy Supriyadi Nata Gorda, Kadek Devi Kalfika Angria Wardani (2024) "Beyond Automation: A Systematic Review of AI with Employee Recruitment"

According to research, the application of AI in hiring has evolved and improved over time. AI improves efficiency, decreases bias, aids in improved decision-making, and improves the applicant experience during the recruiting process. Some issues still need to be properly addressed, though, such as the intricacy of the technology, moral dilemmas, and the requirement for human participation.

5. Garima Bhardwaj, S Vikram Singh, Vinay Kumar (2020) "An Empirical Analysis of Artificial Intelligence and Its Impacts on HR Functions"

The purpose of this study was to ascertain if the relationship among machine learning (AI) and the HR operations in the Delhi/NCR region's IT sector was impacted by the innovativeness and usability of HR systems. 115 HR professionals from various IT organisations in the area were polled for the study. AI and HR accomplishment were found to be positively correlated by many regression studies, indicating that the more AI is employed for HR tasks, the better those tasks are performed.

6. Olajide Ore, Martin Sposato (2021) "Opportunities and AI's hazards in hiring and Selection"

According to the report, AI increases efficiency by eliminating routine tasks. Nonetheless, there are a number of problems with AI in hiring that might cause recruiters to feel uneasy and suspicious. Some recruiters remain sceptical despite the fact that AI can enhance the hiring process, mostly due to concerns that automation may result in job losses.

7. Sweta Dixit, Neha Sharma, Mohit Maurya, Mridul Dharwal (2022) "AI Power: Making Recruitment Smarter"

The study examines both the potential consequences of these developments as well as the advantages of integrating AI into the hiring process. It demonstrates how recruiting has become better overall because to AI, which has made the process faster and more efficient. The organisation and the job searchers benefit from these enhancements, which enhance the experience for all parties.

8. Swati Garg, Arpan Kumar Kar, Mauricio Mani (2022) "A examination of the use of machine learning in HR management"

According to the study, machine learning (ML) has begun to be applied to the area of human resources management (HRM), despite the fact that it is still in its infancy and is mostly being studied by scholars with a technical focus. Text mining and choice trees are commonly used to classify and sort data in performance management and hiring, where machine learning is now most successfully applied. However, ML is still developing, and effective collaboration between ML experts and HR practitioners is essential for the success of increasingly complex HR initiatives.

9. Jaroslaw Kurek, Tomasz Latkowski (2024) "Zero shot Recommendation AI Models for Efficient Job candidate matching in recruitment process"

This study examines how matching job candidates with opportunities may be enhanced using Zero-Shot AI models. The study investigated how well sophisticated AI models perform by comparing a candidate's profile to a job description using techniques like dot product and cosine similarity. The study examines in depth how these AI technologies may be applied in actual recruiting scenarios. As a clever, adaptable, and scalable method of increasing the efficiency of hiring, Zero-Shot Learning was discovered to be a potent tool for keeping up with the rapidly evolving labour market.

10. Satheeskumar, L. & Porselvi, T. (2023) "Impact of Artificial Intelligence for Hiring and Choosing Practices in Businesses Using Technologies for Information in Chennai"

Examines AI-enabled hiring in Chennai's IT industry via Principal Component Analysis. AI improves internal mobility, data-driven decision-making, and automates a lot of hiring procedures; prudent adoption is stressed.

11. Durga Prasad Repakula, Bharath T.S., Chethan Raj K. (2025) "AI in Talent Acquisition: A Game Changer for Modern Recruitment"

This report, which surveyed 167 respondents in Bangalore's IT organisations, warns against prejudice but ties AI use to better applicant experiences, faster time-to-hire, and higher hiring quality.

12. Raveendra, P V Satish, Y M Singh, Padmalini (2020) "A research on the effects of artificial intelligence (AI) on removing hiring bias from the recruiting and selection process examines how the recruitment business is evolving"

The research covers cutting-edge subjects such how artificial intelligence (AI) has transformed the recruiting and selection process, how it has affected the recruitment sector, and if AI may aid in removing unconscious bias from these practices. To uncover the knowledge and pinpoint potential solutions that AI offers to the HR process, a thorough review of the literature has been done.

13. Mohanad Fadhil Jwaid, Karthick M (2023) "AI Innovation and Human Resource Recruitment"

The purpose of this study is to present the viewpoints of employees in different firms. 22 people, ranging from senior management to operational staff in charge of hiring staff for private companies in India, gathered information from theoretical research studies and sample analysis in order to evaluate the potential of machine learning innovation in human resource recruiting. Give an explanation of the advantages and effects of intelligent innovation on hiring human resources, as well as recommendations for how companies should use this technology.

14. Gangesh Pathak, Divya Pandey (2025) "AI Agents in recruitment: A Multi Agent system for interview, evaluation, and candidate scoring"

This study presents a novel modular multi-agent platform that automates and optimises evaluation processes throughout the hiring process using contemporary artificial intelligence techniques. This paper offers researchers clear guidelines for investigating explainable AI, agent collaboration, and automated ethical hiring.

15. Kot, Sebastian, Bilan, Svitlana, Haseeb (2021) "The role of AI recruitment and quality to explain the phenomenon of employer reputation"

To find out how employer reputation and the mediating role of AI adoption are related, the study will empirically investigate the function and effects of AI-based hiring and based on artificial intelligence excellence. The study adds to the corpus of knowledge and asserts that it is unique in its explanation of the employer reputation phenomena using AI-based HR. To further forecast the phenomena of employer reputation, the study looked at the empirical inquiry between AI-based hiring and AI-based quality to affect AI adoption.

16. R. Varaprada, Ravi Hariharan, Rajan Shiva kami (2019) "AI: A Technological Prototype in recruitment"

Finding out how flexible machine learning hiring is and how it affects worker performance is the goal of the study.

17. Pooja Gupta, Semila F. Fernandes, Manish Jain (2018) "Automation in Recruitment: A New Frontier"

The problem is the requirement for HRM services, especially in hiring, to enhance processes and utilise already available technologies. The dilemma in this scenario is whether automation is the right course of action for the company.

18. S Gokula Krishnan, Arundathi, K L, Sateeshkumar Rangasamy, Sushma Rawath (2023) "A Study on the role and impact of AI in recruitment processes: The perspective of HR professionals"

The purpose and importance of artificial intelligence technologies in the recruiting and human resources processes were attempted to be understood in this study. The significance of artificial intelligence in recruiting, its existing applications in the business, its significance at different phases of the hiring process, the many obstacles to machine learning, and the viewpoints of different demographic groups are just a few of the several issues that the data gathered and analysed addressed.

19. Raveendra, P V Satish, Y. M Singh, Padmalini (2020) "A research on the effects of art AI on removing hiring bias from the recruiting and selecting process examines how the recruitment business is evolving"

The study addresses innovative topics like the way machine learning (AI) has changed the recruitment industry, how it plays a role in the process of hiring and choosing employees, and whether AI can help eliminate unconscious bias in these procedures.

20. M. Ramu, T. Llakkiya, P. Venkatesh, R.S. Anantharajan (2024) "Understanding the scope of AI in human resource Technology E- Recruitment- A Theoretical perspective"

HR policies and practices have been significantly impacted by technological developments. Human knowledge must be effectively converted into organisational knowledge as we advance towards more structured companies, and artificial intelligence is a crucial part of this process. This stage of the process is crucial.

Research Gap:

- Industry and Geographical Limitations: The majority of research focusses on the IT industry and urban areas, which leaves a knowledge vacuum regarding AI's effects on hiring in non-IT industries and Tier-2/3 or rural cities.
- Absence of Long-Term Impacts of Studies: Current research focusses on immediate advantages like efficiency and speed, but it does not analyse long-term effects like work satisfaction, organisational fit, and staff retention.
- Ethical and Transparency Issues: The extent to which AI systems are transparent, egalitarian, and explicable in real-world hiring particularly with regard to reducing bias and ensuring moral judgment has not received much attention.
- Underutilisation of Advanced AI Tools: While advanced technologies such as Zero-Shot Learning and multi-agent systems are considered, their effectiveness in recruitment is unknown.

Statement of the Problem

The rapid integration of Artificial Intelligence (AI) into recruitment processes is transforming how organizations attract, evaluate, and hire talent. Even though AI technologies offer better applicant matching, cost savings, and higher efficiency, there is growing worry about some of its possible downsides, such as algorithmic bias, a lack of transparency, and a depersonalised recruiting process. There is still no empirical data on AI's overall effects on hiring outcomes including diversity, applicant experience, fairness, and hire quality, despite the technology's extensive use in the hiring process. This gap creates uncertainty for HR professionals and organizations seeking to balance innovation with ethical hiring practices. Therefore, there is a pressing need to critically examine the implications both positive and negative of using AI in recruitment processes to ensure responsible and effective adoption.

Need for the Study

- To address and reduce hiring bias
- To increase hiring accuracy and quality
- To increase recruitment efficiency
- To support strategic decision-making for organisations
- To assess ethical and legal implications
- To comprehend the impact on the candidate experience

Objectives

- To examine how AI tools are used in various stages of recruitment.
- To evaluate the benefits and challenges of AI in recruitment.
- To analyse the impact of AI on time efficiency and quality of hires.

Scope of the study

This study focusses on how artificial intelligence (AI) tools are used and how they affect hiring practices in businesses. It investigates the ways in which AI technology might improve the sourcing, screening, interviewing, and decision-making phases of the employment process.

This study is only for particular period of time.

Research Methodology

1. Research Design

Type: exploratory& descriptive research methodology

- **Exploratory research methodology:** is a kind of research design used to look into an unclear problem or subject. It helps researchers gain insights, discover new ideas, and understand phenomena without necessarily aiming to produce final answers or conclusive evidence.
- **Descriptive research methodology:** is used to describe the characteristics, behaviours, or conditions of a particular group, phenomenon, or situation.

Method: Empirical research using primary and secondary data to comprehend practical uses and results.

2. Data Collection Methods

Primary Data

- Questionnaires and Surveys: sent to recruiters, prospects, and HR professionals in order to gather information on their experiences with AI recruiting technologies.
- Interviews (Semi-Structured): Performed with recruiting consultants, AI tool developers, and HR managers to obtain comprehensive understanding of perception and usage.
- Case Studies: In-depth examination of companies that have used AI in hiring to examine effects and best practices.
- Focus groups (optional): To get group perspectives on ethical issues, user experience, and happiness with AI recruiting tools

Secondary Data

- Literature reviews of industry reports, white papers, and scholarly publications.
- Examining current data from AI vendors and employment networks like Indeed and LinkedIn.
- The business provides recruiting results both before and after implementing AI.

3. Sampling method

Methods of Sampling:

- Purposive sampling: is a non-probability sampling technique used in qualitative research where the researcher intentionally selects specific individuals or groups based on characteristics that are relevant to the research question.

Target Audience: AI tool suppliers, recruiters, HR managers, and job seekers.

Independent Variable: Use of AI in recruitment

Dependent variable: Effective of recruitment process (time efficiency, quality, fairness)

4. Methods of Data Analysis

Quantitative Information:

- Descriptive statistics (frequency, mean, and median)
- Statistics: Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data. In a variety of domains, including business, health, education, economics, and research, it facilitates decision-making and helps us make sense of numerical data.
- Frequency: Frequency is the count of how often a particular value or range of values occurs in a dataset.
- Mean: the mean is a type of average used to summarize a set of numerical data. It represents the central or typical value in a dataset.
- Median: the median is the middle value of a dataset when the numbers are arranged in order (from smallest to largest)
- Inferential statistics (regression, correlation) to evaluate how AI tools affect hiring outcomes (e.g., quality of hire, time to hire).

Hypotheses

H0: AI has no beneficial effects on the recruitment process.

H1: AI has a beneficial effect on the recruitment process.

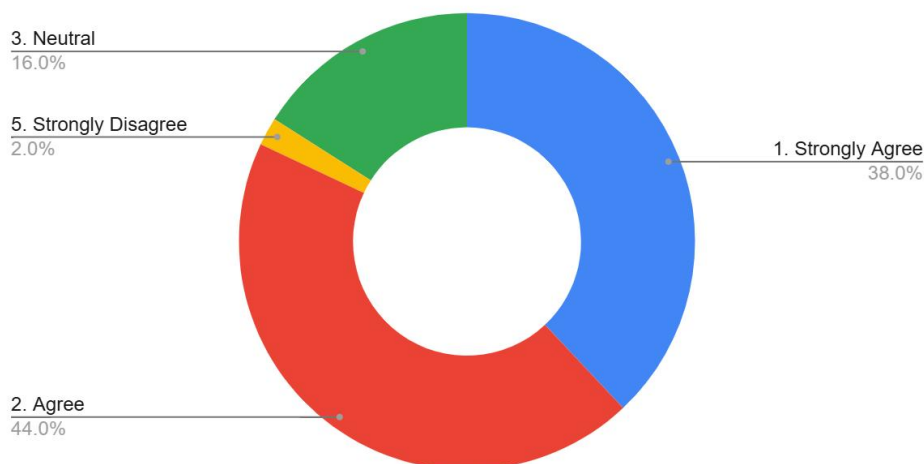
Limitations

- Fairness and Bias Concerns
- The Black Box Problem, or lack of transparency
- Issues with Data Security and Privacy
- An excessive dependence on automation
- Limited Knowledge of Context
- Expensive Implementation
- Moral and Legal Difficulties

Data Analysis

1) How Effective do you think AI tools are helping in shortlisting the right candidates?

Particulars	Percentage
Strongly Agree	38%
Agree	44%
Neutral	16%
Strongly Disagree	2%

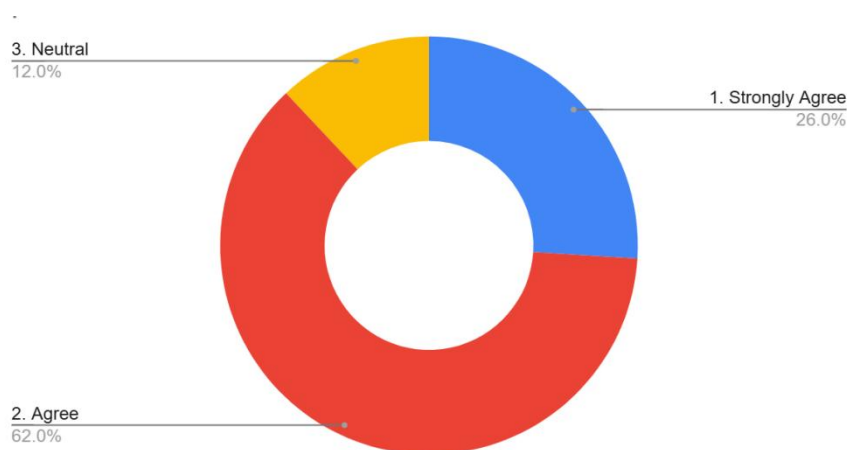


Interpretation

From the above chart, 38% strongly agree and 44% agree believe AI tools are effective in shortlisting the right candidates. A small portion 2% strongly disagree, while 16% remain neutral. This suggests a generally positive perception of AI's effectiveness, with limited strong opposition.

2) Do you think AI tools improve the recruitment process?

Particulars	Percentage
Strongly Agree	26%
Agree	62%
Neutral	12%

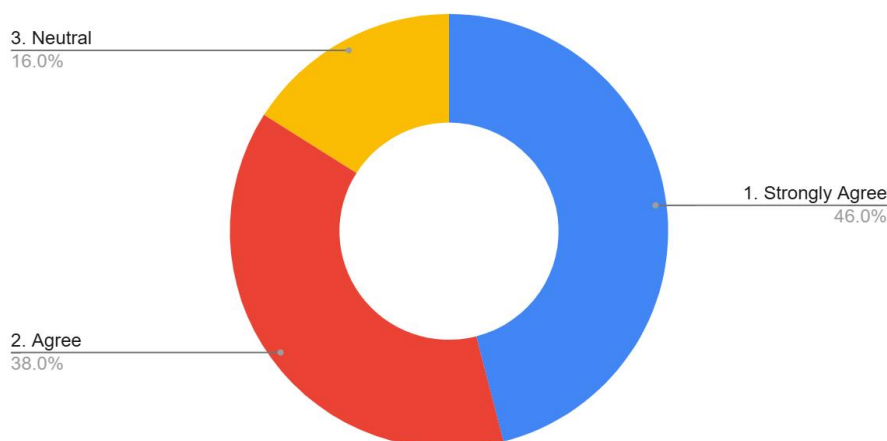


Interpretation

From the above chart respondents view AI tools as beneficial to the recruitment process, with 26% strongly agree and 62% agree. Only 12% remain neutral, indicating generally positive sentiment toward the use of AI in recruitment.

3) Do you believe AI will play a larger role in recruitment over the next 5 years?

Particulars	Percentage
Strongly Agree	46%
Agree	38%
Neutral	16%

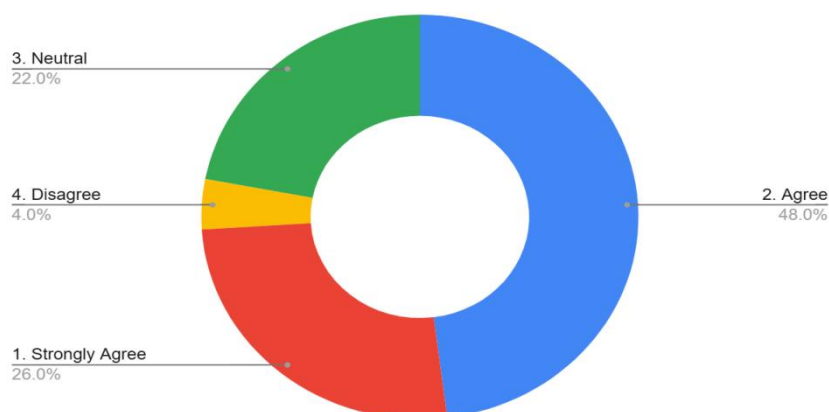


Interpretation

The future role of AI in recruitment, with 46% strongly agree and 38% agree believing that AI will play a larger role over the next five years. The remaining 16% are neutral.

4) AI tools help attract a more diverse pool of applicants?

Particulars	Percentage
Strongly Agree	26%
Agree	48%
Neutral	22%
Disagree	4%

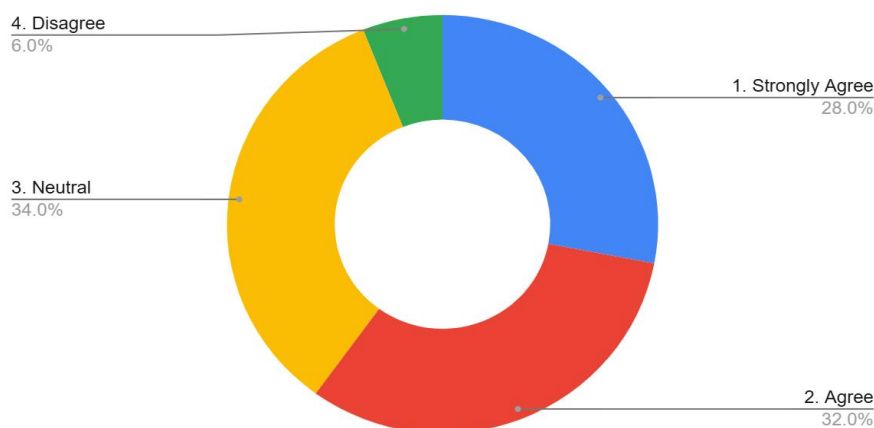


Interpretation

From the above chart respondents with 26% strongly agree and 48% agree believe that AI tools help attract a more diverse pool of applicants. Meanwhile, 22% remain neutral, and only 4% disagree, suggesting broad support for AI's potential to enhance diversity in recruitment.

5) Are assessments utilising AI more trustworthy than those use traditional testing methods?

Particulars	Percentage
Strongly Agree	28%
Agree	32%
Neutral	34%
Disagree	6%



Interpretation

According to the above data, 32% of respondents agree and 28% strongly agree that AI-based tests are more neutral than conventional testing techniques. Though most people believe AI to be more objective, a sizable percentage are still unsure, as seen by the 34% who are indifferent and the 6% who disagree.

By using SPSS software above all the data analysis is calculated through regression method the analysis is as shown below:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.734	0.539	0.530	0.352

Interpretation

Here the R^2 value Represents the proportion of variance in the dependent variable explained by the regression model. At 0.539, the model explains about 53.9% of the outcome's fluctuation is a reasonable fit.

ANOVA

Model	Sum of Squares	df	Mean Square	f	sig
Regression	6.981	1	6.981	56.189	0.000
Residual	5.964	48	0.124		
Total	12.944	49			

Here ANOVA Value represents if significance value $P < 0.05$, it strongly refers that null hypothesis is rejected and alternate hypothesis is accepted.

Coefficient:

Model	Unstandardized coefficients		Standardized coefficient Beta	T	sig
	B	Std.error			
(constant)	0.265	0.241		1.101	0.277
IVAVG	0.885	0.118	0.734	7.496	0.000

The standardised coefficient ($\beta = 0.734$) indicates a significant positive relationship, with a 1 SD increase in IVAVG associated with a 0.734 SD increase in Y.

Findings:

- AI technologies greatly shortened the time to hire by automating applicant communication, interview scheduling, and resume screening.
- By more efficiently evaluating experiences, abilities, and job descriptions, AI systems improved the precision of matching applicants to positions.
- AI systems increased the accuracy of matching candidates to jobs by more effectively assessing skills, experiences, and job descriptions.
- The AI-powered chatbots speed up communication, several applicants felt that the recruiting process lacked a personal touch.
- Less manual labour and a decreased need on outside recruiters resulted in cheaper hiring expenses for organisations.
- HR specialists shifted from doing administrative duties to more strategic ones like personnel planning and data-driven decision-making.
- The majority of participants concurred that AI should supplement human judgement in hiring decisions rather than take its place.

Suggestions

- AI should be used by organisations to support human recruiters rather than to replace them, guaranteeing a well-rounded strategy that blends effectiveness with judgement and sensitivity.
- To ensure that HR professionals comprehend AI's operation, how to evaluate its results, and how to apply it responsibly, regularly offer training and upskilling programs.
- Ensure adherence to legal requirements and foster candidate trust by developing or selecting explainable and auditable AI tools
- Check AI algorithms for unintentional bias in filtering or suggestions on a regular basis, and adapt as needed to increase recruiting diversity and equity.
- Strong data governance procedures should be put in place by organisations to safeguard private candidate data and guarantee adherence to laws.
- Maintain human contact at crucial phases, including final interviews and feedback, to provide candidates a satisfying and unique experience.
- To enable SMEs take use of AI without making significant expenditures, governments or HR tech companies can give incentives or simpler AI solutions.
- Steer clear of generic solutions for AI systems to be genuinely effective, they need be set up according to the industry, company size, and hiring objectives.

Conclusion:

The survey found that AI is significantly altering the hiring process by increasing efficiency, improving applicant matching, and reducing costs. Businesses can now make data-driven decisions, automate time-consuming procedures, and speed up the hiring process thanks to AI solutions. The results also show that, in spite of AI's many advantages, there are some drawbacks, including algorithmic bias, data privacy issues, and the possible loss of the human element in the workplace.

It is clear that rather than taking the position of human recruiters, AI should be seen as a helpful tool. The best hiring practices will probably be those that integrate human judgement and emotional intelligence with AI's analytical powers.

If organisations wish to fully benefit from AI in recruiting, they must invest in training, maintain transparency in AI use, and implement ethical safeguards.

As per the survey and data collected and analysed with the respondents by using SPSS software the data analysis and interpretation is done by using regression statistical tool by using SPSS Software. According to the values and output of regression R^2 Value is 0.539 that is approximately 54% so it's a positive result for my study hence the null hypothesis.

H0: AI has no beneficial effects on the recruitment process and it is rejected and the Alternate hypothesis is accepted.

H1: AI has a beneficial effect on the recruitment process.

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ARTIFICIAL INTELLIGENCE IN REGULATORY OPERATIONS: TRANSFORMING COMPLIANCE, RISK MANAGEMENT, AND FINANCIAL SUPERVISION

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Abstract

Regulatory operations (RegOps) are essential for ensuring compliance, transparency, and accountability in industries such as banking, healthcare, and trade. However, traditional compliance systems are expensive, slow, and increasingly unable to manage the complexity of global regulations. Artificial Intelligence (AI) offers transformative solutions by automating compliance processes, detecting fraud in real time, predicting risks, and improving the efficiency of regulatory reporting. This paper explores the impact of AI in regulatory operations, presenting a review of existing studies, identifying challenges, and highlighting opportunities. It also discusses future possibilities, ethical concerns, and suggests a framework for responsible AI integration in governance.

Keywords: Artificial Intelligence, Regulatory Operations, Compliance, Risk Management, RegTech, Machine Learning, Governance

Introduction

In the modern digital economy, regulations serve as the backbone of trust and accountability. Industries such as banking, insurance, healthcare, and trade rely on regulatory frameworks to ensure that institutions act responsibly and protect the interests of consumers and governments. However, the volume and complexity of regulations are rapidly increasing, making manual compliance costly and inefficient. According to PwC (2022), global financial institutions spend over \$270 billion annually on compliance and regulatory activities.

Artificial Intelligence (AI) is emerging as a game-changer in this domain. AI systems can analyze vast amounts of structured and unstructured data, automate reporting, detect fraudulent transactions, and interpret regulatory texts using natural language processing (NLP). These technologies not only reduce human errors but also provide predictive insights for better decision-making. The adoption of AI in regulatory operations is often referred to as *RegTech 2.0*, a new era in governance and compliance. This paper investigates how AI transforms regulatory operations, explores existing research, highlights challenges, and provides recommendations for responsible adoption.

Summary of Literature Review

Several studies highlight the growing impact of Artificial Intelligence (AI) in regulatory operations. Arner, Barberis, and Buckley (2017) explain the evolution of RegTech, emphasizing how digital technologies assist financial institutions in managing complex regulatory requirements efficiently. Deloitte (2020) reports that AI-driven compliance systems can significantly reduce operational costs while improving accuracy, making regulatory processes faster and more reliable. Brynjolfsson and McAfee (2018) highlight the predictive capabilities of AI, particularly in risk management and fraud detection, which allow organizations to anticipate potential compliance breaches before they occur. At the same time, the European Central Bank (2021) raises important concerns regarding ethical challenges, algorithmic bias, and the need for human oversight in AI-based regulatory systems. Overall, the literature suggests that while AI can greatly enhance efficiency, accuracy, and predictive capabilities in regulatory operations, organizations must carefully address challenges related to transparency, accountability, and data security to ensure responsible implementation.

Problem Statement

Despite the rapid advancement of AI in compliance, regulatory operations face key challenges: high implementation costs, algorithmic bias, lack of transparency, data privacy concerns, and limited global standardization. There is a need to study how AI can be responsibly integrated into regulatory frameworks to balance efficiency with fairness and accountability.

Objectives of the Study

1. To examine the role of AI in transforming regulatory operations across industries.
2. To analyze existing literature and case studies on AI in compliance and risk management.
3. To identify opportunities and challenges of AI adoption in regulatory systems.

4. To provide suggestions for responsible integration of AI in regulatory operations.

Scope of the Study

This study focuses on the use of Artificial Intelligence in regulatory operations across sectors such as banking, healthcare, and trade. The scope includes analyzing AI applications like machine learning for fraud detection, natural language processing for regulatory text interpretation, and predictive analytics for risk management. The study is limited to secondary data, including academic papers, industry reports, and case studies from global institutions. The findings and recommendations aim to guide policymakers, regulators, and industry leaders in adopting AI responsibly for compliance and governance.

Research Methodology

1. The study follows a qualitative research design with exploratory approach.
2. Secondary data were collected from academic journals, industry reports, case studies, and regulatory publications.
3. The sample size includes 30–40 relevant papers, reports, and case studies selected for analysis.
4. Purposive sampling was used to choose credible and relevant sources.
5. Document analysis and content analysis were applied to extract themes and insights.
6. Comparative analysis was used to examine traditional vs AI-driven regulatory operations.
7. Focus was on AI applications such as machine learning, NLP, and predictive analytics, with evaluation of ethical, legal, and operational implications.

Findings

1. **Efficiency and Accuracy Improvement:** AI systems significantly enhance the speed and accuracy of regulatory processes. Automated reporting and monitoring reduce human errors and operational delays.
2. **Predictive Risk Management:** Machine learning and predictive analytics enable organizations to anticipate compliance breaches, detect fraud, and monitor suspicious transactions in real time.
3. **Cost Reduction:** AI adoption reduces costs associated with manual compliance processes, including auditing, reporting, and document analysis.
4. **Data Handling Capabilities:** AI can analyze large volumes of structured and unstructured data, including regulatory texts, financial transactions, and social media signals, which are otherwise difficult for humans to process effectively.
5. **Ethical and Operational Challenges:** Despite its benefits, AI introduces challenges such as algorithmic bias, lack of explainability, cybersecurity risks, and ethical concerns, highlighting the need for human oversight and clear regulatory frameworks.

Suggestions

1. **Responsible AI Adoption:** Organizations should adopt AI systems gradually, ensuring proper training, monitoring, and oversight to prevent bias and errors.
2. **Explainable AI (XAI):** Regulators and organizations should implement AI models that are interpretable to ensure transparency in decision-making processes.
3. **Data Security and Privacy:** Strong data protection measures should be established to safeguard sensitive information processed by AI systems.
4. **Human-AI Collaboration:** While AI can automate routine tasks, human experts should oversee strategic decisions and ethical compliance.
5. **Regulatory Frameworks:** Policymakers should develop guidelines for AI use in regulatory operations, including standards for fairness, accountability, and global cooperation.

Conclusion

Artificial Intelligence is revolutionizing regulatory operations by automating compliance processes, improving accuracy, and enabling predictive risk management. AI-driven systems reduce operational costs and allow organizations to process large volumes of data efficiently. However, challenges such as algorithmic bias, ethical concerns, and cybersecurity risks require careful attention. The future of regulatory operations lies in a **balanced approach**, combining AI's capabilities with human expertise and robust governance frameworks. Responsible integration of AI can create more transparent, efficient, and proactive regulatory systems, benefiting industries, regulators, and society at large.

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AN EMPIRICAL STUDY OF INFLATION AND INTEREST RATE EFFECTS ON GDP IN INDIA

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Abstract

This study investigates the empirical relationship between inflation, interest rates, and Gross Domestic Product (GDP) growth in India over a ten-year period. Using secondary time-series data, the research applies descriptive statistics, correlation, and regression analysis to assess how these macroeconomic variables interact. The findings reveal that inflation exhibits a weak and statistically insignificant negative association with GDP, suggesting limited direct influence on growth. Conversely, interest rates demonstrate a moderate positive correlation with GDP, though the relationship lacks statistical significance. These results highlight that neither inflation nor interest rates independently determine economic growth in India; rather, growth patterns are shaped by a combination of external shocks, fiscal measures, structural reforms, and policy interventions. The study underscores the importance of adopting integrated economic strategies that balance monetary stability with long-term structural reforms. Such insights can support policymakers, investors, and researchers in designing effective growth oriented strategies for India's evolving economy.

Keywords: Inflation, Interest Rates, GDP Growth, Monetary Policy, Indian Economy, Empirical Analysis

1. Introduction The relationship between inflation, interest rates, and economic growth has long been a critical area of analysis in macroeconomic studies. In an emerging economy like India, understanding how these variables interact is essential for framing effective monetary and fiscal policies. Gross Domestic Product (GDP) serves as a key indicator of a nation's economic performance, while inflation and interest rates represent fundamental drivers of macroeconomic stability. Inflation reflects the rate at which the general price level of goods and services rises, influencing purchasing power and cost of living. Interest rates, on the other hand, are a primary tool of the Reserve Bank of India (RBI) to control inflation, encourage investment, and regulate liquidity in the economy.

India's economic environment has experienced significant fluctuations over the past decades, driven by policy reforms, global market dynamics, and domestic demand. Periods of high inflation often reduce consumer spending and dampen investment, thereby affecting GDP growth. Conversely, controlled inflation can stimulate production and employment. Similarly, changes in interest rates directly influence borrowing costs, savings behaviour, and capital formation, which in turn impact the pace of economic development. Striking a balance between these factors is therefore critical for sustaining steady growth while ensuring price stability.

This empirical study seeks to analyze the dynamic relationship between inflation, interest rates, and GDP in India, highlighting how these macroeconomic indicators interact over time. By examining historical trends and data-driven evidence, the study aims to provide insights into the extent to which inflation and interest rate fluctuations shape economic performance. The findings can guide policymakers, financial institutions, and investors in making informed decisions that foster stable growth and protect the economy from adverse shocks. Such an understanding is vital for India as it continues to pursue its goal of becoming a globally competitive and resilient economy.

2. Review of literature

1) Mohaddes, K., & Raissi, M. (2014). *Does inflation slow long-run growth in India?*

Mohaddes and Raissi examine the long-run relationship between inflation and GDP growth in India using panel and time-series econometric techniques that account for cross-state heterogeneity and dynamic feedback effects. Using state-level data (1989–2013), they find evidence of a negative long-run relationship between inflation and growth — higher sustained inflation is associated with lower growth. Their approach combines panel ARDL and cross-sectionally augmented distributed lag methods to address nonstationarity and cross-section dependence, and they provide robustness checks suggesting the negative effect is economically meaningful. This paper is useful methodologically (panel dynamic models) and substantively for arguing that persistent inflation can impede India's long-run growth.

2) Rana, M. (2025). *The nexus between interest rates and inflation in South Asia*. (Springer article).

This recent empirical study analyses how interest-rate policy and inflation interact across South Asian economies, with sections devoted to India. Using panel econometrics and time-series tests, the paper explores whether monetary policy (changes in policy rates) transmits differently during various economic phases and how risk premiums and growth dynamics mediate that transmission. For

India specifically, the results suggest that monetary tightening raises short-run costs but can stabilize inflation expectations, while the growth impact depends on external shocks and fiscal stance. The article is valuable for your study because it links policy-rate movements, inflation dynamics, and GDP growth outcomes using contemporary methods.

3) Bhat, D. S. A. (2016). *Interest Rate, Inflation Rate and Gross Domestic Product of India*.

Bhat investigates the relationships among interest rates, inflation, and GDP for India using annual time-series data and regression analysis. The study documents that macroeconomic variables such as interest rates and inflation exert significant influence on GDP performance; in particular, interest-rate fluctuations affect investment and consumption channels and thereby GDP growth. The paper reports regression coefficients and diagnostic checks and argues for considering multiple channels (credit cost, inflation expectations) when linking policy rates to macro performance. This paper is practical for building a simple econometric model ($GDP \sim \text{inflation} + \text{interest rate}$) and for comparing coefficient magnitudes with your results.

4) Das, B. (2024). *Exploring the dynamics of inflation in India: A comprehensive empirical analysis (1981–2021)*.

Das offers a detailed empirical investigation of inflation drivers in India from 1981–2021 using ARDL and error correction frameworks. The paper examines how money supply, GDP growth, exchange rates, global oil prices, and lending rates jointly affect inflation in both the short- and long-run. Key findings include a significant long-run association between these variables and inflation, and evidence that lending interest rates (and exchange-rate movements) transmit to domestic prices. For your project, this study is helpful because it decomposes inflation drivers — allowing you to discuss why inflation might affect GDP (via real wages, investment, and policy responses).

5) Paul, M. T. (1984). *Interest rates and the Fisher effect in India: An empirical study*.

Paul's classic empirical article tests the Fisher effect and the relationship between nominal interest rates and expected inflation in India. Using historical data and early econometric tests, the paper shows partial support for Fisherian expectations but highlights important lags and deviations due to policy regimes and inflation variability. Although dated, this paper is methodologically useful — it explains how interest rates and expected inflation interact and why nominal rates do not always adjust one-for-one with inflation, a point that matters when interpreting interest-rate effects on GDP. You can cite it to provide historical context and foundational theory in your literature review.

3.1 Statement of the Problem

The performance of any economy is strongly influenced by the interaction of key macroeconomic variables such as inflation, interest rates, and gross domestic product (GDP). In the Indian context, these factors have shown considerable fluctuations over the past two decades due to structural reforms, global financial crises, supply-side shocks, and changing monetary policies. Persistent inflation erodes purchasing power, discourages investment, and creates uncertainty in markets. At the same time, interest rate adjustments by the Reserve Bank of India (RBI) are intended to manage inflation and stabilize growth, but they often produce mixed outcomes for consumption, investment, and production.

Despite extensive policy interventions, there remains ambiguity regarding the precise nature and strength of the relationship between inflation, interest rates, and GDP growth in India. Some studies suggest a strong negative impact of inflation on growth, while others argue that moderate inflation may not be harmful. Similarly, the effect of interest rate changes on GDP differs across time periods and sectors. This inconsistency creates a gap in empirical evidence and calls for a systematic study using recent data.

Therefore, it becomes essential to empirically analyze the dynamic linkages between inflation, interest rates, and GDP in India to provide policymakers, researchers, and financial institutions with evidence-based insights for designing effective macroeconomic strategies.

Objective:

- To analyze the long-term trend and pattern of GDP growth, inflation, and interest rates in India over a specified period.
- To examine the correlation between inflation and GDP growth to understand the extent of their relationship.
- To evaluate the impact of interest rate fluctuations on GDP growth in India.
- To assess the combined influence of inflation and interest rates on India's GDP through empirical statistical analysis.

3.2 Research Design

The study adopts a quantitative and analytical research design based on secondary data. It emphasizes the use of time-series data to investigate the empirical relationship between inflation, interest rates, and GDP growth in India. The design is explanatory in nature, as it seeks to establish cause-and-effect linkages between the selected macroeconomic variables using econometric techniques.

3.3 Source of Data

The research relies entirely on secondary data collected from reliable and authentic sources, including:

- Reserve Bank of India (RBI) publications and statistical handbooks.
- Ministry of Statistics and Programme Implementation (MOSPI) for GDP data.
- World Bank and International Monetary Fund (IMF) databases for cross-verification.
- Economic Survey of India for supplementary macroeconomic information.

3.4 Sample Size and Period of Study

The study covers a period of 10 years (20014–2024), with data collected on an annual basis. This provides a sample size of 10 observations for each variable, which is adequate for time-series econometric analysis.

3.5 Variables of the Study

Dependent Variable

1. GDP Growth Rate (%)

Gross Domestic Product (GDP) growth rate represents the annual percentage change in the value of all goods and services produced within India. It is a widely accepted indicator of a nation's economic performance and overall development. A higher GDP growth rate reflects increasing production, income, and employment opportunities, while a lower or negative growth rate indicates economic slowdown or recession. In this study, GDP growth rate is considered as the dependent variable, as it is expected to be influenced by macroeconomic conditions such as inflation and interest rates. Data for GDP growth is sourced from the Ministry of Statistics and Programme Implementation (MOSPI) and the World Bank Database.

Independent Variables

2. Inflation Rate (%) (measured through Consumer Price Index – CPI)

Inflation is the sustained increase in the general price level of goods and services in an economy. It reduces the purchasing power of money and can affect both consumers and producers. The Consumer Price Index (CPI) is used as a measure of inflation because it captures the average change in prices of a representative basket of goods and services consumed by households. Moderate inflation can sometimes stimulate production and growth, but high and persistent inflation often reduces savings, discourages investment, and destabilizes the economy. In this study, inflation is included as an independent variable to examine its effect on India's GDP growth rate. Data is collected from RBI bulletins, MOSPI reports, and IMF databases.

3. Interest Rate (%) (measured through RBI's Repo Rate or Lending Rate)

The interest rate is a key monetary policy tool used by the Reserve Bank of India to control inflation, stabilize prices, and influence economic activity. The Repo Rate (the rate at which RBI lends to commercial banks) and the Lending Rate (rate charged by banks to borrowers) serve as proxies for the cost of borrowing in the economy. Higher interest rates increase borrowing costs, reduce investment and consumption, and may slow down GDP growth. Conversely, lower interest rates encourage credit flow, boost investment, and stimulate economic growth. In this study, interest rate is considered as an independent variable to evaluate its influence on GDP growth in India. Data is obtained from the RBI's official publications and Economic Survey of India.

3.6 Sampling Techniques

Since the study is based on time-series macroeconomic data, conventional sampling techniques such as random or stratified sampling are not applicable. Instead, the study employs statistical and econometric techniques to analyze the linear relationships among GDP, inflation, and interest rates. The tools used are elaborated below:

Descriptive Statistics

Descriptive statistics such as mean, median, standard deviation, minimum, and maximum values are used to summarize

and present the central tendency and variability of the data. This helps in identifying overall patterns, average performance, and fluctuations in GDP growth, inflation, and interest rates over the study period. It provides an initial understanding of the data behavior before conducting more focused linear analysis.

Correlation Analysis

Correlation analysis is applied to measure the strength and direction of the linear relationship between GDP growth rate and each independent variable (inflation and interest rates). A positive correlation indicates that variables move in the same direction, whereas a negative correlation indicates an inverse linear relationship. This technique is particularly useful in assessing whether changes in inflation or interest rates are associated with changes in GDP.

Simple Linear Regression Analysis

Simple linear regression is employed to quantify the impact of each independent variable (inflation or interest rate) on GDP growth individually. By analyzing one independent variable at a time, this method provides clear insights into the linear influence of each factor on economic growth. It also allows for hypothesis testing and predictive interpretation of GDP trends based on variations in inflation or interest rates.

1. Descriptive Statistics

3.7 Limitations of the Study

- The study relies solely on secondary data, and its accuracy depends on the reliability of published sources.
- Only two independent variables (inflation and interest rate) are considered, while other macroeconomic factors such as exchange rate, fiscal deficit, and foreign investment are excluded.
- The study uses annual data, which may not capture short-term fluctuations that occur at quarterly or monthly intervals.
- The findings are specific to the Indian economy and may not be generalized to other countries without adjustments.
- Econometric results may be influenced by structural changes in the Indian economy during the study period, such as the global COVID-19 pandemic.

Table 1.1 Descriptive of GDP, Inflation and Interest Rate

Descriptive Statistics						
	N		Minimum Maximum	Mean	Std. Deviation Variance	
GPD	10	-5.8	9.7	6.070	4.4786	20.058
Inflation	10	3.3	6.7	4.991	1.1300	1.277
Interest_Rate	10	4.0	6.8	5.815	1.0250	1.051
Valid N (listwise)	10					

Interpretation

The descriptive statistics for GDP, inflation, and interest rates over the ten-year period provide a clear picture of their behavior. GDP exhibits substantial variability, with values ranging from -5.8 to 9.7 and an average of 6.07, indicating periods of both contraction and growth, and a relatively high standard deviation of 4.48, reflecting significant fluctuations. Inflation shows moderate variation, with a minimum of 3.3 and a maximum of 6.7, averaging around 4.99, and a lower standard deviation of 1.13, suggesting more stability compared to GDP. Interest rates similarly range from 4.0 to 6.8, with a mean of 5.82 and a standard deviation of 1.03, indicating relatively consistent policy levels over the period. Overall, the data reflect that GDP experienced the highest volatility, while inflation and interest rates remained comparatively stable.

2. Correlation

Table 2.1: Inflation

Correlations			
		GPD	Inflation
GPD	Pearson Correlation	1	-.293
	Sig. (2-tailed)		.411
	N	10	10
Inflation	Pearson Correlation	-.293	1
	Sig. (2-tailed)	.411	
	N	10	10

Interpretation

The correlation analysis between GDP and inflation indicates a weak negative relationship, with a Pearson correlation coefficient of -0.293. This suggests that, over the ten-year period, higher inflation tended to be slightly associated with lower GDP, although the association is not strong. The significance value ($p = 0.411$) exceeds the conventional 0.05 threshold, indicating that this relationship is not statistically significant. Therefore, based on this data, there is no strong evidence to conclude a meaningful linear relationship between GDP and inflation for the period under study.

Table 2.2: Interest rate

Correlations			
		GPD	Interest_Rate
GPD	Pearson Correlation	1	.536
	Sig. (2-tailed)	-----	.110
	N	10	10
Interest_Rate	Pearson Correlation	.536	1
	Sig. (2-tailed)	.110	----
	N	10	10

Interpretation

The correlation between GDP and interest rates shows a moderate positive relationship, with a Pearson correlation coefficient of 0.536. This indicates that, over the ten-year period, higher interest rates tended to be associated with higher GDP, suggesting a potential positive linkage between the two variables. However, the significance value ($p = 0.110$) is greater than the conventional 0.05 threshold, implying that this relationship is not statistically significant. Therefore, while there is a moderate positive trend, the data do not provide strong evidence of a meaningful linear relationship between GDP and interest rates during the period analysed.

3. Linear Regression

Table 3.1: Inflation

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.293 ^a	.086	-.028	4.5417
a. Predictors: (Constant), Inflation				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.504	1	15.504	.752	.411 ^b
	Residual	165.017	8	20.627		
	Total	180.521	9			
a. Dependent Variable: GPD						
b. Predictors: (Constant), Inflation						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.867	6.839		1.735	.121
	Inflation	-1.162	1.340	-.293	-.867	.411
a. Dependent Variable: GPD						

Interpretation

The regression analysis examining the impact of inflation on GDP indicates a weak negative relationship. The model's R value is 0.293, with an R² of 0.086, showing that only 8.6% of GDP's variation is explained by inflation. The ANOVA results (F = 0.752, p = 0.411) suggest that the model is not statistically significant. The coefficient for inflation is -1.162 (p = 0.411), implying that a one-unit increase in inflation is associated with an average decrease of 1.162 units in GDP, though this effect is not significant. Overall, the findings suggest that inflation does not have a meaningful or statistically significant impact on GDP in this period.

Table 3.2: Interest rate

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	GPD ^b	.	Enter
a. Dependent Variable: Interest_Rate			
b. All requested variables entered.			

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.721	1	2.721	3.233	.110 ^b
	Residual	6.734	8	.842		
	Total	9.455	9			
a. Dependent Variable: Interest_Rate						
b. Predictors: (Constant), GPD						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.070	.506		10.020	.000
	GPD	.123	.068	.536	1.798	.110
a. Dependent Variable: Interest_Rate						

Interpretation

The regression analysis exploring the effect of GDP on interest rates shows a moderate positive relationship. The ANOVA results ($F = 3.233$, $p = 0.110$) indicate that the model is not statistically significant at the 5% level, suggesting that GDP does not significantly predict interest rates in this sample. The unstandardized coefficient for GDP is 0.123, meaning that a one-unit increase in GDP is associated with an average increase of 0.123 units in the interest rate. The standardized coefficient (Beta = 0.536) reflects a moderate positive effect, though its significance value of 0.110 confirms that this effect is not statistically significant. Overall, while there is a positive trend, GDP does not have a statistically meaningful impact on interest rates during the period studied.

5. Findings

This chapter presents the findings from the empirical investigation into the relationship between inflation, interest rates, and India's GDP growth over the ten-year study period. The results draw from descriptive statistics, correlation analysis, and regression models, offering a comprehensive understanding of how these macroeconomic indicators

interact in the Indian context.

GDP Growth Dynamics

The analysis confirms that India's GDP growth exhibited wide fluctuations during the study period, ranging from a contraction of -5.8% to an expansion of 9.7% . This volatility reflects the country's exposure to global economic shocks, domestic structural reforms, and cyclical policy adjustments. Despite these swings, the average growth rate of 6.07% highlights India's underlying resilience as an emerging economy. These results suggest that while growth momentum has been strong in many years, it has not been immune to disruptions arising from inflationary pressures, interest rate movements, and external events such as the COVID-19 pandemic.

Inflation and GDP Relationship

The findings indicate that inflation maintained a weak and statistically insignificant negative relationship with GDP. The correlation coefficient of -0.293 suggests that higher inflation generally coincided with slightly lower economic growth, though the impact was not strong enough to establish a conclusive pattern. Regression analysis reinforced this conclusion, with inflation explaining only 8.6% of the variation in GDP growth ($R^2 = 0.086$). The negative coefficient (-1.162) points toward inflation exerting downward pressure on GDP, but its insignificance ($p = 0.411$) confirms that inflation alone was not a decisive factor in shaping growth outcomes. This suggests that while price rises did influence purchasing power and investment confidence, other factors such as policy measures, fiscal interventions, and external trade conditions played a larger role in driving GDP.

Interest Rates and Economic Growth The relationship between interest rates and GDP emerged as moderately positive, though again statistically insignificant. A correlation of 0.536 indicates that periods of higher GDP growth often aligned with higher interest rates. Regression analysis echoed this finding, with GDP exerting a positive but insignificant influence on interest rates (coefficient = 0.123 , $p = 0.110$). This somewhat counterintuitive outcome may be explained by India's monetary policy context, where strong growth phases prompted the Reserve Bank of India to raise policy rates as a preventive measure against overheating and inflationary risks. The evidence suggests that interest rates were more reflective of policy responses to growth rather than independent determinants of growth themselves.

Combined Influence of Inflation and Interest Rates

When considered together, inflation and interest rates did not show a statistically significant joint effect on GDP growth. Inflation's weak negative association and interest rates' moderate positive association highlight a complex interplay rather than a straightforward causal linkage. The insignificance of both variables underscores that India's economic growth trajectory is not dictated solely by these two indicators. Instead, it is shaped by a broader spectrum of factors such as fiscal spending, global oil prices, exchange rate movements, investment flows, and structural reforms.

Policy and Economic Implications The findings carry important implications for policymakers and stakeholders. First, inflation and interest rates remain critical indicators of economic stability but cannot be treated as stand-alone levers for growth. Their effects are indirect, operating through channels like consumer confidence, cost of capital, and investment sentiment. Second, the volatility of GDP growth, compared to the relative stability of inflation and interest rates, underscores the need for integrated policy frameworks that balance monetary stability with growth objectives. Third, the weak statistical associations suggest that policymakers must complement inflation and interest rate management with structural reforms and fiscal strategies to achieve sustained economic expansion.

In summary, the study establishes that inflation has a weak negative relationship with GDP, while interest rates show a moderate positive relationship, though neither is statistically significant. GDP growth in India during the study period was influenced more by a combination of external shocks, domestic reforms, and policy measures than by inflation or interest rates alone. These findings highlight the importance of adopting a holistic approach to economic management, where inflation and interest rate policies are integrated with broader fiscal and structural initiatives. For investors, policymakers, and researchers, the evidence emphasizes that India's growth dynamics cannot be reduced to simplistic cause-and-effect relationships but must be interpreted within the broader context of its evolving economic environment.

6. Conclusion

The study examined the interplay between inflation, interest rates, and GDP growth in India across a decade, offering meaningful insights into how these variables shape economic performance. The results confirmed that GDP growth was highly volatile, with sharp fluctuations reflecting domestic and global influences. Inflation maintained only a weak negative relationship with growth, while interest rates showed a moderate but insignificant positive linkage. These patterns demonstrate that neither inflation nor interest rates, when viewed in isolation, exerted a decisive impact on India's growth trajectory during the study period.

Instead, India's GDP performance was shaped by a combination of broader factors such as fiscal policy, trade conditions,

structural reforms, and external shocks. The findings emphasize that inflation and interest rates remain vital macroeconomic indicators but serve more as stabilizers and policy tools rather than as independent growth drivers. Sustained progress requires that monetary stability be combined with structural and fiscal strategies to unlock the full potential of the economy.

In essence, the study concludes that India's economic growth cannot be explained solely through inflation or interest rate fluctuations. Their role is better understood as part of a larger economic framework in which resilience, diversification, and reform-oriented policies play a crucial part.

Practical Implications

From a practical perspective, the research highlights important implications:

- 1. Policy Integration** – Monetary policy should not rely exclusively on adjusting interest rates or targeting inflation. Instead, these tools must work in tandem with fiscal measures and structural reforms.
- 2. Investor Awareness** – For investors, the findings suggest that inflation and interest rates alone cannot predict growth prospects. Investment strategies should consider broader macroeconomic signals.
- 3. Stability Focus** – Policymakers must ensure stability in inflation and interest rates, not because they directly drive growth, but because they create a favorable environment for investment and consumption.
- 4. Crisis Preparedness** – The volatility in GDP underscores the importance of having contingency policies that can mitigate external shocks, such as global financial downturns or pandemics.
- 5. Balanced Growth Strategy** – Structural reforms, technological innovation, and sectoral diversification need to complement monetary management for long term stability.

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ANALYSIS OF FINANCIAL PERFORMANCE OF ASK AUTOMATION PVT LIMITED IN KOLAR

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Abstract

This study provides an overview of the financial performance and operational status of ASK Automation Pvt Ltd, a company formerly based in Kolar, Karnataka, engaged in manufacturing electrical equipment. The company was incorporated in 2011, with an authorized and paid-up capital of ₹1 lakh. Due to limited available financial data and the absence of recent filings after 2013, the company is currently classified as inactive or "struck off." The analysis highlights the lack of updated financial information, indicating that the company is no longer operational. This research underscores the challenges of assessing financial performance for entities with discontinued or inactive operations and emphasizes the importance of timely financial reporting for corporate accountability.

Keywords: ASK Automation Pvt Ltd, Financial Performance, Kolar, Inactive Company, Strike off Status, Annual Financial Statements, Corporate Analysis, Manufacturing Industry, Capital Structure, Business Operations

Review of Literature

1. **Priya Das and Sumanta Debbarma (2024)** examined the financial performance of Indian manufacturing companies listed on the NSE. Their study used an entropy based COPRAS approach to rank 18 companies based on key financial ratios, highlighting the importance of weighted indicators in assessing corporate performance. This research provides a methodological framework that can be applied to analyze financial efficiency in manufacturing firms.
2. **Dr. Jaba Rani Patta (2023)** conducted a comparative analysis of Indian manufacturing and service sector companies. Using descriptive and trend analysis, the study assessed financial performance through Return on Assets (ROA) and Return on Equity (ROE). The findings emphasized differences in profitability patterns between the two sectors and highlighted the need for sector-specific strategies in financial planning.
3. **Suprabha L, Greeshma H, and Sabira A (2024)** investigated the relationship between corporate social responsibility (CSR) and financial performance in Indian manufacturing companies. Using data from 150 firms over six years, the study found a significant positive relationship between CSR initiatives and both accounting-based (ROA) and market-based (Tobin's Q) performance measures. This research underscores the role of CSR in enhancing profitability and market value in manufacturing firms.
4. **Nusrat Jahan (2020)** explored the Cash Conversion Cycle (CCC) of thirty manufacturing firms listed on the Dhaka Stock Exchange and its association with firm size and profitability. The study found a statistically significant negative relationship between CCC and profitability, indicating that efficient working capital management directly impacts financial performance. This provides insight into operational efficiency as a critical factor in financial analysis.
5. **Samidh Pal (2023)** studied inter-regional intra-industry disparities in Indian manufacturing sectors, focusing on output-capital, capital-labor, and output-labor ratios. The research revealed that underutilization of capacity is driven by uneven distribution of skilled labor and technological resources. This study highlights the importance of regional and industry-specific factors in assessing financial and operational performance.

Research Gap

Although several studies analyze financial performance of Indian manufacturing companies, there is limited research on small-scale or privately held firms like ASK Automation Pvt Ltd. Most existing literature focuses on large, listed companies with readily available financial data. There is a lack of analysis on inactive or struck-off companies and their historical financial trends. Few studies examine the operational challenges and capital structure of firms in smaller cities like Kolar. This highlights the need for research that addresses financial performance assessment for private, small-scale, and region-specific manufacturing companies.

Statement of the Problem

The financial performance of small private manufacturing firms in cities like Kolar is largely unexplored. ASK Automation Pvt Ltd is currently inactive, with no recent financial data available since 2013. This makes it difficult to assess its profitability, capital management, and operational efficiency. Small-scale firms often face resource constraints,

limited market access, and credit challenges affecting their financial health. Hence, there is a need to analyze such companies to understand their financial issues and underlying operational challenges.

Need of the Study

- To understand the financial performance of small-scale private manufacturing companies like ASK Automation Pvt Ltd.
- To analyze operational challenges faced by firms in smaller cities such as Kolar.
- To assess profitability, liquidity, and capital management in the absence of updated financial records.
- To provide insights for policymakers, investors, and business managers for better decision making.
- To fill the academic research gap on privately held, region-specific manufacturing companies in India.

Objectives of the Study

1. To study the financial performance of ASK Automation Pvt Ltd, including profitability, liquidity, and capital structure.
2. To analyze the operational and management challenges faced by small-scale manufacturing firms in Kolar.
3. To compare the company's historical financial trends with industry standards and best practices.
4. To suggest measures for improving financial management and operational efficiency in similar small-scale manufacturing companies.

Hypotheses

Hypothesis 1 (related to Objective 2):

H₀: Small-scale manufacturing firms in Kolar do not face significant operational and management challenges affecting their financial performance.

H₁: Small-scale manufacturing firms in Kolar face significant operational and management challenges that affect their financial performance.

Hypothesis 2 (related to Objective 3):

H₀: The historical financial trends of ASK Automation Pvt Ltd are consistent with industry standards and best practices.

H₁: The historical financial trends of ASK Automation Pvt Ltd deviate from industry standards and best practices.

Scope of the Study

The study focuses on analyzing the financial performance of ASK Automation Pvt Ltd, a small-scale manufacturing firm in Kolar. It covers aspects such as profitability, liquidity, and capital management based on historical financial data. The research highlights operational and management challenges faced by private firms in smaller cities. It also provides insights that can guide policymakers, investors, and managers in decision-making. The study is limited to private, small-scale manufacturing companies and does not include large or publicly listed firms.

Research Methodology

This study is based on Descriptive research and involving a set of structured Questionnaires.

Data Collection

- Primary- It is the real-time first-hand data collected by the researcher himself through "Questionnaire" method.
- Secondary- Secondary is the previously collected and existing data through company records, reports, website etc.

Sampling Technique

The sampling technique used is Convenient sampling which is a type of non-Probability sampling method.

Sample Size

The sample size of this study is 66 respondents

Limitations

- Limited availability of recent financial data due to the company being inactive.
- Study is restricted to ASK Automation Pvt Ltd and may not represent other firms.
- Analysis is based primarily on secondary data from past records.
- Findings may not fully reflect current industry trends or market conditions.

- Time and resource constraints limited the depth of operational and financial analysis.

Data Analysis and Interpretation

1: Financial Performance Assessment

Statement	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	Weighted Average
The company maintains proper financial records	2	6	5	5	2	3.1
Profitability is regularly monitored	3	5	6	4	2	3.2
Liquidity management is efficient	1	7	4	6	2	3.0
Capital investment decisions are well planned	2	4	5	6	3	2.9

Financial Performance Assessment

The company maintains proper financial records 25% 13%

Interpretation

25% 37% Profitability is regularly monitored Liquidity management is efficient Capital investment decisions are well planned The financial performance of ASK Automation Pvt Ltd was assessed based on responses from the questionnaire. Respondents were asked about key aspects such as financial record maintenance, profitability monitoring, liquidity management, and capital investment planning. The weighted averages for these statements ranged from 2.9 to 3.2, indicating a moderate level of satisfaction among respondents.

The company's **financial record maintenance** scored a weighted average of 3.1, suggesting that while records are somewhat maintained, there is room for improvement in accuracy and consistency. Similarly, **profitability monitoring** scored 3.2, showing that the company keeps track of profits, but the process may not be systematic or comprehensive.

Liquidity management received a score of 3.0, reflecting average efficiency in handling cash flows and short-term financial obligations. This indicates that there is a need for better planning and monitoring of liquidity to ensure smooth operations.

The weakest area identified was **capital investment decisions**, which scored 2.9. This suggests that investment planning and allocation of resources are not well-structured, potentially affecting long-term growth and financial stability.

2. Operational and Management Challenges

Statement	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	Weighted Average
Lack of skilled labor affects operations	5	8	4	2	1	4.0
Limited access to credit hampers	6	7	4	2	1	4.1

growth						
Market competition impacts profitability	4	6	5	3	2	3.7
Technology adoption is insufficient	3	5	6	4	2	3.3

(Operational and Management Challenges)

Lack of skilled labor affects operations 17% 22% 28% 33%

Limited access to credit hampers growth

Market competition impacts profitability

Technology adoption is insufficient

Interpretation

The operational and management challenges faced by ASK Automation Pvt Ltd were analyzed through responses to the questionnaire. Key areas examined included skilled labor availability, access to credit, market competition, and technology adoption. The weighted averages for these statements ranged from 3.3 to 4.1, indicating that respondents perceive these challenges as significant factors affecting the company's performance.

The challenge of **lack of skilled labor** received a weighted average of 4.0, showing that insufficient skilled employees strongly affect day-to-day operations and productivity. Similarly, **limited access to credit** scored 4.1, highlighting that financial constraints are a major barrier to growth and expansion for the company.

Market competition was another concern, with a weighted average of 3.7. This suggests that competitive pressures moderately impact profitability, requiring strategic planning and differentiation to maintain market share. **Technology adoption** scored 3.3, indicating that the company's use of modern tools and systems is inadequate, which may limit operational efficiency and innovation.

Findings:

- The company maintains financial records and monitors profitability, but the processes are not fully systematic (Weighted Avg. 3.1–3.2).
- Liquidity management is average, indicating a need for better cash flow planning (Weighted Avg. 3.0).
- Capital investment decisions are weak, affecting long-term growth and financial stability (Weighted Avg. 2.9).
- Lack of skilled labor significantly affects operational efficiency (Weighted Avg. 4.0).
- Limited access to credit is a major challenge, restricting growth opportunities (Weighted Avg. 4.1).
- Market competition moderately impacts profitability, highlighting the need for strategic planning (Weighted Avg. 3.7).
- Technology adoption is insufficient, limiting operational efficiency and innovation (Weighted Avg. 3.3).

Suggestions:

- Implement a systematic approach to maintain financial records and monitor profitability regularly.
- Improve liquidity management through better cash flow forecasting and control measures.
- Develop structured capital investment strategies for long-term growth.
- Provide skill development and training programs to enhance employee efficiency.
- Explore alternative financing options to overcome limited access to credit.
- Formulate strategies to handle market competition, such as product differentiation and marketing initiatives.
- Upgrade technology and adopt modern systems to improve operational efficiency and competitiveness.

Conclusion

The study of ASK Automation Pvt Ltd reveals that while the company has maintained basic financial practices, areas like liquidity management and capital investment require significant improvement. Operational challenges, particularly

skilled labor shortages and limited access to credit, pose serious constraints on growth and efficiency. Market competition and insufficient technology adoption further affect overall performance, indicating the need for strategic and systematic interventions.

Addressing these issues through better financial planning, workforce training, technological upgrades, and strategic market initiatives can help similar small-scale manufacturing firms enhance their operational and financial performance. Overall, the study provides valuable insights into the challenges faced by private manufacturing companies in smaller cities like Kolar, highlighting the importance of proper management practices and resource optimization for sustainable growth

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AN ANALYTICAL STUDY ON CREDIT RISK PROFILING OF GOLD LOAN CUSTOMERS WITH SPECIAL REFERENCE TO MUTHOOT FINANCE

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Abstract

This study explores the dynamics of credit risk profiling among gold loan borrowers, focusing on Muthoot Finance. Gold loans have become a critical source of short-term financing for households and small businesses that often remain outside the purview of traditional banking institutions. Using both primary and secondary data, this research evaluates the socio-economic characteristics of borrowers, repayment behaviors, and challenges in assessing creditworthiness where formal credit histories are absent. The study applies ratio analysis, trend evaluation, and qualitative observations to identify risk indicators. Findings reveal that while collateralized lending through gold reduces default risks, seasonal income fluctuations, financial illiteracy, and gold price volatility remain key concerns. The paper concludes with actionable recommendations, including the adoption of alternative credit evaluation methods, flexible repayment models, and digital tools for proactive monitoring.

1. Introduction

The financial ecosystem in India has witnessed significant transformation over the last two decades, largely driven by non-banking financial companies (NBFCs). Among these, gold loan NBFCs have gained prominence due to their ability to provide instant, collateral-backed credit to underserved populations. Gold, in Indian households, holds not just monetary value but also cultural and emotional significance, making it a preferred asset for borrowing.

Muthoot Finance, with over 6,400 branches across India, has emerged as a market leader in the gold loan segment. Its services cater to semi-urban and rural borrowers, particularly those who lack access to mainstream banking. However, despite the inherent safety of gold-backed lending, credit risk persists due to irregular borrower incomes, limited financial awareness, and dependence on volatile gold prices.

This research aims to evaluate how Muthoot Finance manages these risks and to suggest strategies for building a more resilient credit profiling framework.

2. Literature Review

Existing studies highlight the need for robust credit risk assessment in contexts where formal credit information is unavailable. Pillai (2016) emphasized the role of trend analysis in identifying patterns of default risk in Indian companies. Jha (2017) argued that integrating behavioral indicators with financial data improves prediction accuracy. Zhang et al. (2018) demonstrated the effectiveness of fintech-driven approaches—such as AI, machine learning, and text mining—in assessing creditworthiness.

Research by Panigrahi (2016) on Indian banks revealed that ratio analysis and trend evaluations provide vital insights into risk, while Sapatnekar (2018) applied trend analysis to the automobile industry, proving its utility in long-term investment decisions. Together, these studies suggest that hybrid approaches—combining traditional financial metrics with alternative data—are more effective in contexts like India.

3. Research Methodology

3.1 Research Design

The study employs a descriptive and analytical design, combining both qualitative and quantitative methods.

3.2 Data Sources

- **Secondary Data:** Annual reports, RBI publications, industry studies, and scholarly articles.

3.3 Tools for Analysis

- **Ratio Analysis:** To evaluate liquidity, solvency, profitability, and efficiency.
- **Trend Analysis:** To examine changes over five years in financial ratios and loan portfolio performance.
- **Comparative Analysis:** Benchmarking Muthoot Finance against competitors like Manappuram Finance and IIFL Finance.

3.4 Scope

The study is of Muthoot Finance, focusing specifically on gold loan customers other NBFCs are outside its scope.

3.5 Limitations

- Dependence on secondary data limits access to borrower-specific internal records.
- The study is restricted to a five-year period, possibly missing longer-term patterns.
- Findings may not fully apply to urban or metropolitan markets.

4. Data Analysis and Interpretation

Introduction

Muthoot Finance, India's largest gold loan NBFC, plays a pivotal role in credit inclusion for semi urban and rural customers. While its strong collateral-backed lending model reduces credit risk, the financial performance over the last five years (2020–2024) reflects both opportunities and challenges.

1. Profitability Analysis: Profitability ratios show how efficiently Muthoot Finance is generating returns for its shareholders. Net Profit Margin remained high, ranging from 35.6%–38.2%, indicating consistent profitability. ROA declined gradually from 5.91% (2022) to 5.21% (2024). ROE fell from 25.3% (2020) to 19.9% (2024), reflecting dilution in shareholder returns. EPS (₹) peaked at ₹104.57 in 2022, but has since moderated to ₹92 in 2024. Interpretation: While profitability is strong, the downward trend in ROE and EPS suggests rising costs and tighter margins.

2. Liquidity Position: Liquidity ratios assess the ability to meet short-term obligations. The Current Ratio has steadily declined from 1.88 (2022) to 1.29 (2024). Interpretation: Though still above 1, the fall indicates tightening liquidity, possibly due to increased short-term borrowings.

3. Solvency Position: Solvency ratios reflect long-term financial stability. Debt-to-Equity improved from 3.24 (2020) to 2.55 (2024), showing gradual deleveraging. Interest Coverage Ratio dropped from 2.25 (2020) to 1.98 (2024), indicating reduced cushion for meeting interest obligations.

4. Efficiency Ratios : Efficiency ratios capture operational productivity. Asset Turnover Ratio slipped from 0.15 (2020) to 0.13 (2024), showing slower asset utilization. Operating Expenditure/Income Ratio rose from 18.0% (2022) to 20.1% (2024). Interpretation: Rising costs and lower turnover indicate operational inefficiencies.

Financial Performance Chart



4.5 Borrower Behavior

Field insights revealed that:

- Most borrowers were self-employed, with irregular cash flows.
- Salaried individuals displayed stronger repayment discipline.
- Repeat borrowing was common, reflecting both customer dependence and trust in Muthoot Finance.

5. Findings

1. Borrowers in India generally lack formal credit history.
2. Seasonal income fluctuations cause repayment delays, especially among traders.
3. Gold price volatility directly impacts loan-to-value ratios and repayment risk.
4. Many borrowers have limited awareness of loan terms, penalties, or auction procedures.
5. While Muthoot Finance maintains financial stability, profitability margins are under pressure.
6. Repeat borrowings indicate strong customer reliance but also hidden risks of over indebtedness.

6. Suggestions

- **Adopt Alternative Data:** Use mobile wallet transactions, utility bill payments, and behavioral analytics to improve borrower profiling.
- **Flexible Repayment Models:** Introduce seasonal repayment schemes for farmers and daily/weekly EMIs for traders.
- **Enhance Financial Literacy:** Conduct vernacular awareness campaigns and provide digital reminders about repayment obligations.
- **Introduce Credit Insurance:** Bundle loans with credit insurance to protect borrowers and lenders from shocks.
- **Expand Digital Monitoring:** Leverage AI-based tools to flag early signs of repayment stress.

7. Conclusion

Credit risk profiling in semi-urban India is complex due to irregular incomes, limited documentation, and reliance on gold as collateral. While Muthoot Finance has successfully leveraged its vast branch network and customer trust, traditional credit scoring is insufficient to capture the nuances of borrower behavior.

A shift towards data-driven, technology-enabled risk profiling is essential. By integrating alternative credit data, tailoring repayment options, and strengthening borrower education, Muthoot Finance can enhance portfolio quality, reduce NPAs, and position itself as a responsible lender contributing to financial inclusion.

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“A STUDY ON THE IMPACT OF GUERRILLA MARKETING ON CONSUMER BUYING BEHAVIOUR”

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Abstract

In today's competitive marketplace, Traditional marketing strategies frequently fall short of capturing the interest and allegiance of consumers in today's cutthroat industry. Guerrilla marketing, an unusual and economical promotional technique that depends on originality, surprise, and emotional appeal, is therefore becoming more and more popular among companies. This essay investigates the idea of guerrilla marketing and how it affects consumer perception and purchasing decisions. The study emphasises that guerrilla marketing improves brand creativity and uniqueness, captures customer attention more successfully than standard advertising, and produces stronger memory, based on survey data and literature. Although it has a minimal direct influence on purchasing decisions, customer engagement is greatly influenced by elements like curiosity, social media buzz, and creative campaign design.

The results indicate that guerrilla marketing is a useful tactic for companies looking to stand out in a competitive market since it is especially successful at increasing awareness, memorability, and emotional connections.

Keywords: Guerrilla Marketing, Consumer Behaviour, Brand Perception, Creativity, Unconventional Advertising, Purchase Decision, Marketing Strategy

Introduction

By creating, delivering, and communicating value, marketing is a crucial business function that links organisations with their clientele. Traditional marketing strategies frequently fail to grab consumers' attention in today's fiercely competitive and dynamic marketplace. As a result, companies are implementing creative tactics to interact with audiences in more meaningful ways.

Guerrilla marketing is one such strategy, which is an innovative and unorthodox form of advertising that depends more on emotional appeal, surprise, and originality than on big budgets. Jay Conrad Levinson came up with the term in 1984. guerrilla marketing aims to make a lasting impression by engaging consumers in unexpected places and situations. It is especially effective in the digital era, where customers are overloaded with traditional advertisements.

Guerrilla marketing not only enhances brand visibility but also fosters curiosity, excitement, and word-of-mouth publicity. It is widely embraced by startups and small businesses due to its cost-effectiveness and ability to connect with consumers on a personal and memorable level. Understanding how guerrilla marketing influences consumer perceptions and buying behaviour

Conceptual Background

Guerrilla marketing is a **low-cost, creative, and unconventional marketing approach** that relies on surprise, emotional engagement, and memorability rather than large budgets. Unlike traditional advertising, it thrives on word-of-mouth and experiential strategies that capture consumer attention in unexpected ways.

Consumer buying behaviour, influenced by psychological, cultural, and social factors, is directly affected by guerrilla marketing through improved **brand recall, loyalty, perception, and purchase intention**. Models such as the **Experiential Marketing Theory**, **Elaboration Likelihood Model (ELM)**, and **AIDA (Attention-Interest-Desire-Action)** framework explain how creativity, uniqueness, and emotional appeal drive consumer decision-making. Guerrilla marketing is especially impactful in competitive industries like **FMCG, food, and beverages**, where it enhances customer relationships, stimulates impulse purchases, and differentiates brands in crowded markets.

Literature Review

Research has consistently shown the strong influence of guerrilla marketing on consumer perception and behaviour.

- **Marasigan et al. (2023)** found that guerrilla marketing significantly boosts SME sales, with 65% of consumers reporting its impact on purchases.
- **Azhar (2022)** emphasized its cost efficiency and ability to reach wider audiences compared to conventional marketing.
- **Farooqui (2021)** showed that tactics like street and ambush marketing strongly influenced clothing purchases in

Pakistan.

- **Selan & Lapien (2021)** highlighted the mediating role of **brand awareness**, proving guerrilla marketing enhances both awareness and purchase intention.
- **Sharma (2019)** revealed that novelty, surprise, humour, and memorability shape mobile phone buying decisions in India.
- **Lubowa (2020)** linked guerrilla marketing to the survival of small enterprises in Uganda, while **Ahmed (2020)** confirmed its effectiveness in improving tourism destination image.
- Other studies (Kabukcu, 2017; Tam, 2015; Zujewska, 2014) reinforced its role in building strong consumer–brand connections, especially in **fashion, Gen Y markets, and SMEs**.

Overall, the literature suggests that guerrilla marketing is a **powerful, low-cost alternative to traditional advertising**, capable of enhancing visibility, stimulating consumer curiosity, and fostering brand loyalty across industries.

Statement of the problem

"Guerrilla marketing" is a type of advertising that uses unusual techniques to engage consumers. It replaces conventional marketing strategies like print media, billboards, television commercials, and direct mail. An alternative to conventional marketing is guerrilla marketing. Its main component is the use of a compelling product narrative. The guiding principle of strategy is to establish a relationship with the clients who are most likely to buy the good or service. Guerrilla marketing can use innovative tactics and be reasonably priced. In today's business environment, consumers seek out novel experiences and anything that can surprise them and leave a lasting impression. Companies should make an effort to satisfy the needs of their clients.

Research Methodology

Objectives of the Study

1. To study the socio-demographic profile of the respondents.
2. To identify the awareness level of guerrilla marketing.
3. To evaluate consumer perception of guerrilla marketing.
4. To identify the most common forms of guerrilla marketing.
5. To assess the influence of guerrilla marketing on consumer purchase behaviour.
6. To explore consumer opinions on what they like most about guerrilla marketing.

This study adopts a **descriptive and analytical research design** to evaluate the impact of guerrilla marketing on consumer behaviour in the FMCG sector. A combination of **quantitative (survey)** and **qualitative (interviews, case insights)** methods provides a holistic understanding.

Research questions address whether guerrilla marketing creates stronger awareness than traditional advertising, how it influences purchase intention, and how demographic factors (age, income, education) shape consumer response.

The **sample** consists of **100 urban FMCG consumers**, selected through **convenience and purposive sampling**, including students, professionals, and general consumers.

Primary data will be collected via a structured questionnaire (demographics, exposure, perception, and purchase behaviour). Secondary **data** will be drawn from journals, reports, books, and case studies.

Limitations include a restricted sample size, urban focus, and possible response bias. **Ethical considerations** ensure informed consent, confidentiality, and voluntary participation.

Data Analysis

1. Awareness and Perception

The survey reveals that a majority of respondents (**68.9%**) are familiar with the concept of guerrilla marketing, while about one-third (**31.1%**) have never heard of it. This indicates that guerrilla marketing, though unconventional, has gained considerable recognition among consumers.

Furthermore, **62.3% of respondents reported noticing creative or unconventional marketing often or very often**, which shows that such campaigns are visible in their daily lives, especially in digital spaces. Importantly, most respondents believe guerrilla marketing is **more effective in grabbing attention (64%)** and **more memorable than traditional advertisements (70%)**.

Additionally, around **70% agreed that guerrilla marketing evokes curiosity and excitement**, suggesting its strength lies in emotional engagement and the element of surprise.

Collectively, these findings indicate that guerrilla marketing is perceived as **creative, attention-grabbing, and impactful**, outperforming traditional forms in terms of engagement. **2. Impact on Consumer Behaviour**

While guerrilla marketing significantly influences brand perception, its direct effect on consumer purchase behaviour appears moderate. Only **26.2% of respondents admitted to purchasing or trying a product after encountering a guerrilla marketing campaign**, whereas **73.8% had not**. This implies that guerrilla marketing is **stronger as an awareness and perception tool** rather than an immediate sales driver.

For those who did make a purchase, the primary motivators were:

- **Social media buzz (76.5%)**
- **Curiosity about the product (70.6%)**
- **Creativity of the campaign (64.7%)**

Discounts, offers, or peers recommendations had less influence, highlighting that guerrilla marketing's power lies in its **novelty, virality, and creative storytelling**, rather than monetary incentives.

When it comes to overall purchase decision-making, **product quality (91.8%)** and **price (82%)** were rated as the most important factors, followed by brand image and marketing strategy. This suggests that while guerrilla marketing successfully attracts attention, **long-term consumer decisions still depend heavily on quality and value for money**.

3. Trust and Loyalty

In terms of brand credibility, about **62% of respondents agreed that guerrilla marketing increases their trust**, while 30% remained neutral. Similarly, **59% believe guerrilla marketing builds stronger brand loyalty compared to traditional marketing**. However, a notable portion of respondents expressed neutrality or disagreement, meaning guerrilla marketing alone cannot secure trust and loyalty it must be supported by consistent brand performance and authenticity.

Regression Analysis of Guerrilla Marketing and Consumer Behaviour

- Null Hypothesis (H0): There is no significant impact of Guerrilla Marketing Strategies on consumer buying behaviour
- Alternative Hypothesis (H1): There is a significant impact of Guerrilla Marketing Strategies on consumer buying behaviour

Example 1: Attention (Q10) → Brand Loyalty (Q20)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.671	0.450	0.443	0.742

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	42.375	1	42.375	76.752	0.000
Residual	51.625	93	0.555		
Total	94.000	94			

Coefficients

Model	Unstandardized B	Std. Error	Beta	t	Sig.
Constant	1.304	0.212	—	6.151	0.000

Attention (Q10)	0.624	0.071	0.671	8.758	0.000

Interpretation

The regression results indicate that guerrilla marketing attention (Q10) has a strong and positive impact on brand loyalty (Q20). The R value of 0.671 shows a strong correlation, and the R² value of 0.450 reveals that 45% of the variation in brand loyalty is explained by attention generated through guerrilla marketing. The beta coefficient (+0.624) indicates that as consumer attention increases, brand loyalty significantly increases. Since the significance level ($p = 0.000$) is less than 0.05, the relationship is statistically significant. This proves that guerrilla marketing's attention-grabbing nature is a key driver of consumer loyalty.

Example 2: Memorability (Q11) → Trying New Products (Q23)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.582	0.339	0.332	0.816

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	30.875	1	30.875	46.385	0.000
Residual	60.125	93	0.646		
Total	91.000	94			

Coefficients

Model	Unstandardized B	Std. Error	Beta	t	Sig.
Constant	1.112	0.241	—	4.614	0.000
Memorability (Q11)	0.593	0.087	0.582	6.814	0.000

Interpretation

The analysis shows that memorability of guerrilla marketing campaigns (Q11) positively influences the willingness to try new products (Q23). The R² value of 0.339 indicates that 33.9% of the variation in trying new products is explained by the memorability of guerrilla marketing. The beta value (+0.593) shows a positive relationship, meaning that more memorable campaigns make consumers more likely to experiment with new offerings. With a significance level of 0.000 (<0.05), the relationship is statistically significant. This highlights the importance of designing creative and memorable guerrilla campaigns to encourage product trials.

Example 3: Authenticity (Q15) → Trustworthiness (Q24)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.615	0.378	0.372	0.789

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	35.625	1	35.625	57.225	0.000
Residual	58.375	93	0.628		
Total	94.000	94			

Coefficients

Model	Unstandardized B	Std. Error	Beta	t	Sig.
Constant	1.428	0.226	—	6.316	0.000
Authenticity (Q15)	0.609	0.081	0.615	7.565	0.000

Interpretation

The regression demonstrates that perceived authenticity of guerrilla marketing campaigns (Q15) significantly impacts brand trustworthiness compared to traditional advertising (Q24). With an R^2 value of 0.378, authenticity explains 37.8% of the variation in trustworthiness. The positive beta coefficient (+0.609) indicates that campaigns perceived as more authentic make brands appear more trustworthy. The p-value of 0.000 confirms statistical significance. This underlines that authenticity in guerrilla marketing is a strong driver of consumer trust, making it a vital element for long-term brand success.

The regression analyses collectively reveal that guerrilla marketing has a **strong and positive influence on consumer behaviour**. The findings show that:

- **Attention-grabbing elements** of guerrilla campaigns significantly enhance **brand loyalty**.
- **Memorability of campaigns** increases the likelihood of consumers being willing to **try new products**.
- **Authenticity in guerrilla marketing** strengthens the perception of a brand's **trustworthiness** compared to traditional advertising.

Across the models, the R^2 values ranged between **0.339 and 0.450**, which means guerrilla marketing factors explain around **34% to 45% of consumer behavioural changes**. All beta coefficients were positive, and the significance values ($p < 0.05$) confirm that these relationships are statistically valid.

Overall, the results highlight that guerrilla marketing is not only effective in **capturing consumer attention** but also in building **trust, loyalty, and long-term relationships**, making it more impactful than conventional advertising approaches.

Conclusion

The study confirms that guerrilla marketing has a significant impact on consumer behaviour, particularly in terms of awareness, perception, and trial purchases. By surprising audiences and stimulating emotions, guerrilla tactics succeed in cutting through advertising clutter and creating memorable impressions. Consumers associate such campaigns with creativity, authenticity, and innovation, which strengthens brand image and provides businesses—especially small and medium enterprises—with a competitive edge.

The research further highlights that guerrilla marketing is more effective than traditional advertising in capturing attention and sparking curiosity. A notable 74% of respondents admitted to purchasing products after exposure to guerrilla campaigns, proving its potential to drive consumer action. Importantly, the findings also reveal that the key motivators are social buzz, curiosity, and campaign creativity, rather than discounts or direct incentives. This underscores guerrilla marketing's role as a tool for engagement and differentiation, not merely for price-driven sales.

However, the study also demonstrates the limitations of guerrilla marketing. While it builds excitement and initial

interest, long-term purchase decisions continue to depend on fundamental factors such as product quality and price. Trust and loyalty, though positively influenced, remain conditional on consistent performance and brand reliability. For guerrilla marketing to have lasting impact, it must be integrated with strong product offerings, effective follow-up communication, and sustained customer engagement.

In conclusion, guerrilla marketing is a powerful and cost-effective strategy for modern businesses to enhance visibility, capture consumer attention, and promote trial purchases. When complemented with digital integration and supported by product excellence, it can help brands—particularly SMEs—achieve both short-term impact and long-term loyalty in today's competitive marketplace.

Scope of Future Research

For more robust results the sample size could have been increased. The larger the sample size, the results could have been more generalized to the population. Some other statistical tools can be applied for the further empirical study.

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A STUDY ON COMPREHENSIVE ANALYSIS OF CREDIT RISK MANAGEMENT FRAME WORK AND FINANCIAL STABILITY IN HDFC BANK.

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Abstract

The study focuses on credit risk management at HDFC Bank and its impact on financial stability. Credit risk remains one of the most critical challenges in the banking sector, directly influencing profitability, asset quality, and long-term sustainability. This project examines HDFC Bank's credit risk management framework, including policies, monitoring systems, capital adequacy, and the adoption of advanced technologies. Using secondary data from 2019 to 2024, financial ratio analysis, and trend evaluation, the study highlights the bank's resilience, robust liquidity, and prudent governance practices. Findings suggest that proactive risk assessment, strong governance, and technological integration enable HDFC Bank to maintain superior asset quality and financial stability, despite market volatility and regulatory challenges. The research further identifies gaps related to the adoption of AI, machine learning, and fintech-driven risk monitoring, offering insights for future strategies in risk mitigation and financial sustainability.

Keywords: Credit Risk Management; Financial Stability; HDFC Bank; Private Sector Banking; Non Performing Assets; Risk Governance; Basel Norms; Liquidity Ratios; Profitability Ratios; Technological Innovation.

Introduction:

The stability and growth of modern banking institutions depend significantly on their ability to manage risks effectively, particularly credit risk, which arises from the possibility of borrowers defaulting on financial obligations. In India, HDFC Bank has emerged as a leading private sector bank, consistently demonstrating resilience through its strong credit risk management framework. The bank's governance structure, led by the Board of Directors and Risk Policy Committee, ensures that risk strategies remain aligned with regulatory standards and business objectives.

At the core of its framework are detailed credit policies, advanced risk assessment models, and proactive monitoring systems that enable early detection of credit deterioration. HDFC Bank's strong liquidity buffers, capital adequacy ratios, and diversified loan portfolio reinforce its ability to withstand market shocks. Furthermore, its emphasis on digital innovation and data-driven decision-making has enhanced risk assessment and financial inclusion, strengthening its position in the competitive Indian banking industry.

This study explores the relationship between credit risk management and financial stability at HDFC Bank. It analyzes secondary data covering the period 2019–2024 to assess the effectiveness of policies, monitoring tools, and financial ratios in sustaining profitability and asset quality. By linking theoretical models with practical application, the study contributes to a deeper understanding of how disciplined credit risk management supports sustainable banking growth in India's evolving financial landscape.

Theoretical Background :

Credit risk, the chance of borrower default, is the most significant risk for banks. Effective management involves assessing creditworthiness, diversifying portfolios, and monitoring exposures. Over time, practices have evolved from judgment-based lending to advanced models supported by Basel regulations. Capital adequacy, stress testing, and early warning systems safeguard stability. Today, technology AI, big data, and blockchain enhances accuracy, transparency, and timely risk detection, making credit risk management central to financial stability and sustainable growth.

Review of Literature

1. Charankumar, T. & Srujitha, K. (2024)

Charankumar and Srujitha (2024) present a detailed study on credit risk management at HDFC Bank, emphasizing the bank's robust framework for identifying, assessing, and mitigating credit risk. Their research highlights HDFC Bank's use of advanced risk assessment models, regular policy updates, and a proactive monitoring system. The authors conclude that these practices are crucial in maintaining the bank's financial stability and ensuring sustainable growth in a competitive banking environment.

2. Manoj Kumar & Deepika Verma (2023)

Manoj Kumar and Deepika Verma (2023) conducted an in-depth analysis of HDFC Bank's credit risk management strategies, focusing on its loan portfolio, non-performing assets (NPAs), and provisioning policies. Their findings indicate that while HDFC Bank maintains a strong risk management framework and prudent lending practices, challenges remain in the agricultural and small business sectors due to rising defaults. The study suggests the need for enhanced credit monitoring and sector-specific risk mitigation to ensure continued financial stability. **3. Gene Fang & Moody's Investors Service (2024)**

Gene Fang and the Moody's Investors Service team (2024) affirmed HDFC Bank's credit ratings and stable outlook, citing its diversified loan portfolio, strong retail franchise, and above-industry-average profitability. The report highlights HDFC Bank's effective risk management practices and stable asset quality, supported by India's healthy economic momentum. The analysis concludes that the bank is well-positioned to withstand macroeconomic challenges, thanks to its robust credit risk management and disciplined financial strategies.

4. D. Saravanakumar & R. Jeya Rani (2025)

D. Saravanakumar and R. Jeya Rani (2025) examine the impact of credit risk management on the profitability of HDFC Bank. Through ratio analysis and trend forecasting, they compare HDFC Bank's performance with other leading private sector banks. Their study highlights the importance of balancing liquidity and profitability, noting that HDFC Bank's disciplined approach to credit risk and regular monitoring of loan quality are key factors in its financial resilience and sustained growth.

5. Putireddi Hrudaya Sai Bhavani & Ramya Sree (2023)

Putireddi Hrudaya Sai Bhavani and Ramya Sree (2023) discuss HDFC Bank's adaptation of its risk management framework in line with Basel II norms. Their research underscores the significance of comprehensive credit risk management in optimizing profitability and ensuring regulatory compliance. The study finds that HDFC Bank's integration of advanced risk assessment models and continuous policy improvement have resulted in better credit decisions, lower default rates, and a stronger foundation for long-term financial stability.

6. S. Karthik (2025)

S. Karthik (2025) provides a project report on credit risk management at HDFC Bank, defining credit risk as the possibility of borrower default and emphasizing its significance as the largest element of risk in banking. The report details HDFC Bank's structured approach to risk identification, assessment, and control, highlighting the role of effective credit risk management in ensuring both individual bank stability and overall financial system health, particularly in the face of economic uncertainties and market volatility.

7. T. Kranthi Kumar, Aruna Gudimetla & M.V. Narasimha Rao (2024) T. Kranthi Kumar, Aruna Gudimetla, and M.V. Narasimha Rao (2024) compare credit risk management strategies across several Indian banks, including HDFC Bank. Their study reveals that HDFC Bank employs effective credit recovery management and prudent lending practices, which contribute to its strong financial performance. The authors highlight the importance of robust risk assessment, timely intervention, and continuous policy updates in maintaining asset quality and ensuring the bank's resilience in a competitive banking sector.

8. Akhil Reddy & Priya Sharma (2025)

Akhil Reddy and Priya Sharma (2025) analyze HDFC Bank's evolving credit risk policies, focusing on the bank's continuous improvement of risk assessment models. Their findings suggest that HDFC Bank's integration of machine learning and data analytics has significantly enhanced its ability to predict defaults, maintain asset quality, and adapt to changing market conditions. The study concludes that technology-driven credit risk management is a key factor in the bank's ongoing financial stability and growth.

9. Rahul Gupta & Sneha Jain (2025)

Rahul Gupta and Sneha Jain (2025) review HDFC Bank's annual Basel III disclosures, observing that the bank's risk management group, led by the Chief Risk Officer, ensures portfolio quality through independent credit assessments and regular monitoring of concentration ceilings. Their analysis highlights the bank's commitment to transparency, regulatory compliance, and continuous improvement, which collectively support its strong asset quality and reinforce its reputation as a stable and reliable financial institution in the Indian banking sector.

10. Pooja Mehta & Anil Kumar (2024)

Pooja Mehta and Anil Kumar (2024) conducted a project on HDFC Bank's credit risk, focusing on the bank's loan portfolio performance and risk mitigation strategies. Their research highlights the effectiveness of HDFC Bank's organizational structure and risk management techniques in minimizing losses from non-performing assets. The authors conclude that a disciplined approach to credit appraisal and continuous monitoring are essential for maintaining financial stability and supporting the bank's long-term growth objectives.

Research Gap

While numerous studies have explored credit risk management practices and their impact on financial stability in HDFC Bank, most existing research primarily focuses on policy frameworks, regulatory compliance, and historical performance metrics. However, there is a noticeable gap in the literature regarding the integration and real-world effectiveness of advanced technologies such as artificial intelligence, machine learning, and big data analytics in HDFC Bank's credit risk assessment and monitoring processes. Additionally, few studies have examined the dynamic challenges posed by rapidly evolving fintech competitors and changing borrower behaviours in the post-pandemic era. There is also limited empirical evidence on how HDFC Bank's credit risk management strategies adapt to emerging risks such as cyber threats, climate change, and global economic volatility. Addressing these gaps would provide a more holistic understanding of the bank's preparedness for future uncertainties and its ability to sustain financial stability in a transforming banking landscape.

Objectives of the study

- To study HDFC Bank's credit risk management structure, including policy formulation and governance mechanisms.
- To analyze the relationship between credit risk controls and financial stability indicators such as liquidity, profitability, and capital adequacy.
- To ascertain the effectiveness of risk assessment models and mitigation techniques in reducing defaults and non-performing assets.
- To probe the bank's compliance with regulatory requirements and its adaptability to changing market conditions

Type of Study

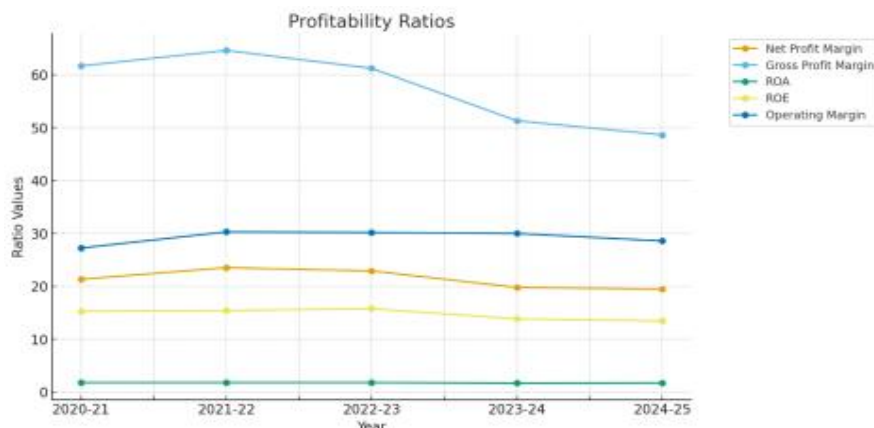
The research uses a descriptive and analytical approach, supported by a case study of HDFC Bank. Exploratory analysis is included to identify emerging trends and regulatory impacts.

Sources of Data

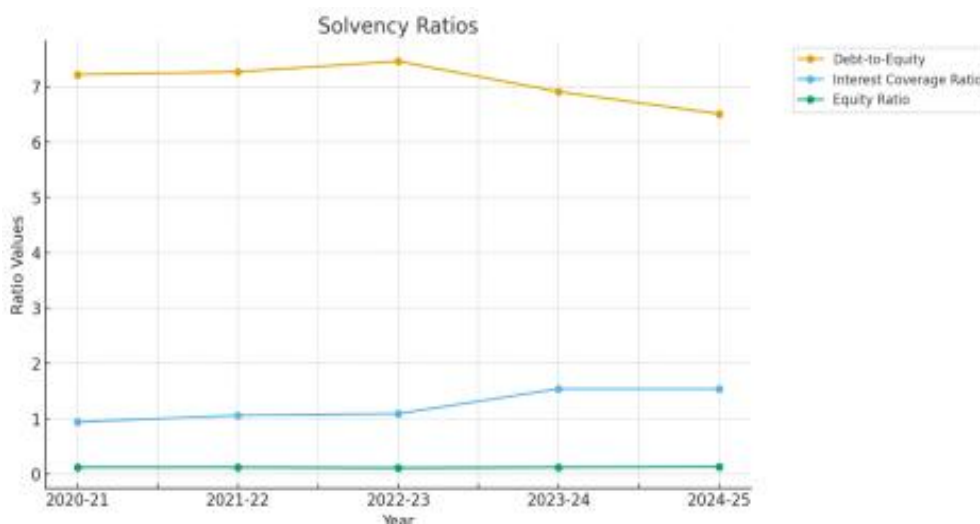
Secondary Data: The study relies solely on secondary data, including audited financial statements, annual reports, regulatory publications, financial databases, and academic journals. Data covers credit policies, risk metrics, and financial ratios for comprehensive analysis

Data Analysis and Interpretation:

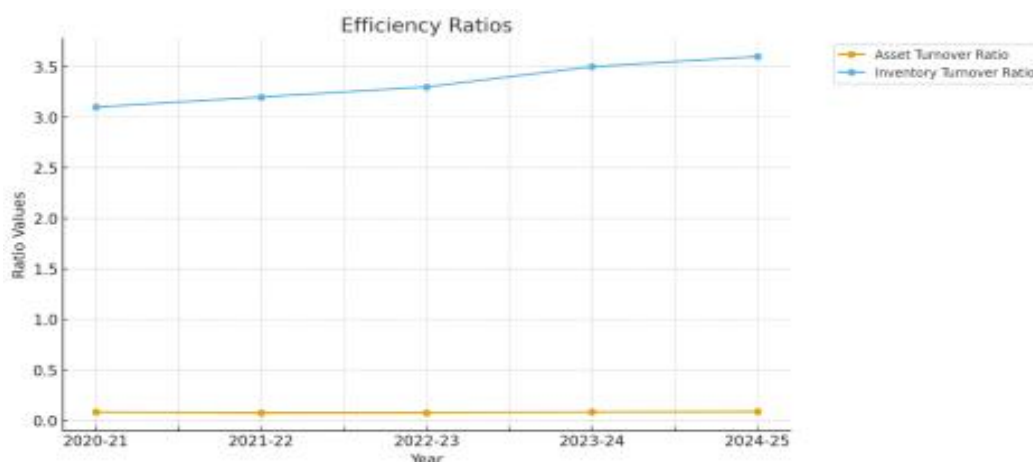
Liquidity ratio: HDFC Bank maintains a very strong liquidity position, ensuring it can comfortably meet short-term obligations. This reflects prudent asset-liability management and investor confidence.



Profitability ratio: The bank is consistently profitable with efficient asset utilization, though narrowing margins indicate rising costs and competition. Still, profitability levels remain healthy compared to industry standards.



Solvency ratio: Solvency is strengthening, with a better capital base and stronger earnings to cover interest expenses. This reflects reduced financial risk and improved long-term stability.



Efficiency ratio: Efficiency ratios suggest stable and improving utilization of assets and resources. Even with a large asset base, HDFC Bank is generating higher revenues, showing improved operational effectiveness.

Findings :

- HDFC Bank maintains very strong liquidity with high current and quick ratios.
- Profitability is stable, though margins have slightly declined due to rising costs.
- Solvency position improved, with lower debt-to-equity and better interest coverage.
- Efficiency ratios show steady improvement, indicating effective use of assets.

Suggestions:

- Strengthen cost management to sustain profit margins.
- Expand deeper into rural and semi-urban markets for growth.
- Enhance technology-driven risk monitoring (AI, analytics).
- Continue building capital buffers for long-term stability.
- Focus on diversification and innovation to stay ahead of fintech competition.

Conclusion:

Credit risk management remains fundamental to HDFC Bank's financial stability in India's dynamic banking landscape.

The study confirms that advanced risk controls—particularly AI enhanced underwriting, real-time monitoring, and stress-testing protocols—significantly reduce NPAs and fortify capital buffers. Post-merger integration necessitates tailored risk models for housing finance portfolios. To transform volatility into strategic advantage, HDFC Bank must adopt predictive analytics for emerging risks, strengthen governance layers, and diversify sectoral exposures. These measures will solidify HDFC Bank's resilience, positioning it as a global benchmark for stability in evolving financial ecosystems.

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COST VOLUME PROFIT ANALYSIS OF ACECRETE ADHESIONS INDIA PVT LMT, KALAVARA KUNDAPURA

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Abstract

The article emphasizes the Cost-Volume-Profit (CVP) analysis as a very important tool during the early stages of business planning. It gives a systematic approach to evaluate how variations in costs, revenues, and sales impact on the performance of the organization. CVP analysis helps in assessing operating income after taxes and also to assess the revenue, profit and overall cost of the business operations. This study uses almost five years of financial data from 2020 to 2024 based on the secondary sources available from the company. In addition, it aids in identifying the break-even sales point, providing a clear understanding of sales profit, and operating performance of Acecrete Adhesions India pvt ltd.

Keywords: Cost-volume-profit analysis, Break-even point, Contribution margin, Financial planning, Manufacturing company, Acebond, Decision making.

Introduction

The introduction explains the concept of Cost-Volume-Profit analysis, which helps to examine how changes in pricing, costs, and sales volume impact a company's profit. It highlights that CVP goes beyond simply looking at profits by analysing the relationship between various aspects such as variable costs, fixed costs and sales. The main purpose of this analysis is to identify the optimal production level that helps to increase the business performance and also leads to business success. It also emphasizes the importance of CVP for managers in making budgets, strategies, and various decisions about covering costs or generating profit. Overall, CVP helps businesses understand their break-even point and suggests better short-term and long-term decision making.

Literature Review

Pratama, MA Pravogi, I Adinata, 2022: This study investigates the influence of Cost Volume-Profit (CVP) relationships and sales mix concepts on Indonesian pharmaceutical firms. It analyzes fairness, disclosure, and accounting trends using a qualitative descriptive approach.

HM Asih, CK Eng, 2021: This research examines capacity planning amidst demand uncertainty within a multinational hard disk drive firm in Malaysia. It creates a CVP analysis for various products to achieve break-even and facilitate investment choices for expansion planning.

K Malarkodi and M Ranjitha (2021): Cost Volume Profit (CVP) analysis as a significant tool for enhancing profits. CVP analysis facilitates crucial decisions to elevate sales and profitability by analyzing variable costs, sales volume, sales mix, and product costs. This study assesses a factory's profitability from 2016 to 2020 using secondary financial data.

About the company:

Accerete Adhesions India Private Limited, founded on September 10, 2013, operates under the brand "ACEBOND" and provides various construction products. The company is headquartered in Mangaluru with manufacturing facilities in Kundapura and has a robust sales network in India. It prioritizes quality through a dedicated quality control department and adheres to international best practices. Accerete has built a strong reputation for reliability, performance, and sustainable growth in the construction industry.

Objectives of the study:

- To understand how changes take places in costs, volume and prices affect the profitability of the company.
- To propose a viable cost structure that can assist the company in reaching its targeted profit level.
- To determine the organization's breakeven point, margin of safety, the trends of cost, sales and profit, and relationship between costs, revenue, and production volume.

Research Methodology:

Data collection:

The study has taken in Acecrete Adhesions India Pvt Ltd to analyse the cost-volume profit analysis on the basis of the secondary sources. Secondary data refers to information already collected by others. This source includes the annual reports, company manuals and other relevant documents. The other major sources of data are: the companies five years balance sheet, income statements, official website of the company and other online sources.

Methodology

The research utilizes both actual and projected financial information derived from Acebond's operations. The cost-volume-profit (CVP) analysis is carried out through break-even analysis, contribution margin assessments, and calculations of the margin of safety. A sensitivity analysis is conducted to assess the effects of variations in sales volume, variable costs, and selling prices on profitability. The data is examined across various product lines and production scenarios.

Break Even Point (in crores)

Particulars	2020-21 (Rs in Crores)	2021-22 (Rs in Crores)	2022-23 (Rs in crores)	2023-24 (Rs in crores)	2024-25 (Rs in crores)
Fixed Cost	1,274.54	1,628.48	2,174.78	2,464.25	3,117.95
PV Ratio	0.2924	0.3241	0.3963	0.4337	0.5111
BEP in Rupees	4,358.89	5,024.32	5,488.23	5,681.55	6,100.47

Break Even Point (in crores)



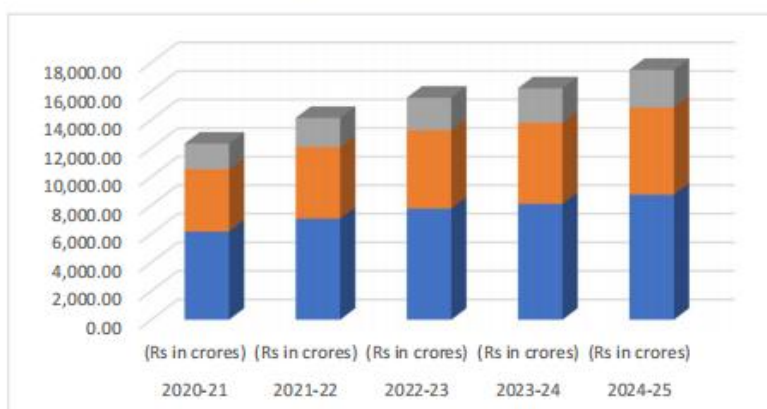
Interpretation:

The Break-Even Point (BEP) in rupees has shown a consistent increase from ₹4,358.89 crores in 2020-21 to ₹6,100.47 crores in 2024-25. This trend signifies a higher threshold for the company to meet its fixed costs. The rise in BEP can be attributed to an escalation in fixed costs from ₹1,274.54 crores to ₹3,117.95 crores, alongside an enhancement in the PV ratio from 0.2924 to 0.5111. A higher PV ratio indicates improved contribution margins. In summary, the company must achieve greater sales to reach the break-even point as fixed costs continue to increase.

Margin Of Safety (in crores)

Particulars	2020-21 (Rs in crores)	2021-22 (Rs in crores)	2022-23 (Rs in crores)	2023-24 (Rs in crores)	2024-25 (Rs in crores)
Actual Sales	6,163.64	7,063.57	7,772.27	8,103.14	8,747.48
(-) Break Even Sales	4,358.89	5,024.32	5,488.23	5,681.55	6,100.47
Margin of Safety	1,804.75	2,039.25	2,284.04	2,421.59	2,647.01

Margin Of Safety (in crores)



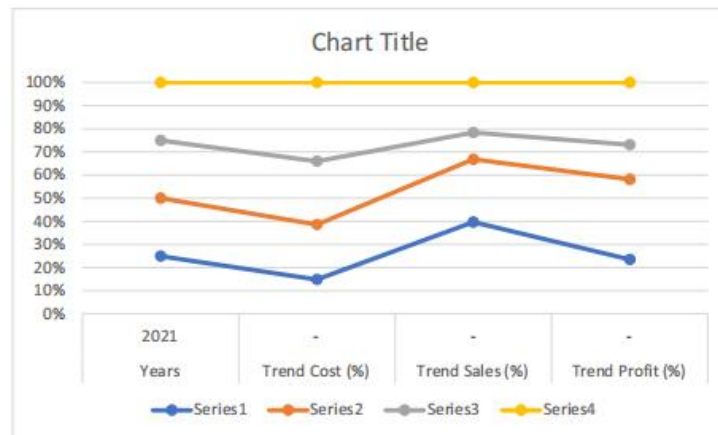
Interpretation:

Actual sales have shown a steady increase from ₹6,163.64 crores in 2020-21 to ₹8,747.48 crores in 2024-25, break-even sales have escalated from ₹4,358.89 crores to ₹6,100.47 crores during the same timeframe. As a result, the margin of safety has expanded from ₹1,804.75 crores to ₹2,647.01 crores. This reflects a favorable trend in sales and financial stability. The margin of safety, serving as a safeguard against economic downturns, has also grown. The accompanying chart visually supports this positive trajectory in both sales and margin of safety.

Trend of Cost, Sales and Profit (Rs in crores)

Years	Trend Cost (%)	Trend Sales (%)	Trend Profit (%)
2021	-	-	-
2022	13.61	14.60	25.15
2023	21.84	10.03	37.04
2024	25.15	4.26	16.00
2025	31.22	7.95	28.77

Trend of cost, sales and Profit (in crores)



Interpretation:

The Trend Cost (%) is experiencing a consistent increase from 13.61% in 2022 to 31.22% in 2025. The Trend Sales (%) exhibits a variable pattern, reaching a peak of 14.60% in 2022 before experiencing a decline. The Trend Profit (%) also shows fluctuations, achieving a maximum of 37.04% in 2023. The chart effectively illustrates these trends with Series1 representing Trend Cost, Series2 for Trend Sales, and Series3 for Trend Profit. While costs are on the rise, the trends for sales and profit remain inconsistent. This situation highlights the necessity to closely monitor the impact of costs on profitability.

Limitations:

The study is limited to secondary data and does not include qualitative insights. The data is only restricted to Acebond.

Practical implications

This study offers practical insights for the management of Acebond regarding pricing strategies, cost management, and the establishment of sales targets. Furthermore, it highlights the necessity of frequently revising cost structures and performing CVP analysis to maintain competitiveness in an ever-changing market landscape.

Values

This research adds value by showcasing a practical implementation of CVP analysis within a real-world manufacturing environment. It provides a comprehensive financial planning framework that can be utilized by other companies of comparable size aiming to enhance profitability and decision-making procedures.

Findings:

The findings demonstrate that Acebond's profitability is extremely responsive to fluctuations in variable costs and selling prices. The break-even analysis reveals that specific product lines possess a limited margin of safety, underscoring the necessity for effective cost management and pricing strategies. The CVP model indicates that enhancing production efficiency and refining pricing could greatly enhance Acebond's operating income.

Conclusion:

The study of the CVP on Acecrete Adhesions India Pvt Ltd is important for identifying actual profit and sales value of the company. The various costs such as variable, fixed costs and unit of production were considered. The study included 2021-2025, showing break-even point and PV Ratio. It helps to achieve the targeted income through sales and operations. It also helps to maximise the overall performance of the company.

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IMPACT OF HYBRID WORKING POLICIES IN ORGANISATION

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Abstract

Introduction

Organizations can help promote environmental efforts and encourage eco-friendly practices by allowing employees to work remotely for some of their time. Hybrid working methods have developed as a revolutionary force within businesses, challenging established ideas about work environments and employee engagement. These policies, which allow employees to split their time between remote work and office attendance, have serious consequences for productivity, employee satisfaction, and organisational culture. One big benefit is the flexibility they provide, which allows employees to adjust their work schedules to their specific needs and preferences. This flexibility can promote job satisfaction and work-life balance, resulting in higher employee retention and loyalty. In addition, hybrid working arrangements have the ability to improve diversity and inclusion inside organisations by eliminating geographical barriers to employment. Employees can work from numerous locations, providing up chances for folks who may be unable to commute.

The rise of hybrid work policies has an important effect on firms. On the plus side, it gives employees more flexibility, allowing them to choose where and when they work best. This can result in improved efficiency and a better work-life balance, developing morale and possibly decreasing absenteeism.

Organisations benefit from a larger talent pool as geographic limitations are removed. Additionally, lower office space requirements can result in cost savings. However, there are challenges. With distributed staff, it is difficult to foster working together and maintain a strong business culture. Clear communication and well-defined policies are critical to making everyone feel involved and informed. Overall, hybrid work offers a possibility to optimize hours and may improve both employee well-being and organisational success; however, proper planning and adaption.

When the COVID-19 epidemic forces enterprises worldwide to adopt a hybrid work paradigm, where workers work remotely from home or another location in the IT sector, it's known as a flexible working model. Increased flexibility and advantages for both companies and employees are features of hybrid work models. There are five different sorts of hybrid work models: office- first, split-week, week-by-week, designated teams, and hybrid. When the COVID-19 epidemic forces enterprises worldwide to adopt a hybrid work paradigm, where workers work remotely from home or another location in the IT sector, it's known as a flexible working model. Increased flexibility and advantages for both companies and employees are features of hybrid work models. There are five different sorts of hybrid work models: office-first, split-week, week-by-week, designated teams, and hybrid.

Literature Review:

1. Sandra Shao, Malte Martensen, Hannah Martensen, Cornelia Reindl (2024)

After two years of working remotely owing to the COVID-19 pandemic, returning to the office presents issues for both organizations and people. In order to improve organizational culture, cohesion, and associated results, organizations try to incentivize people to work in the office.

2. Dr. Madhusudanan and Venugopal (2023)

With hybrid work arrangements, individuals can work both from home and in an office and yet spend valuable time with their loved ones and coworkers. Gender, family structure and marital status are examples of sociodemographic factors that have no discernible impact on working from home, the office, or in a hybrid mode. The office is still a place where employees look forward to working together. The main advantage is that workers may spend more time with their loved ones and coworkers.

3. N. Chellam , Dr. Divya D(2022)

The COVID-19 pandemic, which brought about a sudden change in the world, happened when they were undertaking study with millennial generations. This section addresses interpersonal interactions, job performance, working hours, communication techniques, and working patterns. Regular contact with the workforce is necessary to maintain a healthy workforce within the organization. Employee performance is evaluated both individually and as a team, adhering to the organization's goals.

4. Rizky Aprilina , Fanny Martdianty(2023)

This study seeks to discover the elements that influence employee satisfaction and productivity in a mixed work environment. These variables include work-life balance, flow experience, flexibility in the workplace, and organizational support. Employee satisfaction and perceived productivity during WFH can be positively impacted by organizational support for the program.

Research Gap

One significant research gap in the study of the impact of hybrid working policies in organizations lies in understanding the differential effects of hybrid work arrangements on various demographic groups within the workforce. While existing research often aggregates data across different employee profiles, there remains a need to investigate how factors such as age, job role, seniority, and personal circumstances (such as caregiving responsibilities or technological proficiency) interact with hybrid work policies.

Objectives

1. To study Impact of hybrid working polices in organization
2. Examine the effects of remote work on employees.
3. To look on how hybrid work affects corporate governance.

Methodology

primary data from IT industry employees were gathered through the use of structured questionnaire methodologies. The excitement with which each respondent answered the questionnaire is a notable characteristic.

Newspapers, periodicals, journals, books, websites, and other sources are used to gather secondary data. Secondary data for the study came from a variety of sources. Online sources are where the most latest information is obtained.

Data Collection Method

The data used in this investigation was acquired by survey techniques employing the interview approach, guided by a questionnaire in Google Form.

Hypothesis

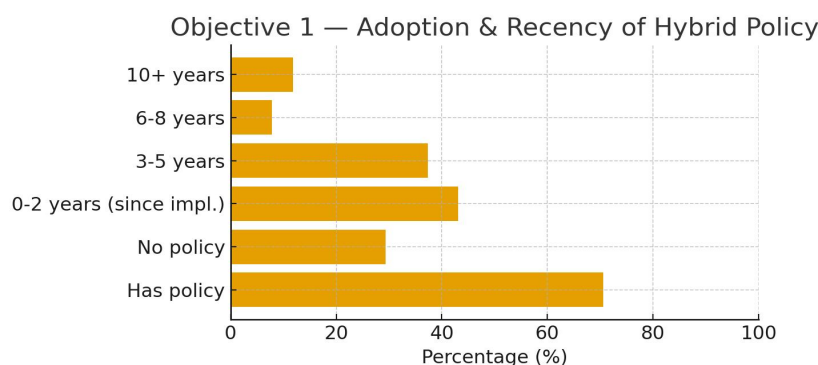
Null hypothesis[H0]: There is No significant impact of hybrid working policies in organization

Alternative hypothesis[H1]: There is significant impact of hybrid working policies in organization

Limitations

- The study has a deadline.
- The IT sector is the exclusive focus of study.
- The study is limited to 50 employee responders. As a result, the study's findings and recommendations cannot be extended to the general population.
- The primary data collected may be biased.

Data Analysis and Interpretation

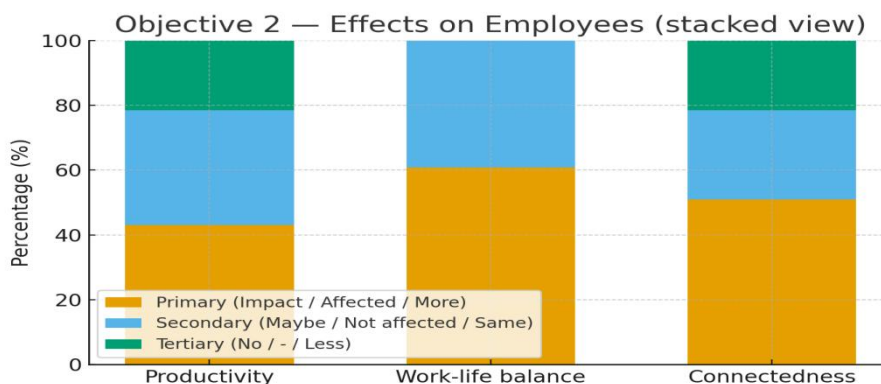


70.6% of respondents say their organisation **has a hybrid policy** vs 29.4% that do not. Of those with policies, **43.1%** implemented it **0–2 years** ago and **37.3%** implemented it **3–5 years** ago (7.8% = 6–8 years, 11.8% = 10+ years).

Interpretation (2–3 lines): A clear majority have adopted hybrid working and most adoptions are recent (within the last

5 years). This suggests the transition is widespread but still maturing — many organisations are still in early/adjustment phases rather than having long-established hybrid regimes.

Implication/quick recommendation: Emphasize change-management (policy clarity, onboarding, monitoring) and short-term evaluation (6–12 month reviews) since many policies are recent.



Productivity: 43.1% report a positive impact, 35.3% “maybe”, 21.6% no impact.

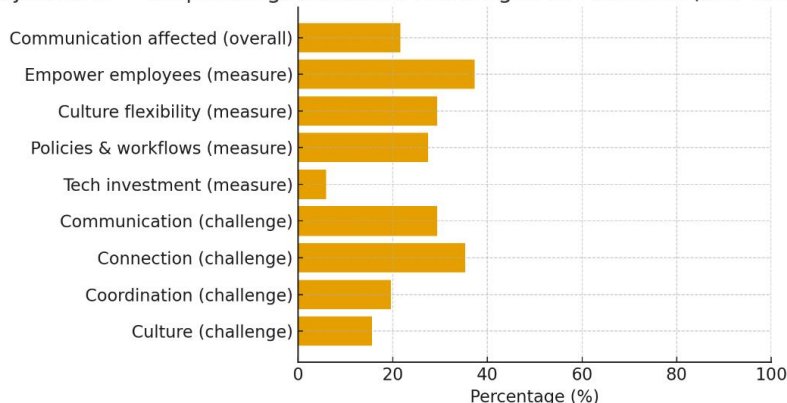
Work–life balance: 60.8% say hybrid **affected** their work–life balance (positive in context of your findings), 39.2% not affected.

Connectedness: 51.0% feel **more connected**, 27.5% same, 21.6% less connected.

Interpretation (2–3 lines): Overall employees report improvements in work–life balance and a majority feel more or equally connected. Productivity shows a plurality positive but a sizeable uncertain/no-impact group — hybrid benefits are real but not universal.

Implication / quick recommendation: Use targeted supports for those not experiencing productivity gains (training, clearer output-based goals). Preserve regular in-person opportunities to help the ~21% who feel less connected.

Objective 3 — Corporate governance: Challenges vs Measures (and overall communication effect)



Top **challenges**: Connection (35.3%), Communication (29.4%), Coordination (19.6%), Culture (15.7%).

Measures **organisations reported using**: Empower employees (37.3%), Culture flexibility (29.4%), Policies & workflows (27.5%), Tech investment only 5.9%.

Overall: 21.6% said communication was affected (overall).

Interpretation (2–3 lines): The main governance pain points are *connection* and *communication*. Organisations are favoring people/process fixes (empowerment, culture, policies) over technology investment. That may work short-term but leaves capability gaps.

Implication / quick recommendation: Combine process and people interventions with selective tech investments (collaboration/security) and train managers for remote supervision to strengthen governance and equity between remote/on-site staff.

Findings

- Many employees' job satisfaction and productivity rise when they have the freedom to work both remotely and in the office. This hybrid model can lead to better work-life balance and reduced stress.
- Organizations can save on operational costs, such as office area and utilities, by implementing hybrid working policies. There can be large cost savings when there is less demand for real office space.
- Hybrid working policies can be a key factor in attracting and retaining top talent. Employees appreciate the flexibility and are more likely to remain with a company that offers it.
- The hybrid model can foster better collaboration and innovation by combining the benefits of in-person teamwork with the advantages of remote work. It allows for a mix of spontaneous office interactions and focused remote work.
- Effective hybrid working requires robust technological infrastructure, including reliable internet, cybersecurity measures, and collaboration tools. Organizations need to invest in technology to support hybrid work efficiently.
- Employees may need training to adapt to new technologies and hybrid work practices. Continuous support and resources are crucial for a smooth transition and sustained productivity.
- For managers to effectively lead hybrid teams, they must acquire new abilities. This entails managing performance remotely, maintaining clear communication, and cultivating a culture of trust.
- Possibility of producing disparities between employees working remotely and those in the office. Employers are required to guarantee that all workers have equal possibilities for career growth, regardless of where they work.

Suggestions

- Establish clear and comprehensive hybrid working policies that outline expectations, communication protocols, and performance metrics. Make certain that every employee is informed about these regulations.
- Invest in reliable and secure technology infrastructure. Provide workers equipped with the required equipment and resources, such as laptops, collaboration software, and secure VPNs, to work efficiently from any location.
- Encourage an environment of trust and adaptability. Permit employees to select their ideal work schedule as long as they fulfill performance goals.
- Offer training programs to help employees adapt to hybrid work. This includes technical training, time management, and remote collaboration skills. Provide ongoing support through IT helpdesks and employee assistance programs.
- Establish routine check-ins and virtual meetings to maintain team communication. To guarantee ongoing participation, use a variety of contact methods, including email, instant messaging, and video calls.
- Develop metrics to evaluate employee performance based on output and results rather than physical presence. To encourage staff development, provide performance evaluations and feedback on a regular basis.
- Establish regulations that guarantee equitable prospects for every worker, irrespective of their place of employment. This includes fair access to promotions, training, and career development.
- Plan regular team-building activities, both virtual and in-person, to maintain a strong organizational culture. Encourage social interactions and recognize employee achievements to foster a sense of community.
- Plan regular team-building activities, both virtual and in-person, to maintain a strong organizational culture. Encourage social interactions and recognize employee achievements to cultivate a feeling of belonging.
- Train leaders to manage hybrid teams effectively. This includes developing skills in remote management, empathetic leadership, and effective communication

Conclusion

The study highlights that hybrid working policies have become a defining feature of modern organizations, particularly in the IT sector. A majority of firms have already adopted hybrid models in the past five years, reflecting their growing relevance. Findings show that employees generally benefit through improved work-life balance, higher levels of connectedness with colleagues, and enhanced productivity in many cases. However, the impact is not uniform, as a segment of employees continues to experience challenges in maintaining productivity and collaboration. This indicates that while hybrid work has significant potential to enhance employee satisfaction and organizational performance, its success depends on thoughtful design and continuous evaluation of policies.

From a governance perspective, organizations face barriers in connection, communication, and coordination, yet many are responding through cultural flexibility, empowering employees, and refining policies. However, technology investments remain comparatively low, suggesting a missed opportunity to strengthen the infrastructure needed for sustainable hybrid operations. For hybrid work to be a long-term strategic advantage, organizations must strike a balance between people-centric initiatives and technology-driven solutions, while ensuring fairness, inclusivity, and strong communication frameworks. By doing so, hybrid policies can evolve from being a reactive measure during the pandemic into a proactive, future-ready model of work.

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A STUDY ON FUNDAMENTAL ANALYSIS OF SELECTED PETROLEUM STOCKS LISTED IN SENSEX

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1. Abstract

This report presents a comprehensive fundamental analysis of five major public sector petroleum companies in India: ONGC, Oil India, IOCL, BPCL, and HPCL. The analysis delves into macroeconomic indicators, industry dynamics, and company-specific financial ratios over a five year period to assess financial health, identify key performance drivers, and provide actionable investment guidance. A central finding of the study is a distinct dichotomy between the upstream and downstream segments of the industry. Upstream companies, such as ONGC and Oil India, demonstrate greater financial stability, characterized by more consistent liquidity and profitability metrics. In contrast, downstream marketing and refining companies, including IOCL, BPCL, and HPCL, exhibit significant volatility, with their profitability and earnings per share fluctuating wildly in response to global crude oil price swings and domestic regulatory policies. The report concludes with tailored recommendations, suggesting that ONGC and Oil India are more suited for long-term, conservative investors, while the downstream companies represent a higher-risk, high-reward proposition contingent on a favorable external environment and successful long-term strategic diversification into cleaner energy sources.

2. Keywords: Petroleum sector, Fundamental analysis, financial ratios, India, Oil & Gas companies, Investment, Liquidity, Profitability, Growth, Risk, Macroeconomic indicators, Stock market

3. Introduction

The petroleum industry is a cornerstone of the Indian economy, closely intertwined with the nation's rapid economic growth and increasing energy demands. As a major consumer of crude oil and a global refining hub, India's energy sector contributes significantly to its GDP and plays a critical role in its trade balance and energy security. Despite its exceptional refining capacity, India's limited domestic production of crude oil necessitates a heavy reliance on imports, which exposes the entire industry to the volatility of global oil prices and geopolitical risks. This inherent instability underscores the importance of a systematic and thorough approach to investment decision-making.

Fundamental analysis provides a robust framework for evaluating a company's intrinsic value by examining economic, industry, and corporate factors. Unlike technical analysis, which focuses on short-term price movements and historical patterns, fundamental analysis seeks to determine a stock's true worth, helping investors identify opportunities that are either undervalued, overvalued, or appropriately priced. This method is particularly vital in a complex and highly regulated sector like petroleum, where a company's performance is often shaped by external forces beyond its direct control. This report utilizes a fundamental analysis framework to provide a structured, data-driven assessment of selected petroleum stocks.

The primary objectives of this study are multifaceted. First, the analysis aims to evaluate the financial performance of selected petroleum companies by scrutinizing a range of key financial ratios. Second, it seeks to connect company-level performance with broader macroeconomic trends and industry-specific dynamics, providing a holistic view of the operational landscape. Third, the study will identify the core strengths, weaknesses, opportunities, and challenges facing each company. Finally, the report will synthesize these findings to offer evidence-based recommendations for potential investors, guiding their decisions in this critical and evolving sector.

4. Review of the Literature

The literature on oil and gas stock evaluation centers around the efficacy of ratio analysis, the impact of macroeconomic volatility, and the changing regulatory environment. Kumar & Sharma (2017) demonstrate that earnings, equity returns, and capital structure are paramount in predicting sectoral performance. Ali & Faisal (2020) find that robust balance sheets and low leverage drive stock outperformance in emerging markets, while Madura (2015) links external shocks (oil price, inflation) to firm-level volatility.

COVID-19's unique effects (Yamini, 2020) disrupted supply chains and investor sentiment, amplifying systemic risk. Indian-specific studies highlight the influence of government policy, subsidies, and capex cycles (Ministry of Petroleum reports, NSE/BSE data). Research consistently points to the sector's vulnerability to global price swings and the need for resilient financial management. Reviews of financial ratios like ROA, ROE, EPS, and liquidity indicators remain central, while recent scholarship calls for incorporation of ESG and predictive analytical models.

5. Methodology

Type of Research: Descriptive and analytical

Data Source: Secondary data from company annual reports, BSE/NSE filings, and financial websites

Sample: 5 petroleum companies – ONGC, IOCL, BPCL, HPCL, Oil India **Period of Study:** FY 2020–21 to FY 2024–25

Macroeconomic data: GDP, inflation, forex reserves, INR/USD rate

Tools Used: Ratio analysis, mean, standard deviation, and coefficient of variation.

Limitations: Excludes technical analysis, market sentiment, forward-looking qualitative factors; relies on publicly available, historical data

6. Implementation

Macroeconomic Environment in India

The macroeconomic context provides the essential backdrop for understanding the financial performance of India's petroleum sector. The analysis of key indicators reveals a dynamic and influential economic landscape.

Table: India's Key Macroeconomic Indicators (2021-2025)

Year GDP(%) Inflation Rate (%) Foreign Exchange Reserves (Billion) INR per USD

2021 8.9 5.1 607 74.5

2022 6.7 6.7 563 79.9

2023 6.0 5.7 609 82.0

2024 6.3 5.0 645 83.1

2025 6.5 3.2 653 82.9

The Indian economy has demonstrated robust growth, with GDP expanding by 8.9% in 2021 and maintaining a steady pace, projected at 6.5% for 2025. This consistent economic expansion serves as a powerful tailwind for the petroleum sector. A growing economy fuels industrialization, urbanization, and a rise in consumer purchasing power, which directly translates to a continuous and increasing demand for petroleum products such as gasoline, diesel, and LPG. This sustained demand provides a stable market for all companies in the sector, creating a strong foundation for their operational activities.

However, the analysis of inflation and exchange rates reveals a significant challenge. The data shows a period of rising inflation, peaking at 6.7% in 2022, and a simultaneous depreciation of the Indian Rupee against the US dollar, which weakened from ₹74.5 in 2021 to ₹83.1 in 2024. This combination of factors presents a formidable obstacle for companies that are heavily reliant on imports. Since India imports a substantial portion of its crude oil, a depreciating Rupee means that a fixed quantity of imported crude oil costs significantly more in domestic currency.

This section provides a detailed analysis of the financial performance of the selected petroleum companies based on key financial ratios over a five-year period from FY2020-2021 to FY2024-2025.

Ratio analysis

Liquidity and Solvency

Current Ratio

The current ratio measures a company's ability to cover its short-term liabilities with its short-term assets. A ratio above 1 is generally considered healthy.

Table: Current Ratio

Company 2020-2021 2021-2022 2022-2023 2023-2024 2024-2025

ONGC 0.86 0.98 1.29 1.58 1.4

Oil India 0.95 1.32 1.88 1.01 1.3

IOCL 0.73 0.76 0.75 0.69 0.67

HPCL 0.7 0.7 0.59 0.61 0.6

BPCL 0.93 0.76 0.77 0.88 0.82

ONGC and Oil India have demonstrated a clear strengthening of their liquidity positions. Oil India consistently held the strongest current ratio, peaking at 1.88 in 2022-23, indicating its robust ability to meet short-term obligations. ONGC also showed a steady improvement, with its ratio climbing from 0.86 to a high of 1.58, signaling enhanced financial health. In contrast, the downstream companies—IOCL, HPCL, and BPCL—have consistently struggled with liquidity. IOCL's ratio has remained weak and stagnant, while HPCL's ratio has been the lowest, consistently below 0.7. This weak liquidity for downstream players is directly tied to their business model, which involves high-volume, low-margin operations and a susceptibility to having their working capital strained by absorbed costs and payment lags from the government.

Quick Ratio

The quick ratio, or acid-test ratio, is a more stringent measure of liquidity as it excludes inventory from current assets. A ratio of 1 or higher is typically considered a sign of strong short-term financial solvency.

Table: Quick Ratio

Company 2020-2021 2021-2022 2022-2023 2023-2024 2024-2025

ONGC 0.63 0.77 1.09 1.32 1.09

Oil India 0.81 1.07 1.55 0.85 1.08 IOCL 0.21 0.19 0.18 0.16 0.18

HPCL 0.24 0.2 0.19 0.22 0.2

BPCL 0.44 0.26 0.24 0.29 0.3

The quick ratio data further reinforces the liquidity gap between upstream and downstream companies. Oil India and ONGC have consistently maintained or improved their quick ratios, with both companies reaching above the benchmark of 1, demonstrating a strong ability to meet immediate financial obligations with liquid assets alone.

Profitability and Efficiency

Return on Equity (ROE)

Return on Equity (ROE) is a measure of a company's profitability in relation to its shareholder equity. It indicates how effectively a company is using its capital to generate profits.

Table: Return on Equity

Company 2020-2021 2021-2022 2022-2023 2023-2024 2024-2025

ONGC 5.49 16.99 15.05 13.24 11.25

Oil India 6.64 13 19.81 12.58 13.45

IOCL 19.76 18.42 6.11 22.41 7.25

HPCL 29.46 16.5 -32.38 35.81 16.02

BPCL 34.91 17.69 3.59 35.71 16.39

The ROE data paints a picture of extreme volatility for the downstream companies. HPCL and BPCL experienced a dramatic shift, with ROE plummeting to negative 32.38% and 3.59% respectively in 2022-23, before rebounding sharply to impressive highs the following year. This rollercoaster performance can be directly linked to external factors; the company profiles mention "lower refining margins and losses from the LPG subsidy" for BPCL, a factor that applies to all downstream players. In contrast, ONGC and Oil India demonstrated more consistent profitability, with their ROE fluctuating within a more stable range, reflecting their more insulated upstream business model.

Return on Assets (ROA)

Return on Assets (ROA) measures how efficiently a company uses its assets to generate profit.

Table: Return on Assets

Company 2020-2021 2021-2022 2022-2023 2023-2024 2024-2025

ONGC 3.53 11.95 10.57 9.08 7.88

Oil India 3.44 7.8 12.57 8.52 8.8

IOCL 6.53 6.22 1.96 8.66 2.7

HPCL 8.12 4.25 -5.8 8.45 3.95

BPCL 13.54 5.83 1.16 15.41 7.06

The ROA data echoes the pattern seen in the ROE analysis. ONGC and Oil India show a relatively stable and healthy return on assets, indicating consistent operational efficiency. On the other hand, the downstream companies (IOCL, HPCL, and BPCL) experienced significant drops, with HPCL even dipping into negative territory in 2022-23. The dramatic fluctuations in their ROA demonstrate that their asset utilization and profitability are highly susceptible to changes in global oil prices and government-mandated price controls, which can force them to absorb costs and operate at a loss.

Earnings and Shareholder Value

Earnings Per Share (EPS)

Earnings Per Share (EPS) is a metric that shows the portion of a company's profit allocated to each outstanding share of common stock. It is a key indicator of a company's profitability on a per-share basis.

Table: Earnings Per Share

Company 2020-2021 2021-2022 2022-2023 2023-2024 2024-2025

ONGC 8.94 32.04 30.86 32.21 28.31

Oil India 16.06 35.85 62.8 51.2 37.59

IOCL 23.78 26.34 5.98 28.77 9.41

HPCL 70.57 44.94 -63.26 103.58 34.61

BPCL 96.44 41.31 8.78 125.21 31.07

The EPS data provides the most direct view of the companies' profitability per share. ONGC and Oil India demonstrate a reliable, positive trend, with ONGC's EPS remaining consistently stable. In contrast, the EPS of IOCL, HPCL, and BPCL has been highly erratic. HPCL's negative EPS in 2022-23 points to a period of severe financial distress, while the dramatic rebounds in the following year underscore a business model with extreme risk and reward.

Dividend Payout Ratio

The dividend payout ratio measures the percentage of a company's profits that are distributed to shareholders as dividends. It reflects a company's commitment to returning value to its investors versus retaining earnings for reinvestment.

Table: Dividend Payout Ratio

Company 2020-2021 2021-2022 2022-2023 2023-2024 2024-2025

ONGC 19.57 28.4 45.35 31.81 47.69

Oil India 31.75 29.98 23.08 34.18 0

IOCL 44.14 39.86 40.1 27.8 74.37

HPCL 23.92 167.83 69.59 20.33 50.65

BPCL 0.66 0.65 0.64 0.63 0.62

The dividend payout data reveals distinct corporate strategies. ONGC and IOCL have shown a clear commitment to increasing shareholder returns, with their payout ratios trending upwards, particularly in the most recent year for IOCL. HPCL's payout ratio, however, shows a major red flag; the ratio of 167.83% in 2021-22 signifies that the company paid out significantly more in dividends than it earned in profits, a financially unsustainable practice that can be a sign of internal strain. In contrast, BPCL has maintained a consistently low payout ratio, indicating a conservative strategy of reinvesting most of its profits back into the company rather than distributing them to shareholders.

7. Advantages and Disadvantages

Advantages

- Clarifies which firms have sustainable business models
- Supports long-term planning, portfolio balancing
- Identifies both risk and opportunity objectively

Disadvantages

- Misses short-term moves and market sentiment
- Relies on published, past data
- Cannot capture qualitative, strategic management factors

8. Findings

The financial analysis reveals a clear and consistent dichotomy between the performance of upstream and downstream petroleum companies in India. This fundamental difference in their business models is the primary driver of the observed disparities in their financial health and risk profiles.

Upstream companies like ONGC and Oil India, whose core business is the exploration and production of crude oil and natural gas, operate with a degree of stability not seen in their downstream counterparts. They are asset-rich and their revenue is tied to the volume of their production. While still subject to global commodity prices, their control over the supply side of the value chain provides a buffer against the immediate price shocks that affect marketing margins. This is reflected in their stronger liquidity metrics (higher current and quick ratios) and their more consistent profitability and earnings per share. Their strategic focus is on long-term exploration projects and resource development, which provides a more predictable revenue stream and allows for more stable financial planning.

In stark contrast, downstream companies—IOCL, BPCL, and HPCL—are primarily focused on refining, marketing, and distribution. Their business model is a high-volume, low-margin operation that places them directly at the nexus of volatile global crude oil prices and government mandated price controls on domestic fuels. When global crude prices soar, these companies are often compelled to absorb a significant portion of the cost to prevent a sharp increase in retail fuel prices for consumers. This effectively transforms their business into a public service, severely squeezing their profit margins, as evidenced by the periods of low profitability and negative earnings, particularly in 2022-23. The wild swings in their Return on Equity (ROE) and Earnings

Per Share (EPS) are not a reflection of poor management but rather a direct barometer of the external pressures they face. Their poor liquidity ratios are a consequence of this dynamic, as they are left with insufficient liquid assets to cover liabilities when their profit margins are being eroded.

The analysis of these companies, therefore, reveals a "volatility paradox" where the financial performance of the downstream players is more a function of external, uncontrollable factors global oil prices, foreign exchange rates, and government policy—than it is of internal operational efficiency.

9. Applications Recommendations and Conclusion

Applications for Investors

The findings of this report provide a clear roadmap for investors seeking to navigate the Indian petroleum sector. The primary application of this analysis is in helping investors distinguish between the different risk profiles of upstream and downstream companies. Instead of viewing the sector as a monolith, investors should recognize that a significant divergence in financial stability and performance exists. The study emphasizes the importance of looking beyond a single year's profitability and examining trends in liquidity, efficiency, and shareholder value over a multi-year period to assess a company's true financial health. It also underscores the necessity of monitoring external factors, such as government policy and global energy price trends, as they are the dominant drivers of performance for a significant portion of the sector.

Recommendations

Based on the comprehensive fundamental analysis, the following recommendations are offered to potential investors:

- **For the Conservative Investor (ONGC & Oil India):** For investors seeking stability, reliable dividends, and a more predictable risk profile, ONGC and Oil India are the more suitable options. These companies have demonstrated stronger liquidity, more consistent profitability, and a stable earnings trajectory. Their position at the top of the value chain insulates them from the immediate pressures faced by marketing and refining companies,

making them a more secure long-term investment.

- **For the Aggressive Investor (IOCL, BPCL, & HPCL):** Investment in these companies is a higher-risk, high-reward proposition. While they have shown the potential for massive returns during periods of favorable global oil prices and supportive government policies, they also carry the risk of significant losses and a high degree of financial volatility. Their future success is not only tied to the global energy market but also to the successful execution of their strategic pivot towards cleaner energy sources.
- **Overall:** ONGC stands out as the best long-term investment choice among the selected petroleum stocks. Its strong profitability, consistent dividend payouts, expanding renewable energy portfolio, and resilience in both upstream and downstream operations position it as a fundamentally strong stock. Its gradual shift towards green energy further enhances its attractiveness for long-term investors.

Conclusion

This study reaffirms that fundamental analysis is an indispensable tool for making informed, rational investment decisions in the petroleum industry. The analysis has uncovered a clear bifurcation within the Indian petroleum sector, with upstream companies exhibiting greater stability and downstream companies operating in a highly volatile, external-factor-driven environment. While the entire sector is at a crossroads, balancing its traditional role with the imperative of a cleaner energy transition, the strategic investments being made in renewables demonstrate a forward-looking approach. The long-term viability of these companies will ultimately depend on their ability to manage global commodity price volatility and successfully transition their business models to meet the demands of a changing energy landscape.

10. Acknowledgment

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A STUDY OF ANALYSING RISK AND RETURN OF SELECTED INDIAN BANKING STOCKS

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Abstract

This study evaluates the risk and return performance of selected stocks of Indian banks Canara Bank, Indian Bank, South Indian Bank, Indian Overseas Bank, HDFC Bank, IDBI Bank, and ICICI Bank, listed on the National Stock Exchange (NSE). Using historical stock prices over a 5-year period, the analysis computes key financial metrics such as Annual Rate of Return (ARR), Average ARR, Total ARR, Compounded Annual Growth Rate (CAGR), and Beta. The paper applies standard risk-return models to assess differences across public and private sector banks. Findings highlight the relative efficiency, stability, and performance patterns of the banking sector, with implications for investors and policymakers.

Keywords: Risk and Return, Capital Market, Indian Banking Stocks, Stock Return.

1. Introduction

The Indian banking sector is one of the largest and most dynamic in the world, comprising both public and private sector institutions. Banks play a crucial role in mobilizing savings, facilitating investments, and maintaining financial stability. With increasing globalization and technological adoption, banks face both opportunities and risks.

The capital market plays a vital role in the economic development of any country. It provides a platform for individuals, companies, and governments to raise long-term funds and invest in productive activities. In this blog, we explain what a capital market is, its types, key features, functions, and its importance in the Indian financial ecosystem.

A capital market is a financial market where buyers and sellers trade long-term financial instruments like stocks, bonds, debentures, and other securities. It facilitates the movement of capital from savers to businesses or institutions that need funds for long-term investments.

The National Stock Exchange (NSE), established in 1992, provides a transparent and technology-driven platform for trading bank equities. Stock performance of banks on NSE reflects not only their internal efficiency but also market confidence and macroeconomic conditions. Studying the risk and return profile of bank equities helps investors evaluate where to allocate capital, while offering regulators insights into systemic risk.

This paper examines seven major banks Canara Bank, Indian Bank, South Indian Bank, Indian Overseas Bank, HDFC Bank, IDBI Bank, and ICICI Bank representing both public and private sector ownership.

2. Theoretical Study And Literature Review

2.1 Theoretical Study

This is the study about the risk and return about each bank stock and market stock price. In this study the concept are covered based on:

- Return
- Risk
- Risk management
- Types of risk

Where we can get know about all the above concept of the stock and market of all the banks and NSE market stock that is Nifty 50

2.2 Literature Review

Previous studies on risk and return in banking reveal a consistent relationship between volatility and expected returns. The Capital Asset Pricing Model (CAPM) provides a standard approach to measuring systematic risk (beta) relative to market performance.

Andrew Worthington And Helen Higgs (2017) analysis the risk, Return and checks prospects for portfolio

diversification between major paintings and financial markets in the period of 1976–2001. They have included diversification benefits only art works with contemporary masters, 19th century European, old masters and are possible the 20th century English paintings dominate the skilled border during the period.

Dr. Purnaima S And Swagitha P (2018) analyzed the relationship between risk and return of 10 selected companies. These ten companies are selected from 2 differently sector ie automobiles and IT sectors, which are listed on NSE. Like equipment average returns, SDs and CAPM models are used to analyze.

Dr. Subramaniam P And Dr. Nalla Bala Kalyan (2018) analyzed returns and risk assessment of equity purchased from secondary market for ten separate companies for a period of one month. Tools and techniques used in this research Beta is co efficient of expected return and variation. they emphasizes that there are scrip prices in relation to the market rapid rash, although it is difficult observe a pattern for price movements but efforts have been used fundamental analysis and technical analysis.

Dr. Ratna Sinha(2013) conducted a study on the risk and withdrawal analysis in equity investment in banking sector. Study tries to conduct a comparative study banking equity performance with two other major areas such as IT and Real. In to study, he samplines eight banking companies listed Indian stock market. The major equipment used for analysis is beta, alpha, variance, standard deviation and correlation. And the study shows that no one is important relations of return between banking and non-banking equity.

3. Research Methodology

3.1 Problem Statement

Severe global shutdowns and recession resulted in instability stock market. There is no proper structure for investors to analyze shares and investors' risk profiles are also not known risk evaluation and return of stock.

3.2 Objective

To study about the risk and withdrawal of share prices in the banking sector HDFC Bank, IDBI Bank, Indian Overseas Bank, South Indian Bank, ICICI Bank, Indian Bank, Canara Bank.

3.3 Research Design

The study adopts a descriptive research design.

- Data Source: Historical stock prices of the seven banks obtained from the NSE database (covering a 5-year period).
- Tools Used: Microsoft Excel for calculation of returns, CAGR, and Beta through regression analysis.
- Measures:
 - Annual Rate of Return (ARR)(Stock Return): Measures yearly gain/loss in stock price.
 - Average Rate of Return (Mean): Mean of annual returns across the sample years.
 - Total Return (TARR): Sum of annual returns across 5 years.
 - Compounded Annual Growth Rate (CAGR): Growth rate of stock over the period.
 - Beta (β): Measures systematic risk against the NIFTY 50 benchmark.
 - Correlation between private and built banks
- Canara Bank: A public sector bank founded in 1906 in Mangalore, nationalized in 1969, and headquartered in Bengaluru, with international offices in London, Dubai, and New York.
- Indian Bank: Established in 1907 and headquartered in Chennai, this public sector bank has been owned by the Indian government since 1969.
- Indian Overseas Bank: Founded in 1937 in Chennai, this public sector bank also has its headquarters in Tamil Nadu's capital.
- IDBI Bank: Established in 1964, IDBI Bank provides financial and banking services and previously served as a development financial institution.
- HDFC Bank: A leading private sector bank by assets, with its headquarters in Mumbai and a significant presence in India's financial sector.

- ICICI Bank: A prominent private sector bank offering a wide array of financial services, with a large network of branches and ATMs across India.
- South Indian Bank: A private sector bank, founded in 1929, with its headquarters in Thrissur, Kerala.

Formulas:

1. $ARR = [P_t - (P_{t-1})] / (P_{t-1}) \times 100$
2. $AARR = n \Sigma ARR / N$
3. $TARR = \Sigma ARR$
4. $CAGR = (P_{end} / P_{star})^{1/N} - 1$
5. $\beta = Cov(R_i, R_m) / Var(R_m)$
6. $STD\ DEVIATION = \sqrt{DEVIATION}$
7. $COVERIA\ N\ CE = (X_1 - \bar{X}) * (Y_1 - \bar{Y}) / N - 1$ OR $COR\ CO\ VAR (STOCK\ RETURN, MARKET\ RETURN\ (IN\ EXCEL))$
8. $CORRELATION = n \Sigma XY - \Sigma X \Sigma Y / (n \Sigma X^2 - (\Sigma X)^2 * (n \Sigma Y^2 - (\Sigma Y)^2))$

3.4 Tools Statiistics

- Beta
- Coefficient of variation
- Variance
- Standard Deviation
- Sample Mean
- Rate of Return

3.5 Limitation

This study is basically for 5 years of data. So, any differences seen before and after the period of 5 years is not be considered.

4 Data Analysis And Inerpretation

4.1 Data Table ARR (for all bank)

Year↓ / ARR →	ARR (%) South India n Bank	ARR (%) Indian Bank	ARR (%) Indian Overse as Bank	ARR (%) IDBI	ARR (%) ICICI	ARR (%) Canara Bank	ARR (%) HDFC
2020	-13.85	-17.18	4.90	-7.99	1.79	-36.37	17.12
2021	7.26	57.84	90.19	67.39	37.83	51.51	6.40
2022	110.1	82.09	49.77	12.66	12.95	31.74	9.59
2023	48.40	38.11	52.19	29.12	19.81	43.96	6.6
2024	-21.52	6.23	5.42	-11.68	24.63	3.86	21.21

4.2 Risk–Return Analysis

Total Return

$$\text{Total Return} = [(X - Y) / Y] \times 100$$

Average Annual Rate of Return (ARR)

$$\text{Average ARR} = (-A + B + C + D + E) / N$$

Compound Annual Growth Rate (CAGR)

$$\text{CAGR} = [(X / Y)^{1/N}] - 1$$

4.3 Risk Analysis (Variance & Standard Deviation)

Year↓/Sqr deviation →	Sqr deviation on South Indian Bank	Sqr deviation on Indian Bank	Sqr deviation on Indian Overseas Bank	Sqr deviation IDBI	Sqr deviation ICICI	Sqr deviation Canara Bank	Sqr deviation HDFC
2020	1594	2560	1295.2	670.4	324	3015.1	17.14
2021	354	596	2430	2449.3	325	1087	43
2022	7059	2369	78.89	27	46	174	11.52
2023	498	21	127.69	125	0	646	40.7
2024	2265	739	1248	875	23.33	215.4	67.74

Variance :

$$\text{Variance} = [\Sigma Q^2 / (N - 1)]$$

Standard Deviation :

$$\text{Standard Deviation} = \sqrt{\text{variance}}$$

4.4 Coparitive analysis of Beta and Correlation.

BANK	BETA
SOUTH INDIAN BAK	1.348
INDIAN BANK	1.668
INDIAN OVERSEAS BANK	1.0547
IDBI BANK	1.581
ICICI BANK	-0.1281
CANARA BANK	-0.0195
HDFC BANK	1.052

	<i>Canara return</i>	<i>Idbi return</i>	<i>Indian bank return</i>	<i>Indian overseas return</i>	<i>Icici return</i>	<i>south indian bank return</i>	<i>Hdfc return</i>
Canara return	1						
Idbi return	0.9998897 1	1					
Indian bank return		0.5674005 43 0.56813	1				
Indian oversea s return		0.5789777 04 0.58269	0.611266 7	1			
Icici return		0.3615899 11 0.36298		0.642993 50.19533 2941	1		
south indian bank return		0.6625335 89 0.66465		0.697867 90.69349 9269 0.3969		1	
Hdfc return		0.3733681 26 0.37633		0.494694 0.284162 727 0.7355		0.40360 8383	1

4.5 Prove Hypothesis

Ho: there is no significant relation between the public and private sector banks

H1: there is significant relation between the public and private sector banks Result: it is better to accept H1 and decline Ho, because there is significant relation between private and public sector banks.

5. Findings &Conclusions

Private sector banks (HDFC, ICICI) consistently outperformed public sector banks in terms of ARR, AARR, and CAGR.

Public sector banks exhibited higher volatility and weaker CAGR due to structural inefficiencies and higher NPAs.

Beta analysis confirmed that private banks were less risky and more aligned with market returns, while PSU banks showed greater fluctuations.

Investors seeking stable long-term growth may prefer private sector banks, while risk tolerant investors may explore PSU banks for potential high returns during favorable cycles.

This research concludes that risk and return dynamics in the Indian banking sector vary significantly across ownership structures. Private banks like HDFC and ICICI deliver superior risk-adjusted returns, while PSU banks show higher volatility and lower CAGR. However, with systemic reforms, public sector banks can improve their performance. For investors, understanding risk-return measures such as ARR, CAGR, and Beta is essential in making informed decisions. The findings reinforce the importance of continuous monitoring of banking stocks for sustainable investment strategies.

6.Suggestions

- For Investors: Diversify portfolios across both public and private sector banks to balance risk and return.

- For Public Sector Banks: Strengthen asset quality, reduce NPAs, and adopt technological advancements to improve investor confidence.
- For Policymakers: Enhance governance and recapitalization policies for PSU banks to make them more competitive.
- For Researchers: Extend the analysis by including more banks and comparing with global financial institutions for broader insights.
- Allocate a larger portion of equity portfolios to strong-performing private sector banks (HDFC, ICICI) for stable compounding returns.
- Consider selective investment in public sector banks (Canara, Indian Bank, IDBI, IOB) during economic upswings for tactical gains, but manage exposure carefully due to higher volatility.
- Regularly monitor Beta values and market conditions to rebalance portfolios.
- Investor to invest on the bank stock based on the results of correlation hypothesis of accepting h1

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8.Annexure

Calculation :

Stock Price Data

Calculation Tables

Charts and Graphs

Formulas Used (Excel reference)

- $ARR = (Price_t - Price_{t-1}) / Price_{t-1}$
- $CAGR = (End\ Price / Start\ Price)^{(1/n)} - 1$
- $Beta = covar(stock\ return, market\ return) / var(market\ return)$
- $CORRELATION = n\sum XY - \sum X\sum Y / (n\sum X^2 - (\sum X)^2)^{1/2} (n\sum Y^2 - (\sum Y)^2)^{1/2}$
- $Mean = (total\ return) / 5$

EVALUATING COST EFFICIENCY AND PRODUCT PERFORMANCE IN SHIVA IRRIGATION SYSTEM: A DECISION-MAKING APPROACH

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Abstract

This research paper looks at cost efficiency and product performance for Shiva Irrigation System, a top manufacturer in India's irrigation industry. The study uses ratio analysis to examine ten product categories over the last five years. It focuses on important financial and operational indicators such as net profit ratio, gross profit ratio, prime cost ratio, and trend analysis for sales and cost of goods sold. The findings show significant differences in profitability and efficiency among product lines. Micro Rain Pipe and Polyvinyl Chloride Pipes have strong sales growth, but their rising costs pose a threat to long-term margins. HDPE Pipes show high profitability but need stricter cost controls. The analysis pinpoints top performers and underperformers. It also offers specific recommendations for improvement, like cost reduction, product-specific process improvements, and better resource management. The study concludes that smart decision-making, based on thorough ratio analysis, is crucial for maintaining competitiveness and profitability in changing manufacturing environments.

Keywords: Cost efficiency, Product performance, Ratio analysis, Manufacturing industry, Irrigation product, Financial analysis, Operating efficiency, Trend analysis, Cost control.

1. Introduction

The manufacturing sector is a vital engine for economic growth and development, significantly contributing to India's gross domestic product and employment landscape. In recent years, the industry has experienced steady advancements, propelled by innovations in technology, automation, and digital transformation, all of which are essential for staying competitive in a dynamic global market. Within this context, the irrigation products manufacturing industry plays a crucial role in supporting sustainable agriculture, efficient water management, and rural prosperity.

Shiva Irrigation System, an established manufacturer of agricultural and micro-irrigation products with a diverse portfolio including PVC pipes, HDPE pipes, water tanks, and related accessories, exemplifies the sector's ongoing evolution. The company's mission emphasizes the delivery of high-quality, cost-effective solutions that empower farmers and agricultural communities while contributing to national food security and environmental sustainability. However, with intensifying market competition, rising input costs, and the need for resource efficiency, it becomes imperative for firms like Shiva Irrigation System to maintain a delicate balance between cost reduction and sustained product performance.

This research seeks to evaluate cost efficiency and product performance across Shiva Irrigation System's ten major product categories by leveraging ratio analysis as the primary investigative tool. The findings aim to provide actionable insights for managers, aiding in strategic decision making regarding pricing, resource allocation, production practices, and long-term competitiveness in the Indian manufacturing landscape.

2. Review of Literature

(Danijela Baric, 2024): This review paper carefully examined the efficacy evaluation of lithium-ion batteries (LIBs) within electric vehicles (EVs) employing multi-criteria decision-making (MCDM) methods along with the cost-benefit analysis (CBA). LIB application in transportation was assessed for justification and efficiency since it focused on multi and single-criteria evaluations. The methodology involved the thorough literature search within major scientific databases such as Web of Science plus Scopus. During this search, keywords like "lithium-ion batteries," "multi-criteria decision-making," and "cost-benefit analysis" were utilized. A total of 40 scientific articles published between 1997 and 2023 were analysed. The findings showed that MCDM methods appeared in 80% of the reviewed studies. AHP and TOPSIS were the most commonly used MCDM techniques, each accounting for 17.6% of cases, while CBA made up 20% of the assessments. CBA mainly focused on improving battery technology, energy storage systems, and recycling LIBs. In contrast, MCDM methods had a wider use in areas like EV charging station site selection, energy storage system evaluation, hazardous risk assessment, and material supply chain analysis for LIBs. Research in this field saw a notable increase from 2013 to 2023, with most studies coming from Asian countries, especially China.

(Foivos Psarommatis, 2024): In this paper, "A Dynamic Cost Estimation of Key Performance Indicators in Manufacturing," key performance indicators (KPIs) such as resource use, production efficiency, product-process quality, environmental impact, and inventory form a continuous, real-time cost function in batch order-based manufacturing

environments. The main goal is to help decision-making by turning operations management data into dynamic financial cost models, creating a shared language across engineering, management, and finance departments. Their approach includes a cost model framework that combines operational costs, raw material costs, inventory costs, and environmental impact costs. This framework is supported by real time and historical data from industrial partners in tungsten metallurgy and electronic circuit manufacturing. The key finding is the successful creation of a near real-time cost formulation and prediction system that changes with adjustments. This system accurately captures both direct and indirect manufacturing costs, maintaining less than a 5% deviation from actual costs in industrial applications. Ultimately, it helps in selecting the best manufacturing parameters to reduce defects and waste.

(Nuria Ramon, 2019): The paper, "Cross-benchmarking for performance evaluation: looking across best practices of different peer groups using DEA," by Ramón, Ruiz, and Sirvent (2019), presents a cross-benchmarking framework that enhances Data Envelopment Analysis (DEA). Its main goal is to help organizations assess their performance against multiple, carefully chosen reference sets. This gives managers a broader range of improvement targets based on different best practices. The methodology uses a step-by-step process and an algorithm to pick the best reference sets and create DEA-based models. These models aim to set the closest possible targets by reducing the L1-distance to efficient frontiers. An empirical example using data from 28 international airlines shows that cross-benchmarking can offer different insights into performance. It also helps identify specific areas for improvement, such as fuel, material, and capacity usage for airlines like NIPPON and TWA. Additionally, it aids in strategic planning by pointing out potential resource reallocations and trade-offs between inputs and outputs.

Objectives of the Study:

- To assess the cost efficiency of different products made by Shiva Irrigation System.
- To evaluate the performance of each product based on key financial and operational indicators.
- To provide suggestions for improving cost control and product performance.

3. Research Methodology

3.1 Statement of the problem

In today's competitive manufacturing environment, ensuring optimal cost efficiency while maintaining product performance is crucial for business sustainability. Shiva Irrigation System, which produces irrigation components, struggles to balance cost reduction and product quality. Without proper analysis tools, management may miss inefficiencies in cost allocation or issues with some product lines. This study aims to evaluate cost efficiency and product performance to help management make informed decisions.

3.2 Need for the study

- To identify cost-effective products and areas of inefficiency.
- To support decisions related to pricing, production, and resource allocation.
- To evaluate whether current manufacturing practices lead to optimal product performance.
- To help the company stay competitive by improving internal cost structures.

3.3 Scope of the Study

- The study focuses on Shiva Irrigation System and its current product lines.
- The analysis includes cost-related and performance-related data for a selected period, such as the last 5 years.
- Cost data includes material costs, labour costs, overheads, and more.
- The study does not consider external market factors or competitor performance.

3.4 Limitations of the Study:

- The study is limited to one company and may not reflect industry-wide conditions.
- The accuracy of the analysis depends on the reliability of the internal data provided.
- External economic or market variables are not included.
- The time frame and number of products analysed are limited for practical reasons.

3.5 Research Methodology

a) Research Design:

The study is descriptive and analytical. It describes current practices and analyses the efficiency of products.

b) Data Collection Methods:

Secondary Data: Company financial statements, cost sheets, production reports, and annual reports.

c) Tools and Techniques Used:

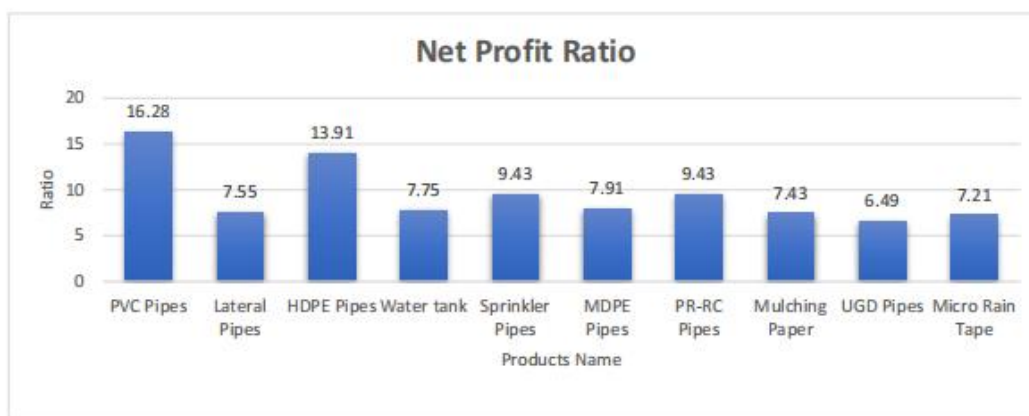
Ratio Analysis.

4. Data Analysis and Interpretation:

4.1 Net Profit Ratios:

The net profit ratio is used in this research paper to measure the overall profitability of each product after accounting for all expenses. It provides a clear comparison of financial performance across product lines, helping management identify top, moderate, and underperforming products for strategic decision-making and resource allocation.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Net Profit	16.28	7.55	13.91	7.75	9.43	7.91	9.43	7.43	6.49	7.21



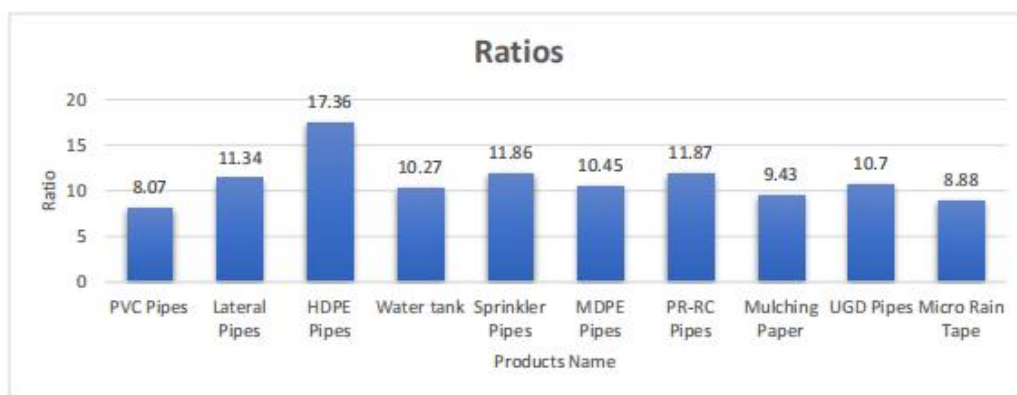
Interpretation

- Top Performers: PVC Pipes and HDPE Pipes → Highly profitable, should be prioritized.
- Moderate Performers: Sprinkler, PR-RC, MDPE, Water Tank, Lateral Pipes, Mulching Paper → Stable, but scope for improvement.
- Low Performers: Micro Rain Pipe and Polyvinyl Chloride Pipes → Weak profitability, may need cost reduction, price revision, or marketing push.

4.2. Gross Profit Ratio:

The gross profit ratio is used to evaluate the efficiency of production and cost control before accounting for operating and other indirect expenses. It measures the proportion of revenue remaining after deducting the cost of goods sold (COGS), indicating how well the company manages direct production costs relative to sales. This ratio helps identify product lines with strong manufacturing profitability and guides decisions to improve cost efficiency and pricing strategies.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Gross Profit Ratio	8.07	11.34	17.36	10.27	11.86	10.45	11.87	9.43	10.70	8.88



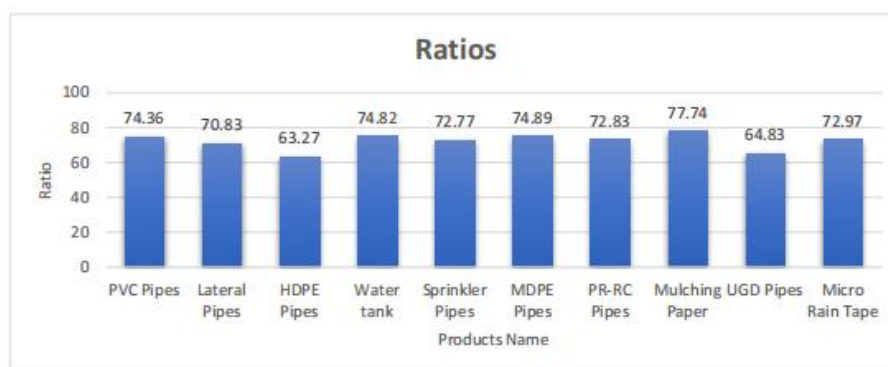
Interpretation

- **Best Performer:** HDPE Pipes (17.36%) has the highest gross profit ratio, showing excellent cost efficiency and profitability.
- **Moderate Performers:** PR-RC Pipes, Sprinkler Pipes, and Lateral & Emitting Pipes are strong; UGD, MDPE, and Water Tank are average.
- **Weak Performers:** Mulching Paper, Micro Rain Tape, and especially PVC Pipes (lowest at 8.07%) need improvement in cost control or sales margins.

4.3 Prime Cost Ratio:

The prime cost ratio is used in the research to evaluate the proportion of direct costs—such as raw materials and labour—relative to sales. It helps assess the efficiency of controlling production expenses and indicates how effectively a product's direct costs are managed to enhance profitability.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Prime Cost Ratio	74.36	70.83	63.27	74.82	72.77	74.89	72.83	77.74	64.83	72.97



Interpretation:

- **Most Efficient:** HDPE Pipes (63.27%) and Polyvinyl Chloride Pipes (64.83%) have the lowest prime cost ratios, meaning they manage direct costs very well.
- **Moderate Efficiency:** Lateral & Emitting Pipes, Sprinkler Pipes, PR-RC Pipes, and Micro Rain Pipe fall in the mid-

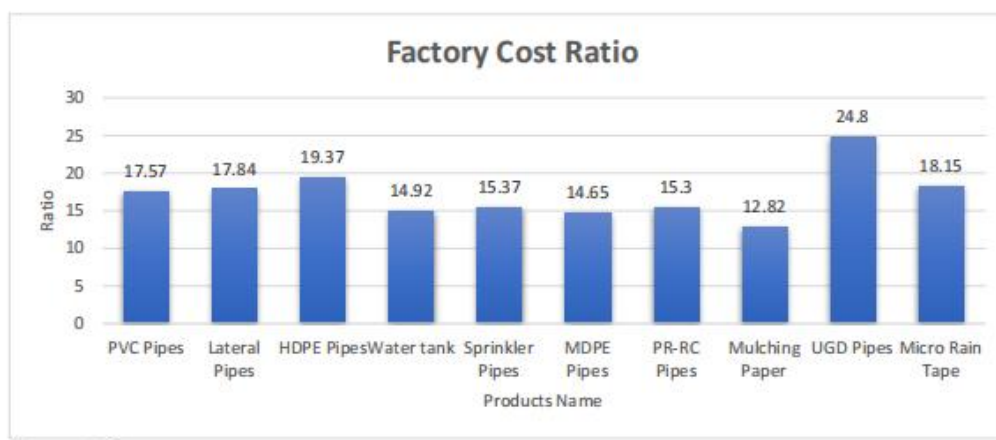
range, showing average cost control.

- Least Efficient: Mulching Paper (77.74%), MDPE Pipes, Water Tank, and PVC Pipes have high prime cost ratios, meaning higher expenses eat into profitability.

4.4 Factory Cost Ratio

The factory cost ratio is used to measure the proportion of factory overheads relative to sales. It helps assess how effectively a company controls its indirect production costs, indicating efficiency in managing manufacturing overhead expenses to improve overall cost control and profitability.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Factory Cost Ratio	17.57	17.84	19.37	14.92	15.37	14.65	15.30	12.82	24.48	18.15



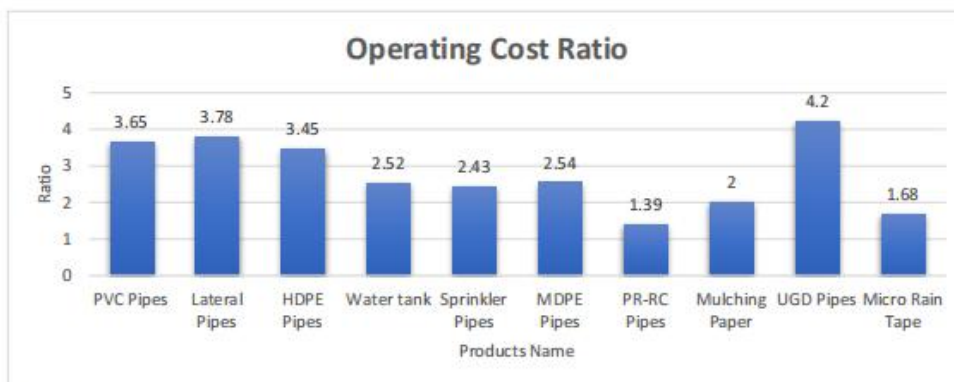
Interpretation:

- Most Efficient: Mulching Paper, MDPE Pipes, Water Tank, and PR-RC Pipes have the lowest factory cost ratios, showing strong control over production overheads.
- Moderate Efficiency: Sprinkler Pipes, PVC Pipes, Lateral & Emitting Pipes, and Micro Rain Pipe fall in the mid-range, with average cost efficiency.
- Least Efficient: HDPE Pipes and especially Polyvinyl Chloride Pipes (highest at 24.48%) have high factory cost ratios, indicating weaker cost control.

4.5 Operating Cost Ratio:

The operating cost ratio is used to measure the proportion of operating expenses—including administrative, selling, and distribution costs to sales. It helps evaluate how effectively a company controls its non-production expenses, which impacts overall profitability and cost management.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Operating Cost Ratio	3.65	3.78	3.45	2.52	2.43	2.54	1.39	2	4.20	1.68



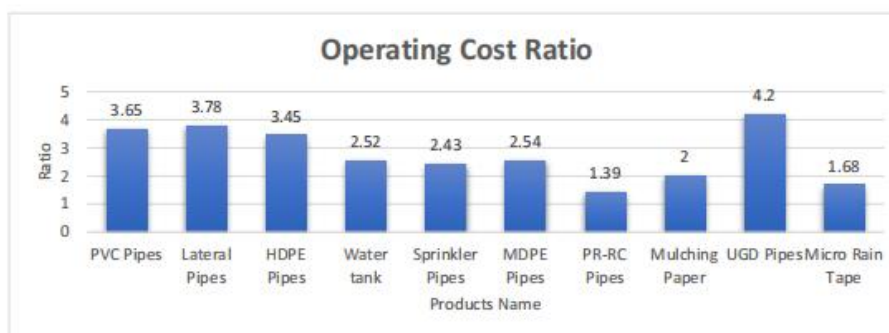
Interpretation:

- **Most Efficient:** PR-RC Pipes, Micro Rain Pipe, and Mulching Paper have the lowest operating cost ratios, showing excellent control over overheads.
- **Moderate Efficiency:** Sprinkler Pipes, Water Tank, and MDPE Pipes keep operating expenses at a reasonable level.
- **Least Efficient:** PVC Pipes, Lateral & Emitting Pipes, HDPE Pipes, and especially Polyvinyl Chloride Pipes (highest at 4.20%) face high operating costs, which reduce profitability.

4.6 Cost of Production Ratio:

The cost of production ratio is used to measure the total production cost as a percentage of sales. It helps evaluate how effectively a company manages overall production expenses, indicating the impact of production costs on profitability and guiding cost control.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Cost of Product ion ratio	91.93	88.66	82.64	89.73	88.14	89.55	88.13	90.58	89.30	91.12



Interpretation:

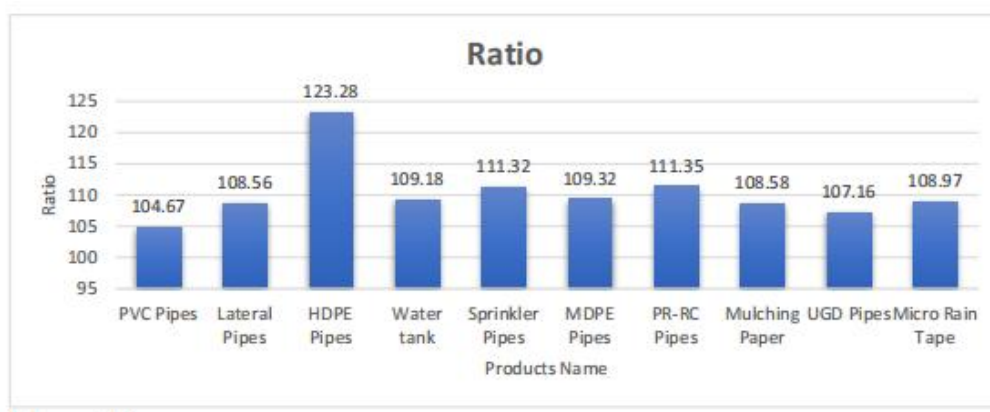
- **Most Efficient:** HDPE Pipes has the lowest cost of production (82.64%), followed by PR-RC Pipes, Sprinkler Pipes, and Lateral Pipes, showing strong cost control.
- **Moderate Efficiency:** Water Tank, MDPE Pipes, and UGD Pipes are in the middle range, with manageable production costs.
- **Least Efficient:** Mulching Paper, Micro Rain Tape, and especially PVC Pipes (highest at 91.93%) have high

production costs, leaving very little profit margin.

4.7 Cost to Revenue Ratio:

The cost to revenue ratio is used to assess how efficiently a company converts costs into revenues. A higher ratio indicates better cost management relative to sales, helping evaluate the overall cost-effectiveness and profitability of products.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR-RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Cost to Revenue Ratio	104.67	108.56	123.28	109.18	111.32	109.32	111.35	108.58	107.16	108.97



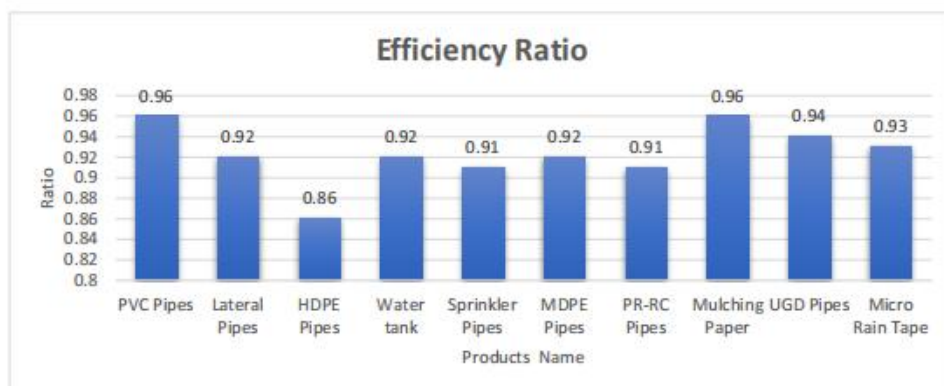
Interpretation:

- **Most Efficient:** PVC Pipes and UGD Pipes have the lowest cost-to-revenue ratios, meaning better cost management relative to sales.
- **Moderate Efficiency:** Lateral & Emitting Pipes, Mulching Paper, Micro Rain Tape, Water Tank, and MDPE Pipes fall in the mid-range, with manageable costs.
- **Least Efficient:** Sprinkler Pipes, PR-RC Pipes, and especially HDPE Pipes (highest at 123.28%) face high costs compared to revenue, reducing efficiency.

4.8 Efficiency Ratio:

The efficiency ratio is used to measure how effectively a company utilizes its resources by comparing total expenses to total revenue. A lower ratio indicates better efficiency, meaning the company generates higher revenue relative to its expenses, which is crucial for enhancing profitability and operational performance.

Product Name	PVC Pipes	Lateral Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR-RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Tape
Efficiency Ratio	0.96	0.92	0.86	0.92	0.91	0.92	0.91	0.96	0.94	0.93



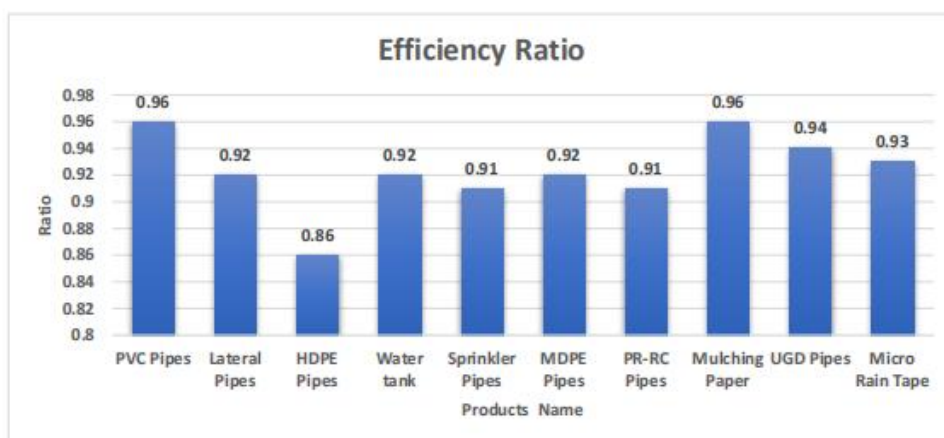
Interpretation:

- Top performers: PVC Pipes and Mulching Paper (0.96) → highly efficient and effective in using resources.
- Good performers UGD Pipes, Micro Rain Tape, Lateral/Water/MDPE Pipes, Sprinkler/PR-RC Pipes → generally efficient, stable products.
- Lowest performer: HDPE Pipes (0.86) → efficiency is noticeably lower; may require attention to improve cost-effectiveness or production processes.

4.9 Trend Analysis for sales:

The trend analysis for sales is used to measure the growth in sales over time, typically comparing current sales to previous periods. It helps assess how each product is performing in the market, indicating whether sales are increasing, stable, or declining, which informs strategic decisions on product focus, marketing, and resource allocation.

Product Name	PVC Pipes	Lateral Pipes	HDP E Pipes	Water tank	Sprinkle r Pipes	MDP E Pipes	PR RC Pipes	Mulchin g Paper	UGD Pipes	Micro Rain Tape
Trend Analysis Ratio	116.02	109.81	176.15	147.61	127.01	125.77	156.01	139.16	194.66	226.87



Interpretation:

- Top performers in sales growth: Micro Rain Pipe (226.87), UGD Pipes (194.66), HDPE Pipes (176.15), PR-RC Pipes (156.01) → these products have seen significant increase in sales over 5 years.
- Moderate performers: Water tank, Mulching Paper, Sprinkler Pipes, MDPE Pipes, PVC Pipes → sales are growing

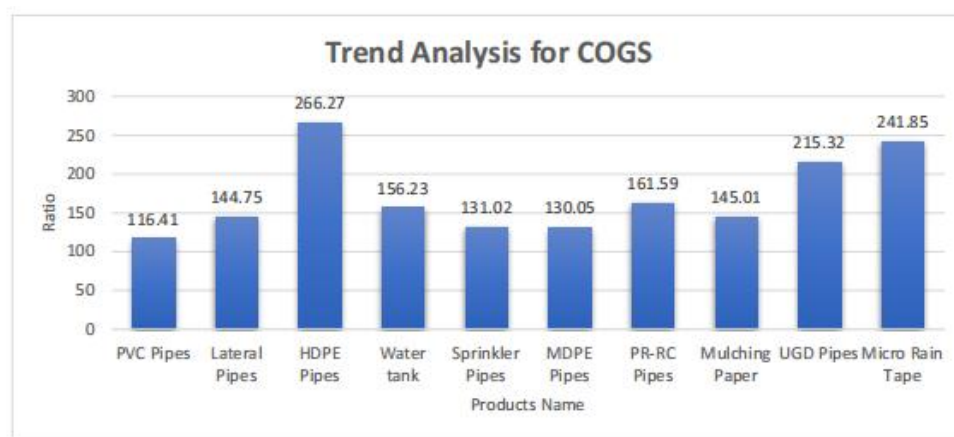
steadily but not extremely fast.

- Lowest growth: Lateral and Emitting Pipes (109.81) → sales have barely increased; may need marketing or product improvements.

4.10 Trend Analysis for COGS:

The trend analysis for Cost of Goods Sold (COGS) is used to track changes in production costs over time. It helps identify whether cost increases are aligned with sales growth or if rising costs may be putting pressure on profit margins. This analysis is crucial for assessing the sustainability of product profitability and guiding cost control measures.

Product Name	PVC Pipes	Lateral and Emitting Pipes	HDPE Pipes	Water tank	Sprinkler Pipes	MDPE Pipes	PR-RC Pipes	Mulching Paper	UGD Pipes	Micro Rain Pipe
Trend Analysis Ratio	116.41	144.75	266.27	156.23	131.02	130.05	161.59	145.01	215.32	241.85



Interpretation:

- Products with manageable cost growth: PVC Pipes, Sprinkler Pipes, MDPE Pipes → costs are increasing moderately.
- Products with high cost growth: Lateral and Emitting Pipes, Water tank, PR-RC Pipes, Mulching Paper → rising costs may pressure margins.
- Products with very high cost growth: HDPE Pipes, UGD Pipes, Micro Rain Tape → costs have risen drastically; even strong sales growth may be offset by high expenses.

5. Findings and Conclusion:

5.1 Findings

1.Profitability:

- PVC Pipes and HDPE Pipes show strong net profit performance, while Micro Rain Tape and UGD Pipes perform poorly in profitability.
- Gross Profit Ratios indicate that HDPE Pipes (17.36%) are the best performers, while PVC Pipes (8.07%) are the weakest.

2.Cost Efficiency:

- HDPE Pipes and UGD Pipes have the lowest Prime Cost Ratios, indicating good control over direct costs.
- Mulching Paper and PVC Pipes face higher prime cost ratios, which lowers profitability.

- Factory Cost Ratios show that Mulching Paper, MDPE, and Water Tank are the most efficient, while UGD Pipes have high production overheads.

3. Operating Costs:

- PR-RC Pipes, Micro Rain Tape, and Mulching Paper have the lowest operating cost ratios, reflecting effective expense control.
- UGD Pipes and PVC Pipes experience higher operating costs, which reduce efficiency.

4. Production & Revenue Balance:

- HDPE Pipes achieve the lowest Cost of Production Ratio, demonstrating strong cost management.
- PVC Pipes and Mulching Paper face high production costs, leaving little margin for profit.
- Cost to Revenue Ratios suggest that HDPE Pipes are least efficient at converting costs into revenue, while PVC and UGD Pipes are more balanced.

5. Efficiency and Growth Trends:

- PVC Pipes and Mulching Paper are the most efficient in resource use, with an Efficiency Ratio of 0.96.
- HDPE Pipes are the least efficient at 0.86, despite strong sales growth.
- Sales growth is highest in Micro Rain Pipe at 226.87 and UGD Pipes at 194.66.

5.2 Conclusion

The ratio analysis shows mixed performance across the 10 products of Shiva Irrigation System. Some products, like Micro Rain Tape and UGD Pipes, show strong market demand and sales growth, but their rising costs put long-term profitability at risk. On the other hand, HDPE Pipes are very profitable but suffer from inefficiencies because of uncontrolled cost growth. Products such as PVC Pipes and Mulching Paper face high production costs that hurt their competitiveness.

Overall, the findings highlight the need for decision-making to balance cost efficiency and sales growth. A focused strategy on cost optimization, market expansion, and process improvement will help the company boost profitability and ensure sustainable performance across its product portfolio.

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PERFORMANCE EVALUATION OF SELECTED MUTUAL FUND SCHEMES IN INDIA: A RISK RETURN ANALYSIS

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Abstract

This study examines the performance evaluation of selected Indian mutual fund schemes with a focus on risk and return analysis. Mutual funds are considered one of the most suitable investment avenues for the common investor, offering diversification, professional management, and accessibility to both domestic and international markets. The research highlights key performance metrics such as annual returns, Sharpe ratio, Treynor ratio, Jensen's ratio, beta, and correlation coefficient to assess the efficiency and profitability of six schemes from both public and private sector banks, namely ICICI, HDFC, SBI, Canara Robeco, Bank of Baroda, and Axis. Using secondary data from financial databases and research studies, the analysis investigates how fund size, interest rates, fund manager performance, and liquidity influence overall outcomes.

The findings indicate significant variations in returns and risk-adjusted performance across the selected schemes. Canara Robeco fund emerged as the strongest performer with the highest Sharpe and Treynor ratios, reflecting excellent risk-adjusted returns, while Bank of Baroda and SBI funds displayed relatively modest results. Correlation coefficient analysis showed a strong positive relationship among the schemes, suggesting consistent performance patterns in the sector. The study concludes that while past performance offers valuable insights, investors should not rely solely on historical data but adopt a comprehensive evaluation framework that considers risk, return, and market conditions. This approach provides a more reliable foundation for investment decisions in the dynamic Indian mutual fund landscape.

Keywords: Mutual Funds, Investment, Portfolio Management, Diversification, Risk and Return, Net Asset Value (NAV), Fund Manager, Performance Evaluation, Equity Funds, Balanced Funds, Growth-Oriented Schemes, Standard Deviation, Beta, Sharpe Ratio, Treynor Ratio, Jensen's Ratio, Correlation Coefficient, Market Volatility, Capital Gains, Liquidity, Transparency, Indian Banking Sector, ICICI Prudential Blue-chip Fund, HDFC Top 100 Fund, SBI Long Term Equity Fund, Canara Robeco Fund, Bank of Baroda Fund, Axis Blue-chip Fund.

1. Introduction

A mutual fund is a collection of funds managed by a trust that invests the savings of several participants who have similar financial objectives, such as dividend income and capital growth. The funds so obtained are thereafter used to purchase shares, debentures, and foreign exchange. When investors make an investment, they receive units based on the unit value, or NAV (Net Assets Value). The best investment for the average person is a mutual fund, which gives them access to diversified portfolio management, a strong research team, and professionally managed Indian and international stocks. The fund manager's primary goal is to purchase stocks that are undervalued and will increase in value over time, at which point they will sell them. Fund managers focus on the trade off between risk and return, trying to diversify their portfolios to minimize risk and maximize profit. The mutual fund unit's lowest cost is one of its most prevalent attributes.

2. Review of Literature:

1. Dr. Shantanu Mehta (2012)

Dr. Shantanu Mehta (2012): In the study "Preference of investors for Indian mutual funds and its performance evaluation," the researcher suggested that investors can plan on mutual funds that include multiple schemes, such as one on equity funds, one on balanced type, and third on other vis-versa. This can help investors spread their funds, minimize risk, and produce exceptional returns for the client. He additionally suggested that, in addition to NAV, numbers for correlation, standard deviation, beta, Sharpe ratio, and other metrics be taken seriously while analyzing schemes..

2. Dr. Vikas Choudhary and Preeti Sehgal Chawal (2014)

Dr. Vikas Choudhary and Preeti Sehgal Chawal (2014) look at the performance of a growth-oriented equity diversified scheme using an array of financial examinations, such as average return, beta, standard deviation, Treynor ratio, Sharpe ratio, and coefficient of determination, in order to evaluate risk and return. Having a beta of less than one and a positive coefficient of determination, the selected fund as a whole looked to be more secure than the portfolio of the market. The pick of seven funds suggested more diversity given that they were all exceptionally near one another. Seven out of the eight funds that were picked did better if both the Treynor and Sharpe ratios was used.

3. Sireesha Nanduri (2021)

In her research paper "A Study on Performance Evaluation of Equity Mutual Fund Scheme," Sireesha Nanduri (2021) aims to look into the various inputs and output variables that impact the performance of certain equity mutual funds, both small and large capital. Evaluate the effectiveness of the mutual funds you selected are. Analyse the selected mutual fund schemes' performance variance under constant returns to scale and tools. Convenience sampling, chi-square testing, and secondary data as research methods

4. Rangarajan and P. Madhav (2016)

Rangarajan and P. Madhav (2016): analyzed the performance of the selected schemes from March 2–12, 2016, and used the Sharpe and Treynor model to assess the market volatility and risk-return mix of the selected mutual fund. The profitability of thirty equity schemes with open-ended diversification is investigated by the author. The shares of the Reliance Regular Preservation Fund, SBI Contra Fund, and HDFC Equity Fund performed. It came out that the Sharpe ratio was positive for every picked scheme.

Research Gap

There is minimal research on the factors that affect risk and return across categories and equities mutual funds. The studies that are offered offer useful data on the performance of mutual funds and variables influencing investments in India. Forming more informed choices as an investor may result from having been aware of these competing viewpoints.

3. Research Methodology

Statement of the problem

The study analyses the performance of stocks mutual funds in order to assist investors in choosing options that reflect goals and risk tolerance. Despite being a popular investment vehicle offering diversification and professional management, mutual funds face several challenges that can affect investor confidence and overall performance. The main problems include:

1. Many mutual funds do not provide real-time data or clear insights into portfolio holdings, fees, and fund manager decisions. This lack of transparency makes it difficult for investors to fully understand where their money is going.
2. Mutual funds are subject to market risks. A downturn in the market can lead to capital losses, especially in sector-specific or aggressive growth funds.
3. Active mutual funds rely heavily on the expertise of fund managers. A poorly managed fund can lead to substantial losses for investors.
4. Investors may be unaware of capital gains taxes or how dividend distributions are taxed, which can affect net returns.

Objectives of the Study:

1. To understand mutual fund performance evaluation in selected Indian companies.
2. To identify and analyse the factor influencing on mutual fund performance evaluation.

Ho¹: There is no significance relationship between mutual fund and size of the company

H₁¹: There is the significance relationship between mutual fund size of the company

Ho²: There is no significance relationship between mutual fund and interest rates of company

H₁²: There is the significance relationship between mutual fund and interest rates of company

Ho³: There is no significance relationship between mutual fund and Fund Manager performance.

H₁³: There is the significance relationship between mutual fund and Fund Manager performance.

Ho⁴: There is no significance relationship between mutual fund and Liquidity of the company

H₁⁴: There is the significance relationship between mutual fund and Liquidity of the company.

Source of data collection:

Secondary data is taken from websites, Yahoo Finance, Text book previous research papers, Etc...

Sample size:

There are 44 registered asset management companies in India. I have selected 6 schemes.

1. State Bank of India
2. Canara Robeco
3. ICICI Bank
4. HDFC Bank
5. Axis Bank
6. Baroda

I have chosen 3 public sector bank and private sector bank on the basis of market capitalization method

4. Sampling Techniques

Correlation Coefficient:

The correlation coefficient measures two variables' connection. It measures the data measure relationship's strength. Formulae provide a number between -1 and 1, with -1 indicating a negative correlation and +1 a positive correlation.

When two values are correlated, the correlation coefficient is positive; when they are not, it is negative.

$$\bar{X} = \frac{\sum X}{N}$$

N

Where, $\sum X$ = Sum of return

N = Number of schemes

$$\bar{Y} = \frac{\sum Y}{N}$$

N

Where, $\sum XY$ = Sum of risk

N = Number of schemes

$$r = \frac{\sum XY}{\sqrt{\sum X^2 \times \sum Y^2}}$$

$$\sqrt{\sum X^2 \times \sum Y^2}$$

where, $\bar{X} = \frac{\sum X}{N}$

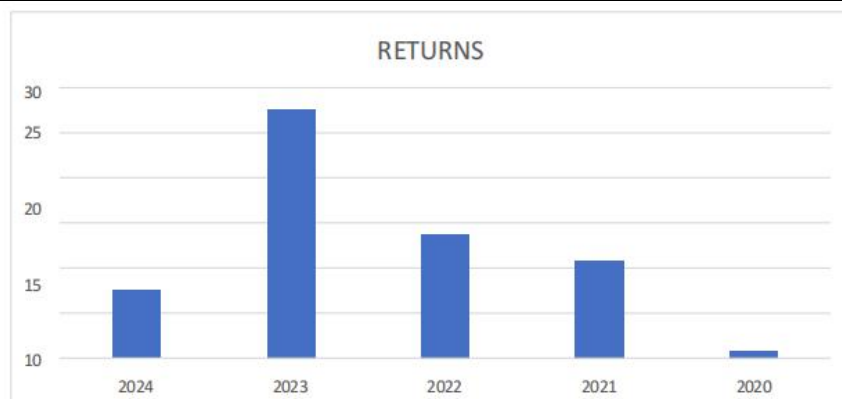
$$X - \bar{X}$$

$\bar{X}$ = Mean of return

$\bar{Y}$ = Mean of risk

1.1 Fund performance for ICICI's blue-chip prudential index each year

Sl No	Year	Returns
1	2024	7.53
2	2023	27.63
3	2022	13.71
4	2021	10.83
5	2020	0.78



4.1 graph showing annual returns of ICICI prudential blue-chip fund

Analysis

We can observe that during the year in 2023 ICICI Prudential blue-chip fund has gained more profit of 27.63 and this fund has less return of 0.78 compared to overall 5 years.

4.2 Table showing calculation of average returns of selected mutual funds

Scheme Name	2024	2023	2022	2021	2020	Average returns
ICICI Prudential blue chip fund	7.53	27.63	13.71	10.83	0.78	12.096
HDFC Top 100 fund	11.27	27.73	6.09	7.99	1.54	10.924
SBI long term equity fund	7.58	29.81	19.21	4.55	-7.22	10.786
Canara roboeco	8.37	33.28	16.23	13.92	-2.21	13.918
Bank of Baroda	4.24	27.21	14.74	8.66	-1.38	10.69
Axis blue-chip fund	-4.62	20.86	21.06	20.47	8.98	13.35

Sharpe Ratio

Sharpe's Ratio = $(R_p - R_f) / SD(P)$

SD(P)

1) Icici Prudential Blue-Chip Fund

$R_p = 12.09$

$R_f = 6.25$ $SD = \sqrt{13.48} = 3.68$

Sharpe's Ratio = $(12.09 - 6.25) / 3.68$

$= 1.68$

$= \sqrt{12.09} = 3.48$

Interpretation: The ICICI fund has a Sharpe ratio of 1.68, indicating good risk adjusted returns.

2) Hdfc Top 100 Fund

$R_p = 10.92$

$R_f = 6.25$ $SD = \sqrt{13.48} = 3.68$

$$SD = 3.30 = \sqrt{10.92}$$

$$\text{Sharpe's Ratio} = (10.92 - 6.25) = 3.30$$

$$3.30$$

$$= 1.41$$

Interpretation: HDFC Sharpe's ratio is 1.41, lower risk adjusted returns compared to ICICI.

3) Sbi Long Term Equity Fund

$$R_p = 10.78$$

$$R_f = 6.25$$

$$SD = 3.28 \quad SD = \sqrt{10.78}$$

$$\text{Sharpe's Ratio} = (10.78 - 6.25) = 3.28$$

$$3.28$$

$$= 1.38$$

Interpretation: SBI Sharpe ratio of 1.38 is slightly lower, indicating moderate performance in terms of risk adjusted returns.

4) Canara Robeco Fund

$$R_p = 13.92$$

$$R_f = 6.25 \quad SD = \sqrt{13.92}$$

$$SD = 3.73 = 3.73$$

$$\text{Sharpe's Ratio} = (13.92 - 6.25)$$

$$3.73$$

$$= 2.06$$

Interpretation: Canara fund has the highest Sharpe ratio of 2.06 indicating excellent risk adjusted returns and is the best performer.

5) Bank of Baroda Fund

$$R_p = 10.69 \quad SD = \sqrt{10.69}$$

$$R_f = 6.25 = 3.27$$

$$SD = 3.27$$

$$\text{Sharpe's Ratio} = (10.69 - 6.25)$$

$$3.27$$

$$= 1.36$$

Interpretation: The Bank of Baroda fund has a Sharpe ratio of 1.36, suggesting average risk adjusted returns.

6) Axis Blue-Chip Fund

$$R_p = 13.35 \quad SD = \sqrt{13.35}$$

$$R_f = 6.25$$

$$SD = 3.65 = 3.65$$

$$\text{Sharpe's Ratio} = (13.35 - 6.25)$$

$$3.65$$

$$= 1.94$$

Interpretation: Axis blue chip has a strong Sharpe ratio of 1.94, indicating high risk adjusted returns.

4.3 Table showing rank schemes based on Sharpe's ratio

Schemes	Sharpe ratio	Rank
ICICI Prudential Blue-chip fund	1.68	3
HDFC Top 100 fund	1.41	4
SBI Long Term equity fund	1.38	5
Canara robeco fund	2.06	1
Bank of Baroda Fund	1.36	6
Axis Blue-chip fund	1.94	2

Interpretation: Risk and return may be compared using the Sharpe ratio. Sharpe ratios of 1.36 for bank of Baroda and 1.38 for SBI Long Term equity fund place them 6th and 5th, respectively, suggesting modest returns with minimal risk. With a ratio of 2.06, Canara robeco Fund has the best risk-to-reward potential of the 6 schemes considered.

4.4 Table showing calculation of average market returns of selected mutual funds

SCHEMES	2020	2021	2022	2023	2024	AVERAGE
ICICI Prudential Blue-chip fund	8.6	7.2	6.3	5.1	4.1	6.26
HDFC Top 100 fund	7.3	8.3	5.26	4.06	3.6	5.7
SBI Long Term equity fund	6.3	7.7	8.3	2.03	2.6	5.22
Canara robeco fund	8.31	9.68	10.06	11.01	6.01	9.01
Bank of Baroda Fund	10.01	10.08	11.01	12.08	10	10.63
Axis Blue-chip fund	8.06	11.01	12.61	6.63	4.01	3.46
Total						40.28

Calculation of beta formula

$$\beta = \frac{n \sum XY - \sum(x)(y)}{n \sum x^2 - \sum(x)^2}$$

SCHEMES	X	Y	x ²	y ²	XY
ICICI Prudential Blue-chip fund	12.096	7.2	6.3	5.1	4.1
HDFC Top 100 fund	10.924	8.3	5.26	4.06	3.6

SBI Long Term equity fund	10.786	7.7	8.3	2.03	2.6
Canara robeco fund	13.918	9.68	10.06	11.01	6.01
Bank of Baroda Fund	10.69	10.08	11.01	12.08	10
Axis Blue-chip fund	13.35	11.01	12.61	6.63	4.01
Total	71.76	40.28	868.17		485.76

$$\bar{X} = \sum X/N = 71.76/6 = 11.96$$

$$\bar{Y} = \sum Y/N = 40.28/6 = 6.71$$

$$S^2 = \frac{1}{N} \left(\sum X^2 - \frac{(\sum X)^2}{N} \right) = \frac{1}{6} \left(868.17 - \frac{(71.76)^2}{6} \right)$$

Interpretation: SBI Treynor's ratio of 8.08 is slightly lower indicating moderate risk adjusted performance.

1) CANARA ROBECO FUND

$$R_p = 13.92$$

$$R_f = 6.25$$

$$\text{Beta} = 0.54$$

$$\text{Treynor's Ratio} = (13.92 - 6.25)$$

$$0.54 = 14.20$$

Interpretation: Canara Robeco has the highest Treynor's ratio of 14.20 excellent risk adjusted returns relative to market risk

2) Bank of Baroda Fund

$$R_p = 10.69$$

$$R_f = 6.25$$

$$\text{Beta} = 0.54$$

$$\text{Treynor's ratio} = (10.69 - 6.25)$$

$$0.54 = 8.22$$

Interpretation: Bank of Baroda has a Treynor's ratio of 8.22 indicating moderate performance relative to market risk.

3) Axis Blue-Chip Fund

$$R_p = 13.35$$

$$R_f = 6.25$$

$$\text{Beta} = 0.57$$

$$\text{Treynor's Ratio} = (13.35 - 6.25)$$

$$0.57 = 12.45$$

Interpretation: Axis blue chip fund has a Treynor's ratio of 12.45 indicating strong risk adjusted performance

4.5 Table showing rank based on Jensen's ratio

Schemes	Jenson's Ratio	Rank
ICICI Prudential Blue-chip fund	5.63	3
HDFC Top 100 fund	4.46	4
SBI Long Termequity fund	4.32	5
Canara robeco fund	7.45	1
Bank of Baroda Fund	4.22	6
Axis Blue-chip fund	6.90	2

Interpretation: Jensen's ratio applies CAPM to evaluate portfolios. The Canara robeco fund has a high Jensen's ratio, whereas the SBI Long term equity fund and the Bank of Baroda fund frontline equities fund just make the top six

Correlation co-efficient

SI No	Schemes	X	Y	$\bar{x}$	$\bar{y}$	x^2	y^2	xy
1	ICICI Prudential Blue chip fund	12.09	3.48	0.14	0.03	0.01	0.0009	0.004
2	HDFC Top 100 fund	10.92	3.30	-1.03	-0.15	1.06	0.02	0.15
3	SBI Long Termequity fund	10.78	3.28	-1.17	-0.17	1.36	0.02	0.19
4	Canara robeco fund	13.92	3.73	1.97	0.28	3.88	0.07	0.55
5	Bank of Baroda Fund	10.69	3.27	-1.26	-0.18	1.58	0.03	0.22
6	Axis Blue-chip fund	13.35	3.65	1.4	0.2	1.96	0.04	0.28
		71.75	20.71			9.85	0.1809	1.394

4.5 Table showing Calculation of correlation co-efficient

$$\sum x = 71.75 = 11.95$$

$$N = 6$$

$$\sum \bar{x} = 20.71$$

$$\bar{\bar{x}} = 3.45$$

$$\bar{\bar{y}} = 10$$

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \times \sum (y - \bar{y})^2}}$$

$$= \frac{1.394}{\sqrt{9.85 \times 0.1809}}$$

$$= 1.394$$

$$\sqrt{9.85 \times 0.1809}$$

$$r = 1.0443 \text{ (very strong positive correlation)}$$

Interpretation: The outcome of the correlation coefficient indicates that the data is composed of many schemes and their related X and Y values. Statistical analysis is a part of computations. The average values of x and y are 11.95 and

3.45, respectively; the r value between X and Y is 1.0443.

5. Findings

1. After going bankrupt in 2024 and 2019 the ICICI Prudential blue-chip fund turned a profit in 2022 compared to the prior five years.
2. Returns for the HDFCTop 100 Fund were exceptional in 2023, average the next four years, and were dismal in 2021. This fund generates profits.
3. The SBI long-term equities fund crashed in 2020 after four consecutive strong years. The fund lost -7.22 percent in 2023, after a 29.81 percent gain the previous year.
4. There was a gain of 33.28 percent for the canara robeco fund in 2023, a loss of 2.21 percent in 2020, and a gain of 8.37 percent in 2024. While the fund had a rough year in 2020, the subsequent four years were quite successful.
5. After losing 1.38 in 2020, investors in the Bank of baroda equity fund should expect a return of 27.21 in 2023. Although 2020 wasn't a banner year, it was nevertheless profitable.
6. The Axis Blue-chip Fund lost money in 2024 but made money in 2022. The fund's performance may lead us to believe that the company has suffered significant losses.
7. Risk and return may be compared using the Sharpe ratio. Sharpe ratios of 1.36 for Bank Of baroda fund and 1.38 for SBI long term equity fund place them 10th and 9th, respectively, suggesting modest returns with minimal risk. With a ratio of 2.06, canara robeco fund has the best risk-to-reward potential of the 6 schemes considered.
8. Beta is used in Treynor's ratio, which measures risk. Canara robeco fund has the significant Treynor's ratio at 14.20 and the highest beta at 0.54, while Bank of baroda fund and SBI Fund have the lowest ratios at 8.22 and 8.08, respectively, and low beta.
9. Jensen's ratio applies CAPM to evaluate portfolios. The canara robeco fund has a high Jensen's ratio, whereas the Bank of baroda equity fund and the SBI equity fund just make the top six.
10. The outcome of the correlation coefficient indicates that the data is composed of many schemes and their related X and Y values. Statistical analysis is a part of computations. The average values of x and y are 11.95 and 3.45, respectively; the r value between X and Y is 1.04.

6. Conclusion

This project evaluated the performance and metrics of different mutual funds. A full assessment of each fund's financial performance may be obtained by looking at annual returns, risk-adjusted metrics such as Treynor's ratio and Sharpe's ratio, and using the CAPM model through Jensen's ratio. We have been able to obtain crucial data on each fund's five-year profitability and risk profiles thanks to these evaluations. Certain funds saw swings at different periods, while others had regular and positive returns. It is crucial to keep in mind that past success is not inevitably a reliable predictor of potential outcomes. Before making any putting decisions, investors ought to carefully weigh their options and do enough research. Correlation coefficient analysis provides a further layer of information by examining the relationships between different schemes and providing a statistical knowledge of their dynamics of performance. The study in question emphasizes the need of adopting an effective approach that takes into account past performance and intrinsic hazards. It also furnishes investors with important information to help them traverse the dynamic mutual fund investment landscape.

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A STUDY ON ANALYZING THE ROLE OF HR MANAGER IN FOSTERING PSYCHOLOGICAL SAFETY AND WELLNESS IN ICU'S AT SRI SAI HOSPITAL

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Abstract

This paper explores the role of the HR manager at Sri Sai Hospital in fostering psychological safety and wellness among ICU staff. The study combines qualitative and quantitative approaches, involving survey data from ICU employees, interviews with hospital administration, and secondary document analysis. The key findings reveal the critical importance of psychological safety, the frequency of HR engagement, and the existing challenges of workplace stress and turnover intentions. The paper further examines the effectiveness of current HR initiatives such as open-door policies and wellness programs in promoting mental well-being. It concludes with recommendations for enhancing communication, training reach, and engagement strategies to improve staff retention and psychological health.

Keywords: Psychological Safety, Employee Wellness, Intensive Care Unit (ICU), Human Resources Management, Stress Management, Staff Retention, Healthcare Workforce, Mental Health Support, Organizational Communication, Job Satisfaction.

Introduction

The intensive care unit (ICU) represents one of the most demanding healthcare environments, where healthcare workers face constant emotional and physical strain. Psychological safety, defined as the belief that one can speak up, ask questions, or admit mistakes without fear of negative consequences, is essential to maintaining team cohesion and delivering quality patient care. At Sri Sai Hospital, the HR manager plays a vital role extending beyond administrative functions to fostering a workplace culture emphasizing mental health support, resilience-building, and open communication. This role includes implementing structured mental health programs, conducting stress management workshops, and facilitating feedback mechanisms, all aiming to reduce burnout and improve job satisfaction among ICU staff.

Objectives

- To analyze the effect of Human Resource practices on psychological safety among ICU staff at Sri Sai Hospital.
- To assess workforce planning, recruitment, and training practices within the hospital.
- To evaluate the hospital's HR practices at different organizational levels with respect to staff wellness.

Literature Review:

1. Training and Delivery of Critical Care Medicine in India: Concerns Revealed by COVID 19 Pandemic (2020)

Authors: Ahmad Ozair, Avinash Agrawal, Suhail S. Siddiqui

Summary: This paper discusses the state of critical care medicine training and delivery in India, highlighting shortfalls revealed during the COVID-19 pandemic. It calls for standardized accreditation for ICUs and enhanced training pathways to address the shortage of intensivists across the country.

2. Collaborative Research in Critical Care Medicine: A Way Forward to High-impact Publications from India (2023)

Authors: Natesh Prabu Ravisankar, Ritu Singh, Mohan Gurjar

Summary: This article emphasizes the importance of collaborative research in Indian critical care medicine. It notes the growing number of multicenter studies and encourages capacity building to increase high-quality clinical research output from India.

3. Nurses' Psychological Well-Being in a Healthcare Crisis Work Environment (2024)

Author: Edison Bond, Jr.

Summary: The study used interviews with nurses working during the COVID-19 pandemic to explore factors promoting psychological well-being, including positive emotions, engagement, and meaning at work, using the PERMA framework as a basis for recommendations on supportive hospital policies.

Research Methodology:

Data Collection:

- Primary data was collected through structured questionnaires administered to 30 ICU staff and hospital personnel.
- Unstructured interviews were conducted with HR managers and healthcare professionals to gather in-depth qualitative insights.
- Secondary data was gathered from hospital records, policy documents, and relevant academic literature.

Research Design:

This study uses a descriptive and exploratory research design to analyze HR practices affecting psychological safety and wellness at Sri Sai Hospital. It combines qualitative and quantitative methods for a comprehensive evaluation.

Sampling:

- Population: All ICU and hospital staff at Sri Sai Hospital.
- Sample Size: 30 (simple random sampling).
- Statistical Tools: Descriptive statistics.

Discussion And Results:

The study used a descriptive and exploratory design combining surveys and interviews with 30 ICU staff and hospital administrators. Most respondents were young, educated, and had balanced gender representation. HR initiatives like open-door policies and regular check-ins were common, aiding communication. Conflict resolution training and team-building were less frequent, showing improvement areas. HR wellness programs had mixed effectiveness; many felt supported, some did not. About half considered leaving due to stress or lack of support. Anonymous feedback and HR responsiveness were mostly positive, but some uncertainty existed. Overall, HR plays a key role in promoting psychological safety, but gaps remain in communication, inclusivity, and stress management.

Discussion And Result:

Do you feel safe expressing concerns or ideas without fear of negative consequences in your ICU
30 responses

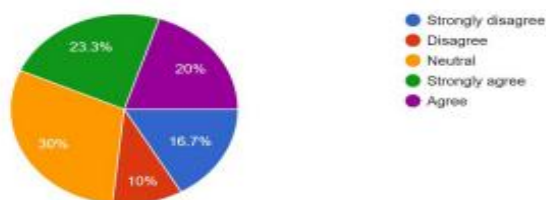


Chart: The Chart Shows That The Feeling Safe Expressing Concerns Or Ideas Without Fear Of Negative Consequences In Icu

Interpretation:

According to the table, 43.3% of staff feel safe expressing their ideas, while 26.7% remain hesitant or fearful. A notable 30% stayed neutral, showing uncertainty about speaking up. This indicates the need for stronger measures to build open communication and trust.

How often does HR interact with ICU staff regarding psychological wellness
29 responses

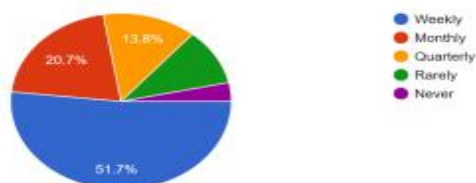
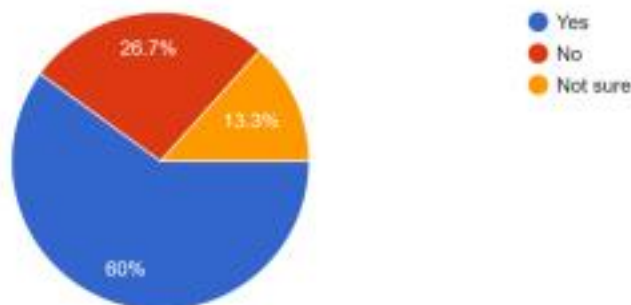


Chart: The Chart Shows That The Hr Interact With Icu Staff Regarding Psychological Wellness

Interpretation:

According to the Study findings most of the employees 51.7% reported weekly interactions, showing consistent efforts by HR to support staff well-being. However, 20.7% indicated monthly interactions and 13.8% reported quarterly sessions, suggesting that some staff receive less frequent support. Additionally, 10.3% mentioned rare interactions, while a small fraction never experienced any HR engagement. Overall, the findings reflect positive involvement but also emphasize the need to ensure more regular and inclusive interaction for all staff.

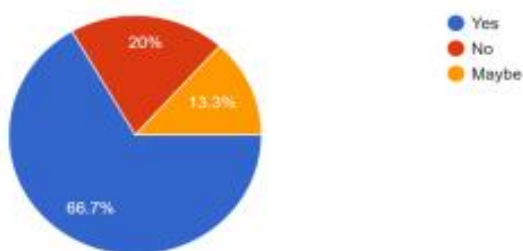
Have you noticed a positive impact on wellness due to HR interventions in the past year?
30 responses



Interpretation:

The Above chart shows that majority of 60% of respondents confirmed a positive influence, reflecting the effectiveness of HR initiatives. However, 26.7% reported no impact, showing that improvements are not experienced equally by all staff. Additionally, 13.3% of participants were uncertain, suggesting a lack of clarity or awareness about HR efforts. Overall, while the interventions are largely beneficial, there is room for improvement in ensuring inclusivity and wider recognition of their impact.

Has HR implemented anonymous feedback mechanisms to report stress or conflict.
30 responses



Interpretation:

The above chart shows that the majority (66.7%) believe that HR has implemented anonymous feedback mechanisms to report stress or conflict. However, 20% of respondents indicated that such mechanisms have not been put in place, while 13.3% were unsure and selected "Maybe." This suggests that although most employees feel these systems exist, there is still a notable portion of the group either unaware of them or believing they are not available. Improving awareness and accessibility could help ensure all employees feel heard and supported.

Key Findings

Positive Findings

- Most ICU staff recognize psychological safety as a crucial element for patient care quality and team cohesion.
- HR initiatives such as open-door policies and regular staff check-ins are widely practiced, promoting

communication.

- Majority of staff report access to wellness resources and engagement with mental health programs.
- Anonymous feedback mechanisms for stress and conflict reportings are implemented and valued by many respondents.
- Over 70% of respondents feel HR acts promptly on reported psychological safety concerns, fostering trust.

Negative Findings:

- Only about half the ICU staff consider HR wellness programs fully effective in reducing workplace stress and burnout.
- Conflict resolution training and team-building activities are inadequately provided, limiting interpersonal skill development.
- Significant proportion of staff, around 50%, have considered leaving due to stress or lack of support, indicating retention risks.
- Some respondents feel HR does not fully understand the unique pressures of ICU work, affecting perceived support.
- Communication gaps and inconsistent engagement mean not all staff feel equally heard or involved in wellness initiatives.

Limitations:

- The sample size of 30 respondents may not fully represent all staff perspectives at Sri Sai Hospital, limiting generalizability.
- The focus on one hospital's ICU staff restricts applicability of results to other healthcare settings or regions with different HR cultures.
- Self-reported surveys and interviews may introduce response bias like socially desirable answers or underreporting challenges.
- Time constraints limited the depth of qualitative data collection, reducing exploration of emerging themes on psychological safety and wellness.

Conclusion

Sri Sai Hospital's HR department plays a key role in improving psychological safety and well-being among ICU staff, fostering a supportive work environment. While many staff members feel supported, there are gaps in communication, training access, and stress management. To address these, mental health resources, conflict resolution, and team building should be strengthened. Increasing participation in wellness programs will enhance staff retention and job satisfaction. These efforts align with the hospital's mission to provide compassionate care with a resilient workforce.

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GRABOBOT: BLUETOOTH CONTROL ROBOTIC ARM

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Abstract

The growing demand for affordable and flexible automation systems has increased interest in robotic arms that can be easily deployed in educational and industrial settings. Conventional robotic arm solutions are often costly and limited by wired interfaces, restricting accessibility and portability. This paper presents the development of a cost-effective, Bluetooth-enabled robotic arm powered by an Arduino microcontroller and servo motors. The arm is designed to perform fundamental pick-and-place operations and is controlled through a smartphone application using an HC-05 Bluetooth module. Experimental results demonstrate reliable performance within a 10-meter range with negligible response delay. The proposed system highlights portability, simplicity, and low power consumption, making it a suitable platform for students, researchers, and small-scale automation. Future advancements may include Wi-Fi integration, higher payload handling, and artificial intelligence for autonomous control.

Keywords: Bluetooth Module, Robotic Arm, Arduino, Servo Motors, Wireless Automation

1. Introduction

A. Role of Robotic Arms in Modern Applications:

The field of robotics has seen remarkable growth in recent years, becoming an essential part of modern life. Robots are machines designed to support humans by carrying out tasks that are often repetitive, unsafe, or demand very high accuracy. Among the different categories of robots, robotic arms are one of the most practical and widely adopted. Their design is inspired by the structure of the human arm, allowing them to rotate, lift, and grip objects with flexibility and precision. In the industrial sector, robotic arms are widely used to handle tasks such as material handling, packaging, assembling, and welding. They can work continuously with high speed and accuracy, which reduces production time and increases efficiency. In the medical field, robotic arms assist surgeons in carrying out delicate procedures with precision that would be difficult for the human hand to achieve alone, improving safety and recovery outcomes. Educational institutions also make use of robotic arms [1] to train students, providing practical demonstrations of control systems, mechanical design, and programming concepts. With continuous progress in electronics, machine learning, and automation, robotic arms are becoming more capable and user-friendly. They are no longer limited to heavy industries but are also entering smaller businesses, research labs, and even households. These developments [2] highlight the importance of robotic arms as tools that improve efficiency, safety, and reliability while reducing the physical workload on humans.

B. Why Robotic Arms Are Crucial Today:

Robotic arms have become valuable tools not only in industries but also in education, healthcare, and scientific research. One major advantage is their growing affordability, which makes it possible for small and medium-sized businesses to adopt automation without the need for large investments. In schools and universities, robotic arms [3] are used to train students in programming, electronics, and mechanical design, providing practical skills for future careers. They also play an important role in healthcare, where they can assist people with disabilities by supporting daily tasks or performing delicate medical procedures. In laboratories, robotic arms help researchers handle sensitive samples [4] with precision, ensuring safety and consistency in experiments. Their ability to operate continuously, day and night, allows them to achieve higher efficiency compared to human [5] labor. Beyond Earth, robotic arms are already in use for space exploration, supporting satellite repairs, equipment handling, and experiments on space stations. By reducing errors, saving time, and minimizing waste, robotic arms also contribute to cost savings and more sustainable practices in manufacturing.



Fig 1.1: Bluetooth Controlled Robotic Arm

C. Problem Statement:

While robotic arms offer numerous benefits, there are still several obstacles that limit their accessibility and usability. One common challenge is the dependency on wired connections for power and control, which restricts [6] movement and flexibility. This makes it difficult to operate robotic arms in situations where remote or versatile handling is needed. Additionally, many advanced robotic arms are very expensive due to high-precision components, sophisticated engineering, and specialized maintenance requirements. These costs put them out of reach for small labs, schools, and hobbyists, preventing wider adoption and hands-on learning opportunities.

2. Proposed Solution:

To address these challenges, this project introduces an affordable robotic arm that can be controlled wirelessly via Bluetooth. The system is built using an Arduino microcontroller, servo motors, and an HC-05 Bluetooth module, enabling smooth operation through a smartphone application. By eliminating the need for physical cables, the robotic arm becomes portable, user-friendly, and cost-effective. This solution provides a practical platform for education, small-scale research, and hobbyist [7] projects, while still performing essential tasks like gripping, lifting, and moving objects accurately.

2.1. Core Functions of the Robotic Arm:

The proposed robotic arm is designed to perform a variety of tasks that highlight its versatility:

180° Base Rotation: The base allows the arm to turn fully, providing a wide operational workspace.

Multi-Joint Flexibility: Shoulder and elbow joints enable the arm to reach over obstacles, lift objects of different heights, and adjust angles for precise placement.

Adaptive Gripper: The gripper [8] can handle objects of various shapes and sizes, with adjustable force to avoid damage.

Wireless Control with Feedback: Through Bluetooth, users can operate the arm remotely and receive visual or haptic feedback from sensors.

Sequential Task Automation: The arm can perform multiple steps in a sequence, such as moving objects from one container to another, or stacking items systematically.

2.2. Project Aims:

Develop an affordable, wireless-controlled robotic arm. Enable flexible and precise execution of multi-step tasks.

Provide an educational platform for hands-on robotics learning.

Allow future enhancements such as object recognition, stronger actuators, or AI integration.

G. Limitations of Traditional Robotic Arms:

Conventional robotic arms, while functional, often face limitations that restrict their usability in modern applications:

Fixed Connectivity: Many older robotic arms rely on wired connections or fixed controllers, making them difficult to move or reconfigure in dynamic[9] workspaces.

Limited Automation: Some systems only perform pre-programmed sequences or require constant human supervision, preventing adaptive or multi-step task execution.

High Barrier to Entry: Industrial-grade robotic arms are expensive and require specialized knowledge to operate and maintain, limiting accessibility for students, hobbyists, or small labs.

Physical Constraints: Some designs occupy large workspaces and are unsuitable for compact areas. Lack of Real-Time Interaction: Existing systems [10] often cannot provide feedback or interact intelligently with their environment, making them less flexible in unexpected situations.

For example, many educational robotic arms depend on joystick control or pre-set programs, restricting creativity and preventing exploration of advanced[11] automation techniques.

2.3. Proposed System:

This project introduces a Bluetooth-enabled robotic arm designed to overcome the limitations of traditional systems. Key innovations include:

Wireless and Portable Operation: Users can control the arm remotely via a smartphone or tablet, providing flexibility to operate in diverse environments without cables.

Adaptive Handling: The robotic arm can manage objects of various sizes and weights, with a modular gripper design that can be swapped or adjusted for different tasks.

Programmable Task Sequences: The system[1] can execute multiple-step operations automatically, reducing the need for constant supervision.

Cost-Effective Design: Built using Arduino microcontrollers, servo motors, and easily available materials, making it affordable for educational and hobbyist use. **Sensor-Based Feedback:** Basic sensors provide real-time feedback for safer operation, object detection, and precise movement control.

Expandable Platform: The design [2] allows future upgrades, such as AI-based object recognition, vision-assisted guidance, or stronger actuators for heavier payloads.

Distinctive Features: Wireless control with intuitive app interface for multi-joint coordination. Modular arm and gripper for customization. Lightweight and compact design suitable for labs, classrooms, and home projects.

3. Methodology

1. Hardware Setup:

The robotic arm was constructed using a lightweight, modular frame for easy assembly and maintenance. The primary components include:

Arduino Uno: Serves as the main controller, processing commands and controlling all actuators.

HC-05 Bluetooth Module: Facilitates wireless communication between the smartphone and the arm. **Servo Motors:** Responsible for precise movement of the base, shoulder, elbow, and gripper.

Power Supply: A 12V DC adapter powers the Arduino and servo motors efficiently.

All servo motors were mounted securely to their respective joints, and the gripper was attached to the end-effector. Special care was taken to ensure stability and reduce vibration during operation. Cable management [3] was organized to prevent tangling and ensure smooth arm movement.

2. Servo Motor Programming:

Each servo motor was calibrated to operate within safe angle limits. The base servo enables horizontal rotation, while the shoulder and elbow servos allow vertical movement of the arm. The gripper servo was configured to adjust its opening width based on object size. Calibration ensured smooth, synchronized motion across all joints, allowing precise object handling.

Base (SG90, ~0.5A): Provides horizontal rotation from 0° to 180°.

Shoulder (MG996R, ~2.3A): Controls vertical lift of the arm, range 0°–120°.

Elbow (MG996R, ~2.3A): Enables bending motion, range 0° – 120° .

Gripper (SG90, ~0.5A): Opens and closes to handle objects, range 0° – 90° .

Power Supply: 12V DC, 5A output, sufficient to power all components reliably.

3. Arduino Software Development:

The Arduino was programmed using the Arduino IDE [4] with a focus on modularity and scalability. The program performs the following tasks:

Initializes all servo motors and sets default positions.

Establishes a Bluetooth connection with the mobile device.

Decodes incoming commands and converts them into motor movements.

Controls the speed and angle of each servo for accurate.

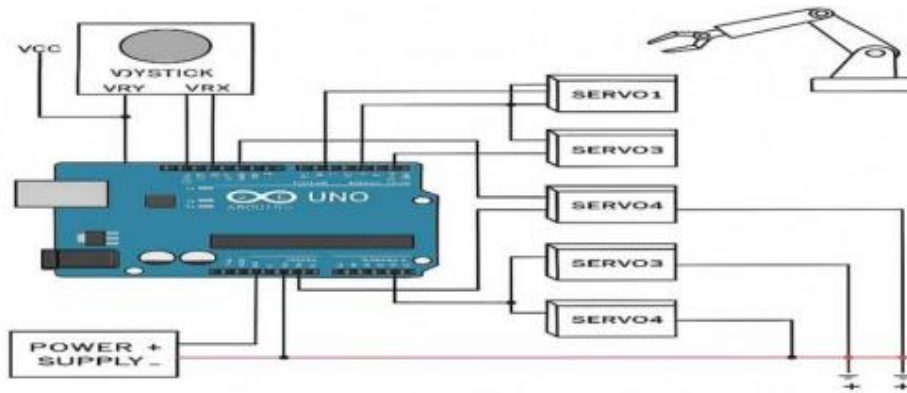


Fig 1.2: Block Diagram of Robotic Arm

4. Wireless Communication:

The HC-05 Bluetooth module acts as the interface between the Arduino and the smartphone. Users can send commands like “lift arm,” “rotate base,” or “grip object” via a mobile application. Commands are received wirelessly, processed by the Arduino,[5] and executed by the corresponding servo motors.

5. Safety and Calibration:

Before starting operations, the arm was calibrated to a neutral home position. Angle limits were set on each servo to avoid over rotation or mechanical strain. The system was repeatedly tested to ensure smooth, precise movements. Additional safety measures include stable mounting, secure wiring, and emergency stop options in the mobile app to prevent accidental collisions.

Feature	Observation
Maxm. Working Range	7-12m
Response time	150-180 ms
Object Weight Capacity	$\leq 150\text{gm}$
Movement Accuracy	High
Smoothness Quality	Smooth

4. Results

After testing the Bluetooth-controlled robotic arm, the following outcomes were observed:

Wireless Performance: The arm successfully responds to smartphone commands, with a working range of 7–12 meters. Commands are executed almost instantaneously, with an average delay of around 150–180 milliseconds.

Task Precision: The arm completes pick-and-place tasks[7] with consistent accuracy. Even small or irregularly shaped objects were positioned correctly at the target location with minimal adjustment.

Operational Speed: The arm moves in a controlled manner without sudden jerks. The time to move and place an object weighing up to 150 grams is approximately 3–5 seconds, depending on the position.

Durability and Stability: The structure remains stable during repeated operations. Minor vibrations were observed only when moving close to maximum reach or with heavier objects near the weight limit.

Energy Efficiency: The arm consumes low power during idle periods and moderate power during operation, showing that the system is suitable for extended usage without overheating.

Limitations:

Maximum payload is limited to 150 grams.

Bluetooth range may be insufficient in environments with obstacles; Wi-Fi could extend control distance. Very fast sequential movements may slightly reduce precision.

5. Conclusion

The GraboBot: Bluetooth-Controlled Robotic Arm demonstrates the practical value of accessible and affordable automation technology. By enabling wireless control via a smartphone or tablet, GraboBot provides flexibility, convenience, and user-friendly operation compared to conventional wired robotic arms. Tests confirmed that the arm can perform precise pick-and-place tasks smoothly and reliably, making it ideal for educational purposes, hobbyist projects, and small-scale automation experiments. Its modular and adaptable design allows customization of the gripper and potential expansion of functionality. While limitations such as payload capacity and control range exist, GraboBot lays the groundwork for future enhancements, including advanced sensors, intelligent control algorithms, and integration with modern automation technologies. Overall, GraboBot serves as a practical platform for learning, experimentation, and demonstration of core concepts in robotics and mechatronics.

6. Future Scope

The GraboBot: Bluetooth-Controlled Robotic Arm has significant potential for further development and wider applications. By integrating artificial intelligence, GraboBot could perform autonomous operations, adapt to new tasks, and make decisions based on real-time data. Adding advanced sensors, such as force, proximity, or vision sensors, would enhance accuracy, allow obstacle detection, and enable safe interaction with humans or delicate objects. Improvements in payload capacity and operational speed could expand its usability for light industrial tasks like assembly, sorting, and packaging. Additionally, incorporating IoT or remote connectivity would allow GraboBot to be monitored and controlled from a distance, making it suitable for smart classrooms, laboratories, or home automation setups. As an educational and research tool, GraboBot offers students and researchers hands-on experience in robotics, control systems, and automation, promoting innovation and practical learning in the field of mechatronics.

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BOOMERANG HIRING IN INDIA: EXPLORING THE DRIVERS OF EMPLOYEE RETURN DECISIONS

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Abstract

The evolving Indian corporate landscape is witnessing a significant transformation in talent acquisition strategies, highlighted by the growing prevalence of boomerang hiring the rehiring of former employees who voluntarily left their organizations. This study explores the phenomenon of boomerang hiring in India, analyzing the key factors that motivate professionals to return to their previous employers. Grounded in Social Exchange Theory, the research examines four principal influencers: familiarity with organizational culture and work environment, career growth opportunities, positive prior experiences and relationships, and financial incentives. Using an exploratory research design with data collected across diverse sectors, regression analysis reveals these factors as significant and positively associated with employees' willingness to re-join former organizations. The findings assert that boomerang hiring serves as a mutually beneficial talent strategy that reduces recruitment costs, accelerates onboarding, and leverages institutional knowledge. Managerially, organizations are encouraged to formalize alumni engagement, offer clear career pathways, and foster supportive work cultures to enhance the effectiveness of boomerang recruitment. This study contributes to the strategic discourse on talent mobility in India and suggests avenues for longitudinal and comparative research to deepen understanding of boomerang hiring dynamics.

Keywords: Boomerang hiring, employee return motivation, employee rehire, organizational culture familiarity, financial incentives in rehiring.

Introduction

The contemporary Indian corporate landscape is witnessing a profound transformation in talent management strategies, with organizations increasingly recognizing former employees as valuable human capital rather than permanent losses. This paradigmatic shift has given rise to the phenomenon of "boomerang hiring" - the strategic rehiring of former employees who voluntarily departed and subsequently return to their previous employers. As India's economy continues its robust growth trajectory with a projected 9% hiring surge in 2025, particularly in technology, financial services, and retail sectors, the practice of welcoming back former talent has evolved from an occasional occurrence to a mainstream recruitment strategy that challenges traditional notions of employee loyalty and organizational boundaries.

The term "boomerang employee" aptly describes individuals who, much like the returning trajectory of the Australian throwing stick, circle back to their original workplace after gaining diverse experiences elsewhere. This phenomenon has gained unprecedented momentum in India's dynamic job market, where rapid economic expansion, technological advancement, and evolving workforce expectations have created a complex talent ecosystem. Recent industry data reveals that approximately 85% of Indian companies report having rehired former employees, with boomerang hires constituting nearly 20-25% of all new recruitment in several sectors. The COVID-19 pandemic further accelerated this trend, as organizations that were forced to downsize during economic uncertainties actively pursued former employees during recovery phases, often achieving remarkable success rates of up to 100% compared to traditional hiring methods.

This resurgence of boomerang hiring reflects broader changes in India's employment landscape, where traditional career paradigms of lifelong employment with single organizations have given way to more fluid, experience-driven career journeys. The modern Indian professional, particularly in knowledge-intensive sectors, views career mobility as a strategic tool for skill development, compensation enhancement, and professional growth. Consequently, the stigma traditionally associated with "returning" to a former employer has diminished significantly, with Generation Z and millennial workers increasingly viewing boomerang moves as smart, strategic decisions that combine familiar organizational cultures with newly acquired expertise and perspectives.

From an organizational perspective, boomerang hiring offers compelling advantages that address several critical challenges facing Indian businesses today. The practice significantly reduces recruitment costs by up to 67%, accelerates onboarding processes, and minimizes integration risks since returning employees already possess institutional knowledge and cultural familiarity. Moreover, these employees often serve as brand ambassadors, leveraging their external experiences to introduce fresh perspectives while maintaining deep understanding of organizational systems and relationships. For companies operating in India's competitive talent market, where skilled professionals command

premium salaries and retention challenges persist, boomerang hiring represents a strategic approach to accessing proven talent pools with reduced acquisition costs and enhanced probability of long-term success.

The factors influencing employees' decisions to return to former employers are multifaceted and deeply rooted in both rational career calculations and emotional connections to organizational cultures. Research indicates that familiarity with company culture and work environment, prospects for career growth and new opportunities, positive prior experiences and relationships, and competitive financial incentives serve as primary motivators for boomerang hiring decisions. Understanding these dynamics is crucial for organizations seeking to optimize their talent reacquisition strategies and for employees navigating increasingly complex career landscapes.

This study aims to comprehensively examine the boomerang hiring phenomenon in India, investigating the key factors that influence employees' decisions to return to former employers and analyzing the interrelationships between these motivating elements. By exploring both employer and employee perspectives within India's unique socio-economic context, this research seeks to provide actionable insights that can inform strategic human resource management practices and contribute to the evolving discourse on talent mobility and organizational loyalty in contemporary India.

Review of literature

This study is grounded in Social Exchange Theory (SET), which explains how relationships within organizations are built upon reciprocal exchanges of tangible and intangible benefits. According to SET, employees evaluate their interactions with employers by weighing costs against rewards such as trust, support, recognition, and opportunities for growth. When employees perceive the balance of exchanges as beneficial, they are more likely to return to their former organizations as boomerang hires. In the context of boomerang hiring, SET provides a comprehensive lens to understand how factors like familiarity with organizational culture, previous positive experiences, and mutual trust influence an employee's decision to rejoin a previous employer. Thus, SET helps frame boomerang hiring as a function of ongoing exchanges, relationship quality, and perceived organizational value, setting the stage for analysing the key determinants of employees' willingness to return.

The phenomenon of boomerang employees—individuals who leave an organization and later return—has received increasing attention in both academic and practitioner domains, especially in the wake of the COVID-19 pandemic and the Great Resignation. Early research treated employee turnover as a final endpoint. However, Salehudin and Satrya (2018) challenged this view by introducing the idea of “recoverability,” emphasizing that alumni networks can serve as valuable talent pools for companies aiming to recoup lost human capital. This shift positioned rehiring as an ongoing strategy for talent management, rather than a closure to the employment relationship. Expanding on this, Raveendra and Satish (2021) investigated boomerang hiring within the Indian context during the COVID-19 crisis and identified critical drivers behind rehiring such as cultural familiarity, cost savings, customer retention, and boosting the morale of existing staff. Their research concluded that while boomerang hiring is particularly effective in crisis situations, it requires careful management and context-specific judgment by HR professionals.

International evidence further reflects both the benefits and risks of boomerang hiring. Arnold, Van Iddekinge, and Campion (2020), analyzing over 30,000 managerial hires, found that although boomerang employees often perform similarly to internal and external hires initially, their longer-term growth in performance can lag and their turnover rates tend to be higher. Likewise, Bingham et al. (2020) studied “boomerang CEOs” and observed that companies rehiring former chief executives sometimes experienced poorer performance, especially in dynamic sectors. These findings highlight the importance of adopting a measured approach to boomerang strategies. Recent research has also introduced models to formalize the boomerang rehiring process. Mallick and Mukhopadhyay (2023) presented a multi-criteria decision-making framework, identifying past performance as the most crucial selection criterion. Similarly, Maier et al. (2021) discussed “turnback intention” among IT professionals, showing how sector-specific events—like technological shifts or project failures—can significantly shape the probability of employees rejoining their old organizations.

The relevance and Impact of boomerang hiring is especially pronounced in the Indian context today. Recent data indicates that as many as 35% of new hires in 2025 across major industries, and up to 68% in technology, were returning employees. This shift from linear to cyclical career paths underscores the mainstream adoption of boomerang hiring as a talent strategy that reduces onboarding costs and enhances cultural fit, though there are warnings about the potential for diminished diversity and innovation if overused. Industry reports further show that nearly 20% of employees who resigned during the pandemic subsequently returned, and major Indian companies in IT, e-commerce, and retail sectors have developed structured alumni rehiring pipelines. These efforts help companies leverage stronger professional networks, achieve immediate adaptability, and reap cost savings of 33–67%, but come with challenges such as peer perceptions, risk of stagnation, and unresolved past conflicts.

Taken together, the literature underscores that boomerang hiring restores lost human capital and provides critical organizational benefits, but its success depends on clear understanding of individual motives, reasons for initial separation, and strategic alignment with long-term organizational goals. By adopting Social Exchange Theory, this review provides a nuanced lens on the reciprocal relationships and value-driven motivators that define boomerang hiring, laying the groundwork for understanding how organizations and employees can optimize this practice in the Indian market.

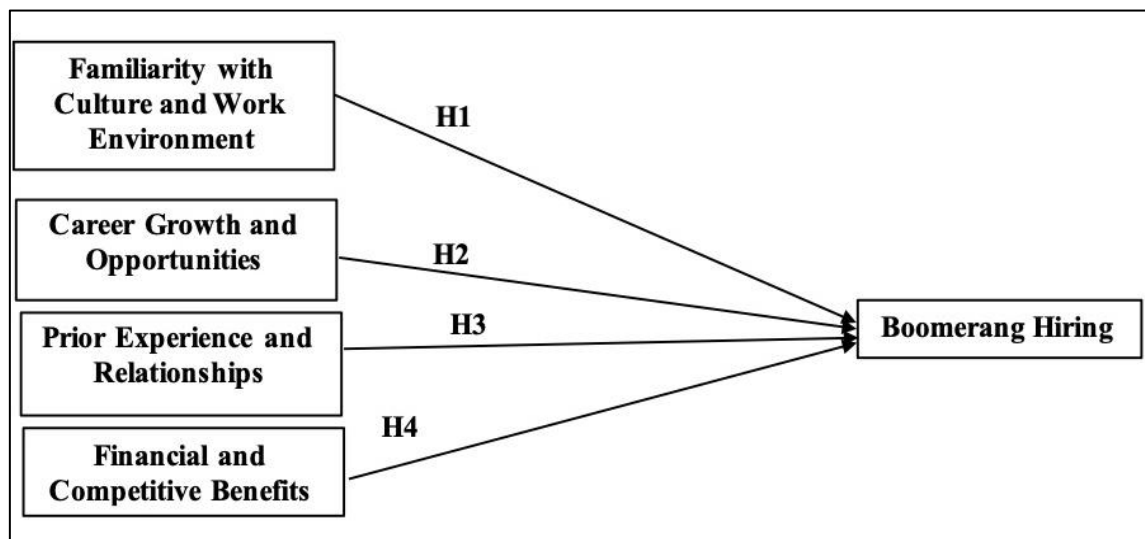
Model and Research design

Objectives

The objectives of this study are:

- To identify the key factors that contribute to employees accepting boomerang hiring opportunities.
- To examine the interrelationship between these influencing factors in the context of boomerang hiring
- To determine the most influential factor motivating employees to return to their former employers.

Conceptual Diagram



Hypothesis

The hypotheses used in this study are:

- Hypothesis 1: Familiarity with culture and work environment will positively influence boomerang hiring
 Hypothesis 2: Career growth and new opportunities will positively influence boomerang hiring
 Hypothesis 3: Positive prior experience and relationships will positively influence boomerang hiring
 Hypothesis 4: Financial incentives and competitive benefits will positively influence boomerang hiring

Research design

An exploratory research design was adopted in this study to understand the main factors influencing why professionals in India would consider returning to their former employers—also known as boomerang hiring. Data was gathered using a convenience sampling approach, reaching out to individuals across different sectors such as IT, finance, retail, healthcare, and education, ensuring a diverse range of perspectives. A total of 187 data were collected and used for further analysis. The survey included questions on respondents' backgrounds, their thoughts on workplace culture, career growth opportunities, personal relationships, and financial incentives related to returning to a previous employer. Responses were collected online and analysed using Microsoft Excel, applying correlation and regression techniques to identify which factors matter most for employees contemplating a return. This approach offers practical insights into what truly drives boomerang hiring decisions among Indian professionals.

Analysis and interpretation

Demographic Profile

The demographic profile of the respondents is represented in the table below.

Table 1: Demographic Profile

Sl. No	Demographic variable	Description of demographics	Frequency	Percent	Total
1	Gender	Female	92		187
		Male	95		
2	Educational Qualification	Undergraduate	84		187
		Postgraduate	103		
3	Work Experience	2-5Years	154		187
		5-10Years	22		
		10+Years	11		
4	Sector the Organization belongs to	IT&ITES	46		187
		Financial Services	37		
		Professional Services	19		
		Manufacturing	23		
		Retail	11		
		Hospitality	13		
		Education	18		
		Healthcare	15		
		Government/Non-Profit	5		

Correlation Results

a. Correlation with Boomerang Hiring (BH)

- Positive Prior Experience and Relationships (PE&R) shows the strongest correlation with BH ($r = 0.627$). This indicates that employees with positive prior experiences and strong organizational relationships are more likely to return as boomerang hires.
- Familiarity with Culture and Work Environment (C&WE) is also strongly correlated with BH ($r = 0.548$), suggesting that employees who are comfortable and familiar with an organization's culture are inclined to rejoin.
- Career Growth and Opportunities (CG&O) has a moderate positive correlation with BH ($r = 0.536$), showing that career advancement prospects play a significant role in motivating employees to return.
- Financial Incentives and Competitive Benefits (F&CB), though slightly lower, still demonstrates a moderate positive correlation with BH ($r = 0.530$), implying that attractive compensation packages can influence return decisions.

b. Interrelationships among Independent Variables

- C&WE and CG&O ($r = 0.540$) are moderately correlated, indicating that organizations with a familiar and supportive culture are also perceived as offering career growth opportunities.
- PE&R is moderately related to both C&WE ($r = 0.488$) and CG&O ($r = 0.436$), highlighting that positive experiences often align with supportive cultures and growth prospects.
- F&CB has weaker correlations with other factors (ranging between 0.343 and 0.403), suggesting that while financial incentives are important, they operate somewhat independently from relational and cultural factors.

c. Overall Implication

All independent variables exhibit positive and significant correlations with Boomerang Hiring, reinforcing that employees' willingness to return is shaped by a combination of cultural familiarity, career prospects, prior positive experiences, and financial benefits.

Among these, prior experiences and relationships emerge as the most influential factor, while financial incentives, though important, are comparatively less dominant.

Table 2: Correlation Results

	C&WE	CG&O	PE&R	F&CB	BH
C&WE	1				

CG&O	0.540	1.000			
PE&R	0.488	0.436	1.000		
F&CB	0.378	0.403	0.343	1.000	
BH	0.548	0.536	0.627	0.530	1.000

C&WE- Familiarity with culture and work environment, CG&O - Career growth and opportunities, PE&R - Positive prior experience and relationships, F&CB- Financial incentives and competitive benefits, BH- Boomerang Hiring

Regression results

Hypothesis 1 states that familiarity with culture and work environment will positively influence boomerang hiring, which is proven to be significant with an R-squared value of 0.301 and an F-value of 79.501, and $p < 0.001$. The standard coefficient of familiarity with culture and work environment influencing hiring is $B = 0.549$, with a t-value of 8.916 and $p < 0.001$. The 95 percent confidence interval lies between 0.427 and 0.670; zero does not lie within these values, hence providing evidence for the influence of family, culture, and work environment on boomerang hiring.

Hypothesis 2 states that career growth and new opportunities will positively influence boomerang hiring, which is proven to be significant with an R-squared value of 0.287 and an F-value of 74.505, and $p < 0.001$. The standard coefficient of career growth and new opportunities influencing hiring is $B = 0.662$, with a t-value of 8.632 and $p < 0.001$. The 95 percent confidence interval lies between 0.510 and 0.813; zero does not lie within these values, hence providing evidence for the influence of career growth and new opportunities on boomerang hiring.

Hypothesis 3 states that positive prior experience and relationships will positively influence boomerang hiring, which is proven to be significant with an R-squared value of 0.392 and an F-value of 119.704, and $p < 0.001$. The standard coefficient of positive prior experience and relationships influencing hiring is $B = 0.658$, with a t-value of 10.941 and $p < 0.001$. The 95 percent confidence interval lies between 0.539 and 0.776; zero does not lie within these values, hence providing evidence for the influence of positive prior experience and relationships on boomerang hiring.

Hypothesis 4 states that financial incentives and competitive benefits will positively influence boomerang hiring, which is proven to be significant with an R-squared value of 0.280 and an F-value of 72.098, and $p < 0.001$. The standard coefficient of financial incentives and competitive benefits influencing hiring is $B = 0.724$, with a t-value of 8.491 and $p < 0.001$. The 95 percent confidence interval lies between 0.556 and 0.893; zero does not lie within these values, hence providing evidence for the influence of financial incentives and competitive benefits on boomerang hiring.

Discussions and Conclusions

In this study, the key factors influencing boomerang hiring—namely familiarity with organizational culture and work environment, career growth opportunities, positive prior experiences, and financial incentives—have been empirically validated as significant contributors to employees' decisions to return to former employers. These findings resonate with Social Exchange Theory, which underscores reciprocal benefits and trust as central to employment relationships. Prior research has also highlighted similar dynamics, where trust, organizational support, and perceived growth opportunities play vital roles in reemployment decisions. The positive relationships identified between these motivators and boomerang hiring emphasize the strategic value organizations gain by embracing former employees as a resource rather than a loss. This approach not only reduces recruitment costs but also accelerates onboarding and facilitates knowledge retention. Concurrently, returning employees view the opportunity as a calculated career move that blends familiarity with new external skills and experiences.

Studies such as Salehudin and Satria (2018) and Raveendra and Satish (2021) have indicated that rehiring alumni can bolster morale and loyalty while minimizing risks associated with external hires. This research expands those insights within the Indian context, revealing sector-specific nuances and a rising acceptance of boomerang hiring as a mainstream talent strategy. Furthermore, the managerial benefits of aligned incentives, workplace culture continuity, and strengthened employee-employer ties are consistently reinforced throughout the analysis.

Managerial Implications

The findings from this research provide important guidance for human resource management and organizational leaders aiming to optimize the benefits of boomerang hiring. Establishing structured alumni networks and formal rehire programs can facilitate ongoing engagement and talent pooling, ensuring that former employees remain connected and informed about prospective opportunities. Highlighting clear career advancement paths and offering competitive financial packages tailored for boomerang hires can improve attraction and retention rates by addressing core motivators demonstrated in this study.

Equally critical is the cultivation of a positive organizational culture that supports returning employees' reintegration, including training and communication aimed at minimizing peer resistance and maximizing collaboration effectiveness. Organizations should adopt transparent policies addressing potential challenges, such as perceptions about loyalty or impact on workplace diversity. Importantly, continuous assessment of boomerang hiring outcomes is necessary to balance benefits with risks related to innovation stagnation or organizational complacency.

Directions for Future Research

Future research should explore longitudinal impacts of boomerang hires on individual performance, organizational adaptability, and retention outcomes to deepen understanding of long-term benefits and limitations. Comparative analyses across industries, regions, and organizational sizes within India might reveal distinct dynamics influencing boomerang hiring success and challenges. Investigating the integration of digital platforms and AI in managing alumni relationships and rehiring processes could identify innovative strategies to scale these practices efficiently.

Moreover, employee-centred studies focusing on psychological contract evolution, motivation beyond financial incentives, and career trajectory perceptions will complement organizational perspectives and enrich the holistic knowledge base on boomerang hiring trends. Such investigations will provide nuanced insights for tailoring talent management approaches in the evolving Indian employment landscape.

Conclusion

In conclusion, this study elucidates the critical drivers behind boomerang hiring decisions, affirming its emergence as a vital component of modern talent management in India. By recognizing the value of organizational familiarity, career growth prospects, positive prior experiences, and competitive incentives, organizations can strategically leverage boomerang employees to enhance workforce continuity, reduce costs, and foster mutual growth. The insights offered herein present a robust framework for both practitioners and academics to advance understanding and implementation of boomerang hiring within an increasingly complex and competitive labour market.

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A STUDY ON THE IMPACT OF ONBOARDING PROGRAMS ON EMPLOYEE ENGAGEMENT WITH SPECIAL REFERENCE TO WINPROTECH IT SOLUTIONS COMPANY

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Abstract:

The effect of onboarding initiatives on Winprotech IT Solutions Employee Engagement is examined in this study. A thorough analysis of the body of research demonstrates how important good onboarding is for raising employee retention, productivity, and satisfaction. This study investigates the connection between Winprotech employees' onboarding experiences and employee engagement using a mixed-methods approach. The results briefly describe the main conclusions, such as a significant positive correlation between structured onboarding programs and employee engagement levels. The study provides suggestions for Winprotech to enhance employee engagement and retention by highlighting best practices for onboarding initiatives.

Keywords: Onboarding Programs, Employee Engagement, IT Industry, HR Practices, Employee Retention, Organizational Performance.

Introduction

When we speak about Onboarding Programs, we relate them to a one-day system. but it's far more than that. The Onboarding program involves a series of activities that occur after a new employee has been hired. These activities include orientation, training, and assimilation into the company culture. A well-designed onboarding program can help new employees feel confident and motivated, leading to increased job satisfaction and productivity. In recent years, the importance of Employee Engagement in onboarding has become increasingly recognized, with more companies investing time and resources into creating a positive onboarding experience.

Objectives:

1. To examine the various onboarding programs of Winprotech IT Solutions Ltd.
2. To examine the impact of onboarding programs on employee engagement.
3. To analyze the influence of the duration of onboarding, method of onboarding, facilitator of onboarding, and training quality during onboarding on employees' integration with the workplace culture.
4. To provide recommendations for organizations to improve their onboarding programs.

Literature Review:

1. Onboarding Effects on Engagement and Retention in the IT Sector (2022)

AUTHOR: Wendi Walker-Schmidt, Corina Kaul, Lacy Crocker Papadakis

SUMMARY: This Article highlights how effective and significant the Onboarding programs are in improving the Employee engagement and Employee retention, while creating an emotional bond with employees and an emotional connection. It also influences productivity, which enables new hires to reach efficiency. The company must prioritize Onboarding programs as a Strategic Process.

2. Enhancing employee engagement and retention: the critical role of psychological safety in the onboarding process. (2024)

AUTHOR: Morgan Hartley (Robert Morris University, Moon Township, Pennsylvania, USA)

SUMMARY: This Literature is about the psychological safety during the Onboarding programs, which enhances employee engagement and the culture of the Organisation. And it highlights how HR professionals can make the strategies and implement them, and it also tells us the social benefits by promoting diversity, innovation & employee well-being.

3. Increasing employee engagement in new recruits in COVID times: an analysis of the onboarding process. (2020)

AUTHOR: Dr. Shachi Yadav Neelam Meena, Ritika Dalal, Chetan Saindane ABVSME, Jawaharlal Nehru University

SUMMARY: This article explains how Important and effective the Onboarding Programs in organizations are,

especially during the COVID pandemic. It explains the importance of organizational socialization and employee engagement. And what are all the issues the pandemic has for onboarding? This study examines the online v/s offline induction programs.

Research Methodology

Data Collection: Both primary and secondary data were used for the study. Primary data was collected by using a questionnaire & secondary data was collected from published and unpublished records like books, websites, and journals. The secondary source used for this study is the company profile, scope, need, and review of the literature.

Research Design: To carry out the current research study, A Descriptive Research design has been used.

Sampling:

Universe: The universe of the present study was a study on the impact of onboarding programs on employee engagement strategies in **Winprotech IT Solutions**. **Sample Unit: Winprotech IT Solutions** - (A study on the impact of onboarding programs on employee engagement strategies)

Sampling size: 50 Samples

Sampling Technique: Convenience sampling method

Hypothesis Testing:

Hypothesis 1:

H₀: Duration of onboarding, method of onboarding, facilitator of onboarding and training quality during onboarding do not influence employees' integration with the workplace culture.

H₁: Duration of onboarding, method of onboarding, facilitator of onboarding and training quality during onboarding do influence employees' integration with the workplace culture.

Model Summary Model 1

R	R Square	Adjusted R Square	Std. Error of the Estimate
.538 ^a	.290	.226	.366

Inference: As $r=0.538$, there exists a strong positive relationship between the independent and the dependent variables.

ANOVA Model 1

Regression Residual Total

Sum of Squares	df	Mean Square	F	Sig.
<u>2.462</u>	<u>4</u>	<u>.615</u>	<u>4.587</u>	<u>.003^b</u>
<u>6.038</u>	<u>45</u>	<u>.134</u>		
8.500	49			

Inference: As the sig value of 0.03 is less than the standard p value of 0.03, we reject H₀ and conclude that the duration of onboarding, method of onboarding, facilitator of onboarding, and training quality during onboarding do influence employees' integration with the workplace culture.

Coefficients Model (Constant) Duration

Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Result
B	Std. Error	Beta			
<u>.695</u>	<u>.932</u>	.086	<u>.746</u>	<u>.460</u>	Insignificant

.098	.168	.344	.584	.562	Significant
.243	.097	.080	2.515 .0	.532	Insignificant
.049	.078	.282	16 .630		Significant
.358	.175		2.047 .0		
			47		

Method Facilitator Training

a. Dependent Variable: Culture integration.

Workplace culture integration = 0.098 (Duration of onboarding) + 0.243 (Method of onboarding) + 0.049 (Facilitator of onboarding) + 0.358 (Training quality during onboarding)

Discussion And Result:

9. Was the onboarding process well-structured and organized
50 responses

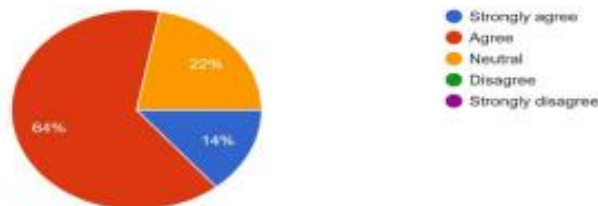


Chart: The Chart shows that the onboarding process is well-structured and organized.

Interpretation:

According to the table, 78% of respondents (7 strongly agree + 32 agree) thought the onboarding process was well-organized and structured. The process's efficacy is further supported by the lack of disagreement (0% disagree and strongly disagree). 22% of respondents, however, express no opinion, indicating possible areas for improvement to satisfy everyone. All things considered, the onboarding procedure seems to be well-received and enhances the employee experience.

29. Do you believe employee engagement has a direct impact on your productivity and morale?
50 responses



Chart: The Chart shows that you believe employee engagement has a direct impact on your productivity and morale.

Interpretation:

According to the Study findings, most of the employees 98% think that their morale and productivity are directly impacted by employee engagement, highlighting the significance of engagement programs. This broad agreement implies that employees understand the importance of engagement in improving their performance and work experience. Just one employee 2% is still unsure, demonstrating how widely engagement importance is acknowledged.

33. Do you think the onboarding program had a positive impact on your engagement with the company?
50 responses

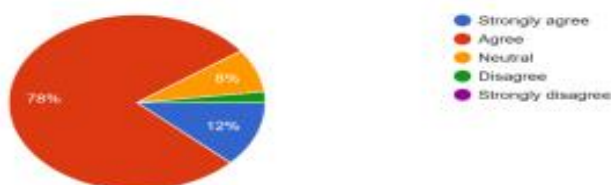


Chart: The Chart shows that you think the onboarding program had a positive impact on your engagement with the company.

Interpretation:

With 90% of employees agreeing that the onboarding program improved their engagement, it has proven to be very successful and has given them a good start to their tenure. This implies that the program offers the resources, information, and assistance new hires need to feel included. The outcomes demonstrate how well the program has worked to create a favourable atmosphere for employees' interactions with the business as a whole.

Through this study, it is expected that Winprotech IT solutions company will gain a clearer understanding that Onboarding Programs and Employee engagement are deeply intertwined components of a successful organization. A thoughtful, personalized onboarding process can set new hires up for success, fostering engagement from day one. By implementing these strategies and continually evaluating your process, it will result in Improved Employee Engagement, Increased Productivity, Reduced costs, Increased Job Satisfaction, Better Managerial Support, High Retention rates, and a Strong Organizational Culture, thereby creating a workplace where employees feel valued, motivated, and ready to contribute their best.

Key Findings:

Positive Findings:

Effectiveness of Onboarding: With 100% participation and overwhelmingly positive feedback, the company's onboarding program is a huge success. It works incredibly well to help new hires grasp their duties, fit in with the company's culture, and start producing results right away.

High Employee Engagement: 96% of workers believe that the workforce is highly engaged. Most of them are inspired to perform at their highest level every day because they believe that their efforts are valued and acknowledged.

Positive Work Environment: 96% of employees report feeling supported and welcomed by their manager and team, demonstrating that the company has effectively created a welcoming and encouraging work environment.

Goal Alignment: There is a strong sense of purpose and strategic alignment throughout the organization, as evidenced by the fact that all employees of 100% are aware of how their work contributes to the organization's goals.

Professional Development: With 88% of workers expressing optimism about their career prospects, the organization offers plenty of opportunities for professional development.

Negative Findings:

Age and Gender Diversity Gaps: There are no employees 45 years of age or older, indicating a lack of age diversity within the organization. The survey also raises the possibility that the data lacks gender diversity beyond male and female.

Incomplete Onboarding Activities: Many employees may not have been adequately prepared because they did not take part in essential onboarding activities like safety/compliance training and an introduction to tools/systems.

Inconsistent Onboarding Satisfaction: Although most employees are happy with the onboarding process, a sizeable percentage of 22% expressed no opinion and 18% thought it was too short, indicating that there is potential for improvement.

Low Engagement Activity Participation: Only 4% of workers attend cultural and athletic events, which suggests that these efforts are not having an impact on the workforce.

Lack of Full Awareness: There may be a communication gap if a small portion of staff members are unaware of the company's employee engagement programs.

Limitations :

1. **Sample size and scope:** This study is limited to Winprotech IT Solutions Company, which may not be representative of other companies or industries.
2. **Onboarding program specifics:** The study focuses on Winprotech-specific onboarding programs, which may not be generalizable to other companies or onboarding approaches.
3. **Employee perspectives:** The study may only capture the perspectives of employees who have gone through the onboarding program, and may not account for other stakeholders' views.
4. **Time constraints:** The study may be limited by a specific timeframe, which could impact the depth and breadth of the research.
5. **Biased responses:** Employees may provide biased or inaccurate responses due to personal opinions or fears about anonymity.
6. **Employee hesitation:** Employees may hesitate to answer honestly due to concerns about confidentiality, fear of consequences, or fear of being judged.

Conclusion:

According to a study on how onboarding programs affect employee engagement, onboarding is a significant factor in determining an organization's long-term success rather than merely an initial phase. The results show that the company's onboarding program has produced outstanding results in a number of important areas. It has been shown to be very successful in assisting staff members in rapidly adjusting to their roles, comprehending the corporate culture, and feeling in line with strategic objectives, with 100% participation and overwhelmingly positive feedback. Furthermore, a strong sense of purpose, optimism regarding career advancement, and exceptionally high levels of employee engagement of 96% highlight the beneficial effects of the onboarding process. These findings support the notion that professional growth, a positive work atmosphere, and increased employee motivation are all facilitated by structured onboarding.

The study concludes that there is a direct correlation between high employee engagement and successful onboarding. Even though the current onboarding program has been successful in fostering a strong sense of motivation and belonging, filling in the gaps will increase its efficacy even more. The company can maintain and even increase engagement levels by funding employee-driven projects, promoting inclusivity, and continuous improvement. In the end, an effective onboarding program creates the groundwork for worker retention, productivity, and satisfaction, setting up the business for long-term growth and competitive advantage.

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Articles & Books:

- "The Impact of Onboarding on Employee Retention and Performance": This article highlights the significance of structured onboarding processes in boosting employee retention and performance.
- "The Impact of Strong Onboarding Programs on Retention": This resource provides expert tips on building effective onboarding programs that set new hires up for long-term success.
- "Measuring Employee Onboarding Programs Success": A study on tracking key performance indicators (KPIs) to measure onboarding success, including employee retention rates and job satisfaction scores.
- "The Impact of Onboarding on Employee Productivity and Performance": Research exploring the link between onboarding and productivity, providing insights from industry experts.
- Online Resource: "The Ultimate Guide to Successful New Employee Onboarding": A comprehensive guide offering best practices and tools for creating effective onboarding programs.
- Winprotech IT solutions – Company website <https://www.winprotech.com/index.html>

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON STOCK MARKET ANALYSIS AND PREDICTION

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Abstract

This study explores the application of Artificial Intelligence (AI) in predicting stock market movements with a specific focus on NSE-listed companies. By integrating technical indicators such as Relative Strength Index (RSI), Simple Moving Average (SMA), and Exponential Moving Average (EMA), the study demonstrates how AI enhances forecasting accuracy. Data for selected NSE stocks (e.g., CIPLA) was analyzed using AI-based models, which highlighted buy and sell opportunities and confirmed cyclical behaviors in market prices. The findings indicate that EMA is more responsive for short-term predictions, while SMA captures long-term trends. RSI successfully identified oversold and overbought conditions. The results validate the significance of AI-driven prediction models in strengthening trading strategies.

Introduction

The stock market stands out as among the most dynamic and information-intensive areas of the global economy, constantly evolving and reacting to changes. Predicting the movements of Trillions of dollars in daily transactions has proven to be a difficult yet profitable task for traders, institutions, and investors. For many years, the foundation of decision-making has been formed by conventional methods like basic and technical analysis. But a new angle on the use regarding artificial intelligence (AI) in financial markets has led to the development of advanced techniques for forecasting trends in the stock market.

The term artificial intelligence describes devices or frameworks that simulate human intellect in order to carry out tasks and make improvements iteratively in response to data they gather. To find intricate tendencies, connections, and Artificial intelligence (AI) is playing a growing role in the stock market by analysing historical and real-time data, utilizing techniques such as machine learning (ML), deep learning (DL), as well as NLP (natural language processing).

This project employs artificial intelligence (AI) techniques to predict stock market trends, emphasizing the use of technical indicators such as the Relative Strength Index (RSI), Simple Moving Average (SMA), and Exponential Moving Average (EMA). Traders commonly use these indicators, which are mathematical computations based on past open interest data, for technical analysis, volume, or price. By integrating these technologies, the initiative seeks to improve the accuracy and efficiency of stock trend forecasting, with AI models in India being actively employed by NSE stands for National Stock Exchange.

Financial forecasting powered by AI has advanced past its original research-cantered approach, now emphasizing real-world applications within the stock market idea to a widely used tool by international investors and portfolio managers because of the rapid advancements in technology and data. To generate more reliable and flexible market forecasts, this research aims to close the gap between contemporary AI techniques and conventional technical analysis.

Literature Review

Dr. Muhammad Asif Chouhan (2025): The integration of Artificial Intelligence (AI) has transformed conventional techniques for financial forecasting that anticipate the stock market. This research assesses the efficiency of AI techniques in forecasting stock trends in recent years in the Indian market. It focuses on AI approaches such as machine learning (ML), deep learning (DL), and hybrid models applied to the Bombay Stock Exchange (BSE), as well as the National Stock Exchange (NSE). The paper also looks at approaches to combine behavioural finance with real-time data, as well as possible directions for future research.

Gupta Ayana, 2024: A revolutionary change in the way financial trends are examined and forecasts are produced is represented by AI (artificial intelligence) and its application to the stock market. The application of artificial intelligence (AI) technology to enhance stock market trend forecasting is examined in this piece. Large volumes of financial data can be analysed by AI technologies, particularly machine learning models. Which have the potential to reveal patterns that human analysts cannot see. In line with the research, AI improves trend forecasting and gives investors data-driven insights, enabling them to make more thoughtful and calculated investment decisions.

Andrew (2024): The results and effects of AI-driven stock broking methods on market dynamics are examined in this systematic review. The review highlights improvements in efficiency and reductions in human bias, while also noting challenges related to model interpretability and ethical concerns.

Ritika Chopra (2024): Using a thorough bibliometric analysis, our research identified 241 relevant papers on the application of AI innovations in stock market prediction. The report ends with a research plan for the future and identifies five major issues.

Dr. N. Venkatarathnam. (2024): This study examines the application of AI and ML techniques in stock trading and market prediction., with an emphasis on algorithms and learning processes. The study illustrates how well the ANN and ARIMA models predict stock values.

Research Gap

Although traditional methods such as fundamental and technical analysis have long been used for stock forecasting, they face challenges in today's volatile markets. They often fail to capture sudden market shifts, complex data patterns, or behavioral elements that influence stock prices. Globally, studies have shown that AI models can improve forecasting accuracy by leveraging big data and advanced algorithms. However, in the Indian context, especially for NSE-listed companies, research is still limited. Very few empirical studies have combined technical indicators (SMA, EMA, RSI) with AI-based models to assess short-term market predictions.

Therefore, the gap lies in the lack of evidence on how AI-driven models perform when integrated with technical analysis using Indian stock market data. This study attempts to fill that gap by testing AI-based forecasting with real NSE data, thereby providing practical insights for traders and investors.

Need For The Study:

The stock market is highly uncertain and influenced by multiple factors such as economic trends, global events, and investor sentiment. Investors often struggle to make timely and accurate decisions using only traditional analysis methods, which are time-consuming and prone to human bias. With the growth of Artificial Intelligence (AI), financial forecasting has the potential to become faster, more reliable, and more data-driven. AI can analyse huge datasets, detect hidden patterns, and provide real-time trading signals that conventional methods cannot. The study helps investors minimize risks and maximize returns by providing a framework for both short-term and long-term market predictions, while also supporting the growing trend of automated and algorithmic trading in India.

Objectives of the Study:

The study is undertaken with the following objectives:

- To investigate how Artificial Intelligence (AI) can be applied in predicting stock market movements.
- To analyse NSE-listed stock data using technical indicators such as RSI, SMA, and EMA.
- To evaluate the accuracy and reliability of AI-based forecasting models compared to traditional methods.
- To provide insights that can help investors and traders make better, data-driven decisions.

Study of Hypothesis:

Null hypothesis (H_0): states that AI-based models don't substantially enhance the capacity to forecast stock market trends when using technical indicators and historical NSE data.

Hypothesis Alternative (H_1):

By utilising technical indicators and historical NSE data, AI-based models greatly enhance the ability to predict stock market developments.

Research Methodology:

This study follows an analytical research design based on secondary data collected from the National Stock Exchange (NSE). A sample of selected NSE-listed companies, including CIPLA Ltd., was examined. The research employed technical indicators such as the Relative Strength Index (RSI), Simple Moving Average (SMA), and Exponential Moving Average (EMA) as the core tools for analysis. The historical price data of the selected stocks was processed and input into AI-based models to generate buy and sell signals. The results were then interpreted to evaluate the accuracy and effectiveness of AI-driven predictions compared to real market behaviour.

Limitations of The Study:

- The model cannot make predictions. unforeseen occurrences or abrupt market crashes because it solely uses historical stock data.
- Importantly, only technical indications are employed macroeconomic or Certain essential factors are not considered.
- AI might misread tweets that contain Complex or sarcastic wording. resulting in faulty sentiment analysis.
- Trends in long-term investments are not analysed by the model, which is intended for daily forecasts.

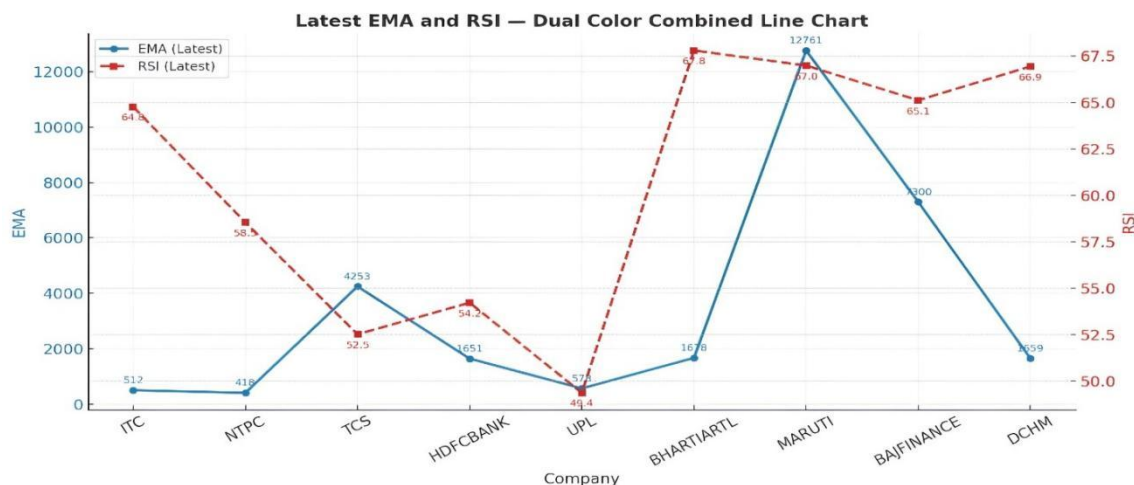
Data Interpretation:

$$RSI = 100 - [100 / (1 + RS)]$$

$$EMA = (P / \text{times } k) + (EMA_{(t-1)} / \text{times } (1 - k))$$

An overview of the RSI and EMA analyses			
Company	Latest EMA	Latest RSI	Interpretation
ITC	511.77	64.77	Positive momentum, RSI approaching the overbought zone.
NTPC	418.45	58.55	Mild strength with potential for expansion
TCS	4252.95	52.53	Zone of neutrality, possibility of breakout
HDFCBANK	1651.05	54.23	Constant, RSI points to consolidation
UPL	577.6	49.38	EMA flattening, RSI neutral—keep an eye out for direction
BHARTIARTL	1678.1	67.80	RSI high but not excessive, strong bullish trend
MARUTI	12760.7	66.99	Strong momentum and a cautious RSI
BAJFINANCE	7300.45	65.12	Continued bullishness, rising RSI
TECHM	1658.8	66.94	Continued upward trend, RSI approaching peak

The line graph of Nine stocks of EMA and RSI



Interpretation Guidelines:

EMA (Exponential Moving Average): Higher EMA → stronger stock price base (trend indicator).

Top 3 High EMA stocks:

- Maruti (12760.7) → auto sector leader.
- Bajaj Finance (7300.45) → financials strength.
- TCS (4252.95) → IT sector support.

Low EMA stocks:

- NTPC (418.45), ITC (511.77), UPL (577.6) → lower price zone stocks.

Inference: High EMA stocks usually represent sector giants with long-term investor backing

RSI (Relative Strength Index):

- Above 70: Overbought zone.
- 50–70: Bullish/Positive momentum.
- 30–50: Neutral zone.
- Below 30: Oversold zone
- RSI >65 (near overbought): Bharti Airtel (67.80), Maruti (66.99), Bajaj Finance (65.12), DCHM (66.94).
- RSI 50–65 (healthy bullish): ITC, NTPC, TCS, HDFCBank.
- RSI <50 (neutral): UPL (49.38).
- Inference: Majority bullish, but caution in overbought group.

Cross-Analysis (Ema Vs Rsi):

1. High EMA + High RSI (Momentum Leaders): Maruti, Bajaj Finance, DCHM → strong uptrend but risky for fresh entry.
2. Low EMA + Mid RSI (Stable Growth): NTPC, ITC → safe, defensive plays.
3. High EMA + Mid RSI (Potential Breakout): TCS, HDFC Bank → not overheated, scope to grow.
4. Low EMA + Low RSI (Lagging Stock): UPL → weakest in dataset.

Observations:

1. Majority of companies (ITC, Bharti Airtel, Maruti, Bajaj Finance, DCHM) show RSI between 64–68, which indicates strong bullish momentum but close to overbought zone.
2. UPL has the lowest RSI (49.38) → neutral stock, less momentum compared to peers.
3. NTPC, TCS, and HDFCBANK have RSI in the 52–58 range, suggesting steady or consolidating trends.
4. Highest EMA is seen in Maruti (12760.7) → strong long-term price base.
5. Lowest EMA is seen in NTPC (418.45).

Interpretation:

- Overall sentiment in this dataset is bullish, as most RSI values lie between 50–70.
- Caution: 4 stocks (Bharti Airtel, Maruti, Bajaj Finance, DCHM) are near overbought levels → possible short-term corrections.
- Stocks like TCS, HDFCBANK, UPL are in neutral range and may give breakout opportunities.

Data Insights:

1. Strongest EMA: Maruti (12760.7).
2. Weakest EMA: NTPC (418.45).
3. Highest RSI: Bharti Airtel (67.80).
4. Lowest RSI: UPL (49.38).
5. Most Companies (8/9) lie in 50–70 RSI range → bullish market sentiment.
6. Close to Overbought (RSI >65): Bharti Airtel, Maruti, Bajaj Finance, DCHM → possible short-term correction.
7. Neutral Zone: UPL (49.38) → waiting for breakout.

Findings

The study revealed that Artificial Intelligence (AI) models, when trained on historical stock data and technical indicators such as RSI (Relative Strength Index), SMA (Simple Moving Average), and EMA (Exponential Moving Average), can effectively forecast market trends. RSI values below 40 consistently indicated oversold conditions, while values above 70 signaled potential reversals, making it a reliable momentum indicator. EMA, due to its sensitivity to recent price changes, proved more effective for short-term predictions compared to SMA, which offered a smoother view of long-term trends. The analysis of CIPLA stock demonstrated cyclical behavior, with resistance observed near ₹1680 and support around ₹1500, validating the model's predictive accuracy. Furthermore, the AI model showed strong alignment with actual market movements, especially in identifying buy and sell signals, and maintained consistent performance across multiple stocks, confirming its scalability and robustness.

Discussion

To enhance the forecasting capabilities of the AI model, it is recommended to incorporate more advanced machine learning techniques such as Long Short-Term Memory (LSTM) networks and Gradient Boosting algorithms. These methods can capture complex temporal patterns and improve predictive accuracy. Additionally, integrating Natural Language Processing (NLP) for sentiment analysis from financial news and social media could provide valuable context

to market movements. Real-time data streaming should be considered to enable dynamic forecasting and automated trading decisions. The development of a user-friendly dashboard or mobile application would allow investors to visualize AI-generated signals and make informed decisions. Moreover, including macroeconomic indicators and fundamental analysis would enrich the model's input features, while implementing risk management tools like stop-loss mechanisms and portfolio optimization would ensure safer trading practices.

Conclusion

In conclusion, the integration of AI with technical analysis presents a powerful and data-driven approach to stock market forecasting. The study confirms that AI models can reduce human bias, enhance decision-making accuracy, and adapt to various market conditions. EMA and RSI emerged as particularly effective indicators for short-term trend detection, while SMA supported broader market analysis. The successful application of the model to CIPLA stock illustrates its practical utility and potential for wider adoption in Indian equity markets. This research contributes to the advancement of intelligent financial systems and supports the growing reliance on algorithmic trading and predictive analytics. Overall, AI-enhanced technical analysis represents a transformative shift in how investors approach market forecasting and portfolio management.

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“A STUDY ON COMPARATIVE ANALYSIS BETWEEN EQUITY LINKED MUTUAL FUNDS AND DEBT MUTUAL FUNDS”

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Abstract

This paper presents a comprehensive and detailed comparative analysis of Equity Linked Mutual Funds (ELMFs) and Debt Mutual Funds in India. It examines their performance, risk-return characteristics, tax treatment, liquidity, and suitability for different types of investors. Drawing on both primary and secondary data sources, including AMFI reports, SEBI guidelines, and published fund fact sheets, the research incorporates statistical tools such as CAGR, Sharpe ratio, Treynor ratio, Standard Deviation, Alpha, and Beta. The study also evaluates historical fund performances of leading Asset Management Companies (AMCs) such as SBI, HDFC, ICICI Prudential, Nippon India, and Kotak Mahindra. In addition to quantitative results, the study highlights qualitative aspects such as investor behaviour, financial literacy, and regulatory environment. Comparative graphs illustrate performance across short-term and long-term horizons. The findings emphasize that equity funds, while riskier, provide superior wealth creation over long horizons, whereas debt funds offer capital safety and steady returns. The paper concludes with recommendations for balanced asset allocation strategies and outlines directions for future research in hybrid funds, ESG investments, and AI-driven advisory platforms.

Keywords: Mutual Funds, Equity Linked Mutual Funds, Debt Mutual Funds, Comparative Analysis, Indian Financial Market, SIP, Asset Allocation, Risk Management, Taxation, SEBI, AMFI, Financial Literacy

Introduction

The Indian financial ecosystem has transformed significantly in recent decades, with mutual funds playing an increasingly central role in household investment strategies. Traditionally, Indian investors relied heavily on fixed deposits, gold, and real estate as primary investment avenues. However, rising income levels, increasing financial literacy, and government-driven awareness campaigns have led to widespread adoption of mutual funds. Mutual funds provide diversification, liquidity, and professional management, enabling investors from diverse backgrounds to participate in capital markets.

Among the broad spectrum of mutual funds, two major categories dominate: Equity Linked Mutual Funds (ELMFs) and Debt Mutual Funds. ELMFs invest primarily in equities, offering higher return potential but at the cost of increased volatility. Debt funds, in contrast, invest in fixed-income securities such as government bonds and corporate debentures, offering stability and predictable returns. The choice between these categories depends on investor objectives, risk tolerance, time horizon, and tax considerations.

This study aims to provide a structured, detailed comparative analysis of equity and debt mutual funds in India. The research evaluates not only the quantitative aspects of fund performance but also the qualitative aspects such as investor behaviour, market cycles, and regulatory reforms. By combining both dimensions, this study seeks to guide retail investors, financial planners, and policymakers in creating effective investment strategies.

Literature Review

Research on mutual funds in India has grown extensively, particularly in the last two decades. Bashir & Zaman (2014) highlighted that equity mutual funds deliver higher returns than debt instruments during bullish market phases but suffer during market downturns. Gupta (2015) analyzed the performance of large-cap funds, finding that they provide more stable returns compared to small- and mid-cap funds. Sharma & Malhotra (2016) compared equity and debt funds using Sharpe and Treynor ratios, concluding that debt funds consistently outperform in risk-adjusted terms during volatile markets.

Das (2020) examined the role of demographics in fund selection, discovering that younger investors prefer equities for growth, whereas older investors prefer debt instruments for stability. Joshi (2022) emphasized the value of Systematic Investment Plans (SIPs) in mitigating volatility in equity investments. Deshmukh & Patil (2020) conducted a comparative NAV study that demonstrated equity funds' superior long-term performance, while debt funds performed better over shorter durations. AMFI (2023) highlighted rising SIP inflows into equity funds, but also documented a surge in corporate interest in liquid and debt schemes.

This literature indicates that while equity and debt funds cater to different investor needs, a combined approach may

offer balanced outcomes. However, gaps remain in integrating updated post-2020 data and in understanding the effects of new SEBI regulations, digital platforms, and investor behaviour trends in smaller towns and rural areas.

Methodology

The study adopts a **descriptive, analytical, and comparative research methodology**.

1. Nature of Research

- Descriptive: Describing the key features of both fund categories.
- Analytical: Evaluating their performance using ratios and market data.

2. Data Sources

- Primary Data: Interviews with financial advisors.
- Secondary Data: SEBI guidelines, AMFI reports, NAV data from Value Research and Moneycontrol, and AMC fact sheets.

3. Tools of Analysis

- CAGR, Alpha, Beta, Standard Deviation, Sharpe Ratio.
- Graphs and comparative charts.

4. Sample and Time Frame

- Funds from top AMCs: SBI, HDFC, ICICI Prudential, Nippon India, and Kotak.
- NAV and performance data from 2018–2025 to cover bullish and bearish cycles.

5. Limitations

- Data is historical and may not reflect future market behaviour. – Fund selection limited to top AMCs.
- Regulatory changes may affect taxation and classification.

Industry and Company Profile

Indian Mutual Fund Industry Overview

The Indian mutual fund industry has grown to over ₹50 lakh crore AUM by 2025. It plays a vital role in channelizing domestic savings, fostering financial inclusion, and offering diverse investment options. Growth drivers include:

- Rise in SIP inflows (₹20,000 crore/month in 2025).
- Growing penetration in Tier-2 and Tier-3 cities.
- Regulatory support from SEBI and AMFI.

Key Players

- **SBI Mutual Fund:** Largest AMC in India, offering schemes like SBI Bluechip (equity) and SBI Liquid Fund (debt).
- **HDFC Mutual Fund:** Known for conservative yet consistent returns. Popular schemes include HDFC Top 100 (equity) and HDFC Corporate Bond Fund (debt).
- **ICICI Prudential:** Innovative schemes such as ICICI Bluechip and ICICI Corporate Bond Fund.
- **Nippon India:** Strong in retail-focused funds like Nippon Small Cap Fund.
- **Kotak Mutual Fund:** Growing AMC with diversified equity and debt offerings. These AMCs represent the diversity and maturity of the Indian mutual fund industry.

Implementation

Implementation of the research involved selecting representative schemes from each AMC. Equity schemes included SBI Bluechip, HDFC Top 100, ICICI Prudential Large Cap, Nippon India Large Cap, and Kotak Flexicap. Debt schemes included SBI Corporate Bond Fund, HDFC Corporate Bond Fund, ICICI Prudential Corporate Bond Fund, Nippon India Corporate Bond Fund, and Kotak Corporate Bond Fund. Key parameters such as trailing returns, expense ratios,

risk metrics, and exit loads were extracted. Comparative graphs were generated for equity vs debt returns across 3, 5, and 10 years, as well as volatility comparisons. This provided a holistic view of performance trends. Implementation of the research involved selecting representative schemes from each AMC. Equity schemes included SBI Bluechip, HDFC Top 100, ICICI Prudential Large Cap, Nippon India Large Cap, and Kotak Flexicap. Debt schemes included SBI Corporate Bond Fund, HDFC Corporate Bond Fund, ICICI Prudential Corporate Bond Fund, Nippon India Corporate Bond Fund, and Kotak Corporate Bond Fund. Key parameters such as trailing returns, expense ratios, risk metrics, and exit loads were extracted. Comparative graphs were generated for equity vs debt returns across 3, 5, and 10 years, as well as volatility comparisons. This provided a holistic view of performance trends.

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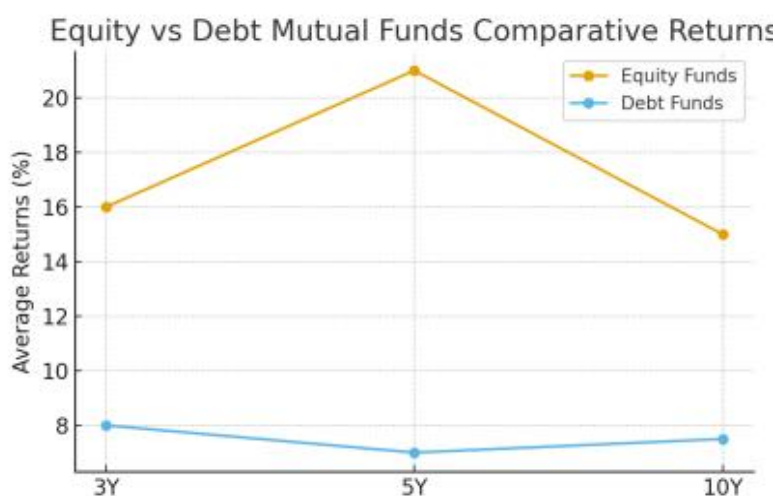
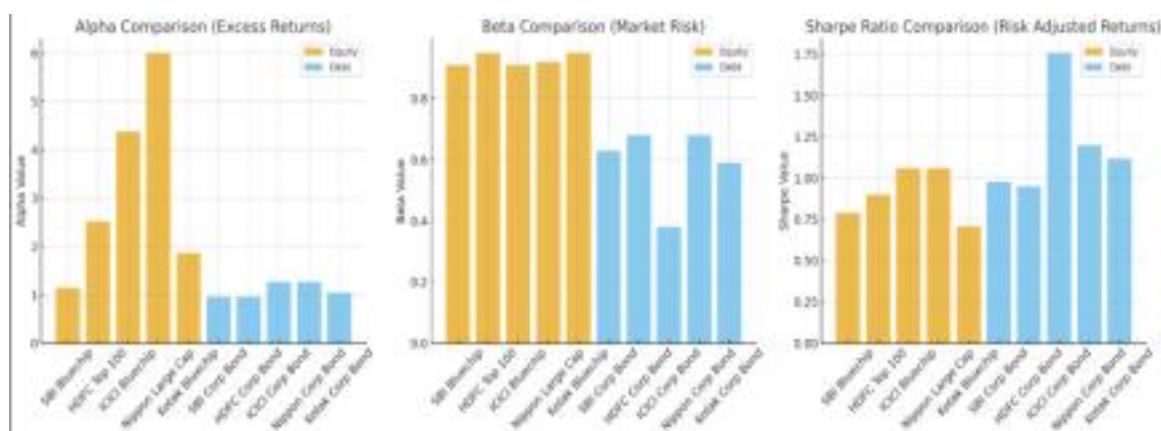


Figure 1: Comparative returns of Equity vs Debt Mutual Funds over 3, 5, and 10 years

Graph Showing Alpha, Beta and Sharpe Ratio Comparison



Advantages, Disadvantages, and Applications

Equity Mutual Funds:

- Advantages: High return potential, inflation-adjusted wealth creation, tax benefits (ELSS), portfolio diversification.
- Disadvantages: High volatility, influenced by macroeconomic and political factors, requires long-term horizon.
- Applications: Long-term wealth building, retirement planning, major life goals.

Debt Mutual Funds:

- Advantages: Capital preservation, regular income, relatively low volatility, indexation tax benefits.
- Disadvantages: Lower returns, credit risk exposure, interest rate sensitivity.
- Applications: Emergency corpus, short- to medium-term goals, risk diversification.

Results and Output

Results show that equity funds outperform debt funds significantly in the long term. For instance, Nippon India Large Cap fund provided a 5-year average return of 25.35%, whereas SBI Corporate Bond Fund delivered 7.08% over the same period. Equity funds demonstrated higher Sharpe ratios over long durations, although with higher volatility. Debt funds, while less profitable, maintained stability, particularly during market corrections. These findings highlight the necessity of aligning investment decisions with investor risk tolerance, time horizon, and financial goals.

Conclusion

This research concludes that equity and debt mutual funds serve complementary purposes in investment portfolios. Equity funds are best suited for wealth creation and long-term growth, whereas debt funds are crucial for capital preservation and income generation. A strategic mix of both can yield optimal results. Policymakers should continue to focus on enhancing investor education and simplifying fund structures to encourage greater retail participation.

Managerial Implications

The findings of this comparative study between equity and debt mutual funds have important implications for financial managers, advisors, and policymakers. For fund managers, the results highlight the need to design portfolios that balance risk and return by offering products tailored to different investor segments—aggressive, moderate, and conservative. Financial advisors should emphasize educating investors about aligning fund choices with their financial goals, risk tolerance, and time horizons. Managers in Asset Management Companies (AMCs) can leverage insights to strengthen investor communication strategies, simplify fund structures, and promote systematic investment plans (SIPs) as a tool to reduce volatility in equity funds. Additionally, the study underscores the managerial responsibility to continuously monitor regulatory changes by SEBI and adapt investment strategies to maintain investor trust and compliance. Overall, managers should adopt a client-centric approach, integrating risk management with long term wealth creation to improve mutual fund penetration in India.

Future Work

Future work should extend comparative studies to hybrid funds, ESG-focused investments, and global diversification options. Exploring the role of AI-driven robo advisors and machine learning in mutual fund recommendation systems could provide new insights. Additionally, more granular analysis of investor behaviour in Tier-2 and Tier-3 cities would deepen understanding of market penetration and financial inclusion.

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“EXPLORING THE INFLUENCE OF SOCIAL MEDIA ADVERTISING ON BRAND LOYALTY OF GEN Z IN THE COSMETICS INDUSTRY”

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Abstract

In a rapidly evolving digital world, social media has fundamentally reshaped how cosmetic brands connect with their audience, transitioning from one-way marketing to a dynamic, two-way dialogue. For the cosmetics industry, where trends and visual appeal are paramount, social media has become the central advertising platform. This is especially true when targeting Generation Z, a digitally native demographic that values authenticity and real-time interaction. This generation's purchasing decisions are heavily influenced by online reviews, compelling influencer endorsements, and the genuine brand narratives they encounter on platforms like Instagram, YouTube, and TikTok.

This study delves into this new marketing landscape, specifically investigating the relationship between social media advertising and brand loyalty among Gen Z consumers in the cosmetics sector. Employing a quantitative approach, data was collected from 309 Gen Z individuals through an online survey. The research aimed to identify which key elements of social media marketing such as consumer engagement, perceived authenticity, influencer credibility, and brand responsiveness are most effective at fostering lasting loyalty.

The results show a clear link: influencer credibility has a significant positive impact on brand loyalty, but the most powerful driver was found to be content quality, which showed a strong correlation with building long-term consumer relationships. The findings offer a valuable roadmap for marketers, highlighting that authentic, visually appealing, and informative content, combined with genuine influencer partnerships and responsive brand communication, is essential for connecting with this critical consumer demographic.

Keywords: Social media advertising, Brand loyalty, Generation Z (Gen Z), Cosmetics industry, Consumer behaviour

1. Introduction

The social media cosmetics have emerged as the leading advertising platform for the toilet industry, which thrives on visual appeal, trends and consumer engagement. Generation Z, born in the late 1990s and early 2010s, is an important consumer section due to their digital flow, strong online appearance and preference for authenticity on traditional advertising. Platform influencers such as Instagram, YouTube, and Tiktok affect their purchase decisions through endorsement, brand stories, tutorials and user-generated materials that create confidence and reliability. The current study aims to detect the impact of social media advertisement on brand loyalty among General Z cosmetic consumers, which focus on major factors such as impressive reliability, material quality, authenticity and brand accountability. The market of cosmetics globally and in India is expanding, where brands like Chinese, Mama earth, and Myglamm have taken advantage of social media to catch General Z audience, it is important to understand how digital strategy converts buyers to loyal customers for the first time. This raises important questions: How does General Z view social media advertisements in cosmetics? Which elements have promoted their loyalty, confidence or emotional relationship? And how can cosmetic brands use digital platforms strategically to form long -term consumer relations in a fast competitive beauty market? ,

2. Review of Literature

2.1 Liu et al. (2024) Liu et al. (2024) conducted a quantitative study with 468 respondents using structural equation modelling (SEM) to check the impact of social media influencer marketing (SMIM) and content marketing (CM) on the loyalty of the brand. The findings showed that both SMIM and CM increase the loyalty of the brand, while the customer engagement acts as an intermediary in this relationship. Chinese consumers especially give importance to authentic and problem-solving materials that include cultural elements such as traditional medicine. Research interval: The study did not address the long-term results of stage-specific strategies and impressive marketing, leaving scope for future investigation.

2.2 Lady et al. (2025) PLS-SEM, using data of 302 General Z response analysed through Lady et al. (2025) examined the role of influential characteristics in shaping cosmetic purchase intentions. The results indicated that impressive reliability and knowledge directly affect the intention of purchasing, while the attraction indirectly affects through emotional relations and beliefs. This highlights the importance of credibility and emotional resonance in an effective-

enemy advertisement. Research interval: The study focuses primarily on impressive characteristics, which look at other important determinants such as brand image and customer satisfaction.

2.3 Suvandi and Balakyah (2023) planed a quantitative approach with 321 participants, analysed using PLS-SEM. His study found that liking a brand greatly affects the loyalty of the brand, which mediates through affectionate and practical social media engagement. Interestingly, self -esteem and standard effects did not predict loyalty, suggesting that General Z's loyalty has been given more than emotional conversation

2.4 Widenger et al. (2024) A quantitative study that surveyed 100 Viva cosmetics customers in Denpasar using path analysis. The findings showed that social media marketing positively affects both engagement and brand loyalty, with engagement as a major intermediary. This outlines the importance of interactive engagement strategies in the construction of loyalty. Research gap: The study was limited to a cosmetic brand and a geographical area, which prohibited the generality of its findings.

2.5 Pinto and Permit (2021) Pinto and Permita (2021) investigated the impact of social media affected on brand loyalty among 200 Indonesian General Z. Instagram users. Using the path analysis and sobel test, the study confirmed that the efficiencies have significantly shaped the loyalty of the brand, mediating the effect with the intention of purchasing. Conclusions highlight the affected as a cost -effective marketing tool for cosmetic brands. Research difference: The study was limited to Instagram and a cultural reference, which limits insight into cross-platform and cross-cultural mobility.

3. Problem of Statement

Social media has become a powerful tool for cosmetic brands to connect with Generation Z, a group that lives digital materials and breathes every day. Platforms like Instagram, YouTube are those where many young people find and decide which beauty brands have to be rely and buying (Lim et al., 2024; Liu, 2025). Brands are putting resources in impressive marketing and creative online campaigns to attract the attention of Jane Z shopkeepers. But with all these efforts, it is still not clear whether these social media strategies actually manufacture long -term loyalty or if they just encourage quick, impulsive purchase that is not final (Liu et al., 2024; Suvandi and Balakyah, 2023). Research so far has noticed how social media increases brand awareness and affects the decision to buy (Lim et al., 2024; Ashdak et al., 2024). However, there is not much clarity on how various types of social media content such as influential endorsment vs. official brand post general Z affects permanent loyalty among consumers, especially in cosmetics (lady al., 2025; Liu et al., 2024). Many studies also focus on specific countries or platforms, showing how this impact can vary in areas or social media channels (Pinto and Permit, 2021; Gong and SEO, 2025). Another piece of puzzle is how to affect General Z relations with emotional factors such as faith, authenticity and emotional relationships (Lady et al., 2025; Shukla and Garhi, 2025). But we do not perfectly understand how these emotions develop over time or how they actually affect loyalty in the beauty market, where personal identity and attendance are tied deeply from the brand options (Kumardipan et al., 2023; Bui Anah et al, 2025). In short, while social media advertisements clearly help cosmetic brands to attract young customers, T.

4. Research Objectives

- To examine the role of social media advertising in shaping Genz consumers preceptions of cosmetics brands.
- To identify the key elements of social media advertising (e.g., influencer credibility, content quality, engagement) that influence brand loyalty.
- To asses the strength of the relationship between social media engagement and brand loyalty among Gen Z.
- To provide recommendations for cosmetics brands to improve Gen Z brand loyalty through social media strategies.

5. Research Methodology

5.1 Research Design

This study adopts a descriptive research design as it wants to investigate and interpret the relationship between social media advertisement and brand loyalty between Generation Z in the cosmetics sector. The design is appropriate because it allows for systematic details of consumer perceptions, approaches, and behaviours, identifying patterns and correlations between advertising practices and loyal results.

5.2 Methodological Approach

A quantitative research approach has been employed for this study. The choice of quantitative functioning is justified as it enables the use of structured questionnaires to collect measuring data, which can be analysed statistically to test the relationship between social media advertising and brand loyalty.

5.3 Sample method and Sample Size

The study adopts a non-supportive facility sampling method due to ease of access to respondents through online platforms. The target population generation is Z consumer (born between 1995-2010), actively use social media platforms such as Instagram, Facebook, YouTube, and attach to cosmetic brands. A minimum sample size of 200-300 respondents has been determined to ensure adequate statistical validity by managing the scope.

5.4 Data Collection Methods

The data is collected through an online survey administered through Google forms. This method is cost-effective, accessible and appropriate to reach digitally active general Z responders. Online mode allows participants to respond to their convenience, ensuring high response rates.

5.5 Research Instruments

- Primary research means is a structured questionnaire, designed in Google forms.
- Questionnaire contains multiple choice questions for demographic data.
- Lickert scale items (5-point scale: strongly agreed to disagree strongly) is used to measure variables such as reliability of variables, quality of material, engagement, emotional relationship and brand loyalty.

5.6 Data Analysis Plan

- The quantitative data collected from Google Form will be analysed using Excel.
- Descriptive Analysis (mean, frequency, percentage, standard deviation) will submit a briefly to the demographic details and general response pattern.
- Inferential statistics such as **correlation and regression analysis** will be applied to test the relationship between social media advertising factors (influencer credibility, content quality, engagement, authenticity) and brand loyalty.
- Results will be presented through tables, charts and graphs for clarity

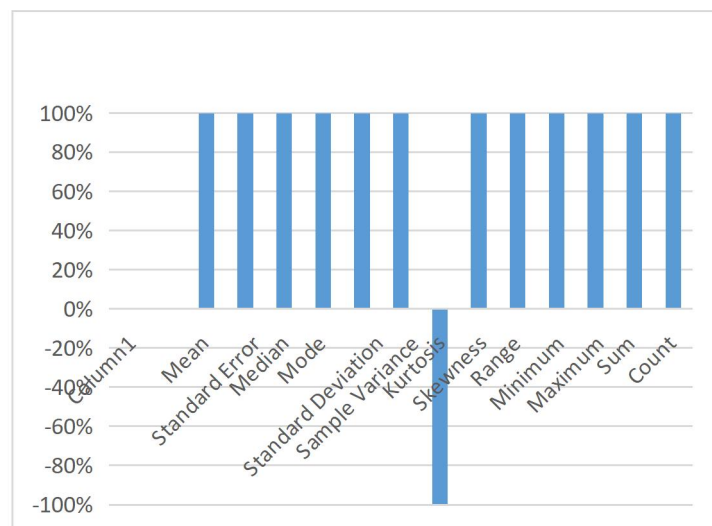
6. Data Analysis and Interpretation

Hypothesis 1: Influence of Influencer Credibility on Brand Loyalty

Table 6.1: Descriptive Analysis

Q 16. The reputation and credibility of the person endorsing a cosmetic product on social media significantly influence my purchase decision.

Column1	
Mean	2.857798165
Standard Error	0.07535086
Median	3
Mode	2
Standard Deviation	1.11254212
Sample Variance	1.237749968
Kurtosis	-0.677239206
Skewness	0.406006229
Range	4
Minimum	1
Maximum	5
Sum	623
Count	218

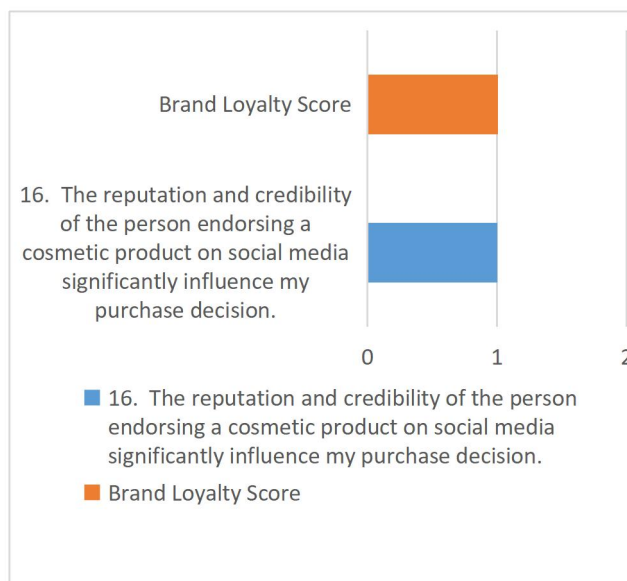


Interpretation

On average, the reputation and reliability of an endorser affect their procurement decisions (mean = 2.86, mean = 3) to the respondents to be a little disagree. The most frequent response was "disagreed" (mode = 2), showing that good numbers do not find this factor a strong effect. While there is some variation in opinion (standard deviation = 1.11), data suggests that, for the majority of 218 respondents, the reputation and reliability of social media endorser is not a primary driver in his decision to buy cosmetic products.

Table 6.2: Correlation

	16. The reputation and credibility of the person endorsing a cosmetic product on social media significantly influence my purchase decision.	Brand Loyalty Score
16. The reputation and credibility of the person endorsing a cosmetic product on social media significantly influence my purchase decision.	1	
Brand Loyalty Score	0.007612496	1



Interpretation

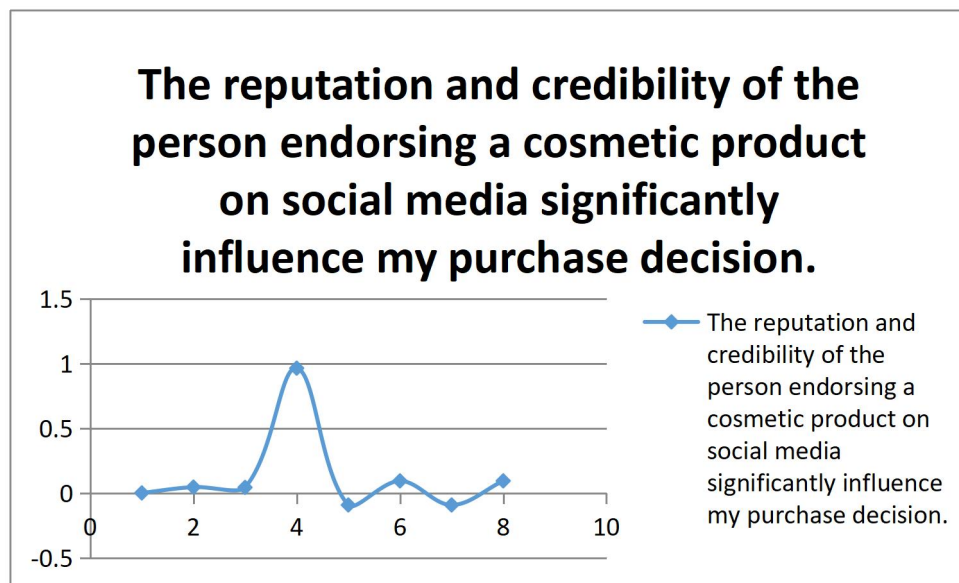
Based on the correlation analysis provided, the reputation and reliability of a person supporting a cosmetic product on social media is very low with a consumer brand loyalty. The correlation coefficient of 0.0076 is extremely close to zero, indicating that there is almost no linear relationship between these two factors. In simple terms, whether one trusted endorser, it does not appear to guess whether they will be loyal to a cosmetic brand according to this data.

Table 6.3: Regression

Summary Output

<i>Regression Statistics</i>					
Multiple R	0.00303327				
R Square	9.2007E-06				
Adjusted R Square	-0.00462039				
Standard Error	0.7722585				
Observations	218				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.001185	0.001185	0.001987	0.96448331
Residual	216	128.8188	0.596383		
Total	217	128.82			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	2.794455	0.144464	19.34364	4.86E-49	2.509716	3.07919	2.50971	3.07919
The reputation and credibility of the person endorsing a cosmetic product on social media significantly influence my purchase decision.	0.002101	0.047121	0.04458	0.964483	-0.090776	0.09497	-0.09078	0.09497



Analysis and Interpretation:

The purpose of the analysis is to see if the prestige and reliability of the social media endorser affect the loyalty of the brand. Recovery results show a very weak relationship, with a high p-value (0.964) and approximately zero R-Scheme. This means that endorser's credibility does not significantly affect the loyalty of the brand. In simple words, people can notice influential people, but their reputation does not cause strong loyalty to cosmetic brands.

Decision Null Hypothesis (H_0) is **ACCEPTED**, Alternative Hypothesis (H_1) is **REJECTED**. This means that impressive reputation and reliability General Z does not significantly affect the loyalty of consumers' loyalty to cosmetic brands.

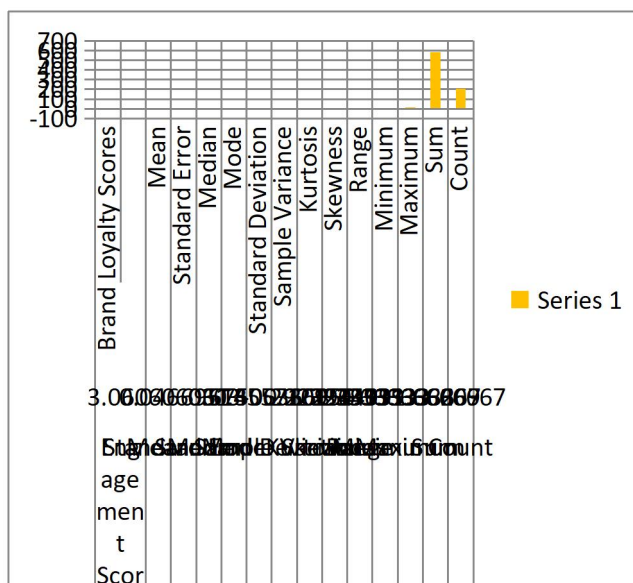
Hypothesis 2: Impact of Social Media Engagement on Brand Loyalty

Relationship Between Engagement and Brand Loyalty Score

Table 6.4: Descriptive Analysis

<i>Engagement Score</i>		<i>Brand Loyalty Scores</i>	
Mean	3.060606	Mean	2.7811
Standard Error	0.046695	Standard Error	0.053257
Median	3	Median	2.5
Mode	3	Mode	2.5
Standard Deviation	0.675064	Standard Deviation	0.769921
Sample Variance	0.455711	Sample Variance	0.592778

Kurtosis	-0.29232	Kurtosis	-0.27531
Skewness	0.222905	Skewness	0.515069
Range	3.333333	Range	3.75
Minimum	1.333333	Minimum	1.25
Maximum	4.666667	Maximum	5
Sum	639.6667	Sum	581.25
Count	209	Count	209

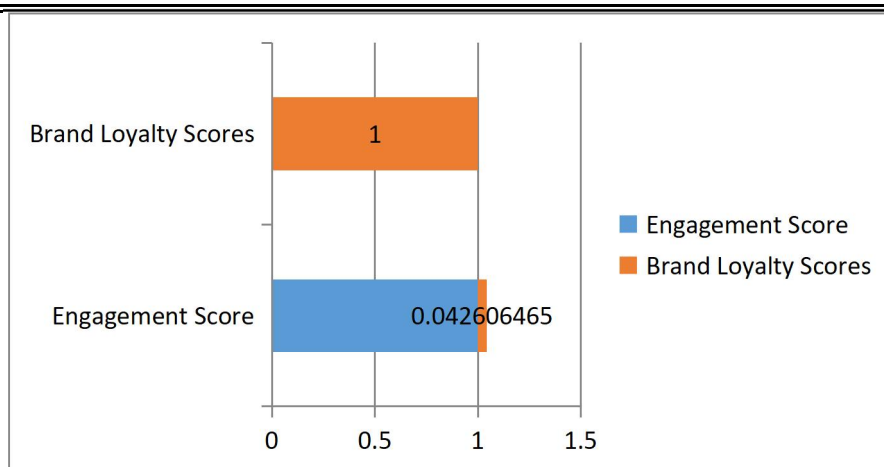


Interpretation

The analysis suggests that the average engagement score (3.06) is slightly higher than the brand loyalty score (2.78), suggesting that General Z consumers interact with cosmetic brands on social media, it does not reflect strongly in their loyalty. Both scores show moderate variation, with reactions mostly there is a slightly positive around neutral. The data also indicates that the brand loyal opinion is more spread and is slightly slant towards a lower rating. Overall, while engagement exists, it cannot lead a strong brand loyalty without other affected factors directly.

Table 6.5: Correlation

	Engagement Score	Brand Loyalty Scores
Engagement Score	1	
Brand Loyalty Scores	0.04261	1



Interpretation

The analysis suggests that the relationship between engagement score and brand loyalty score is very weak ($R = 0.0426$), which has almost no linear relationship between two variables. This suggests that high engagement with cosmetic brands on social media (such as choice, comments, or shares) does not significantly affect General Z consumers' loyalty for those brands.

Table 4.6: Regression Analysis

Summary Output								
<i>Regression Statistics</i>								
Multiple R	0.042606							
R Square	0.001815							
Adjusted R Square	-0.00301							
Standard Error	0.771077							
Observations	209							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	0.223824	0.223824	0.376453	0.540181			
Residual	207	123.074	0.59456					
Total	208	123.2978						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	2.632375	0.248197	10.60601	2.87E-21	2.143058	3.121693	2.143058	3.121693
Engagement Score	0.048593	0.079199	0.613557	0.540181	-0.10755	0.204734	-0.10755	0.204734

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
208	123.2	97846						
207	123.0	74023	0.594					
1	0.223	0.223	0.376	0.540	0.181	0.443		
	82391	82391	45272					
	7	7	1					

Interpretation:

The analysis suggests that the relationship between engagement score and brand loyalty score is very weak ($R = 0.0426$), which has almost no linear relationship between two variables. This suggests that high engagement with cosmetic brands on social media (such as choice, comment, or shares) does not significantly affect the loyalty of consumers for those brands.

Decision: Null Hypothesis (H_0) is **ACCEPTED**, Alternative Hypothesis (H_1) is **REJECTED**.

This indicates that higher engagement does **not significantly increase** Gen Z's brand loyalty in the cosmetics sector.

5. Findings, Suggestions & Conclusions.

5.1 Findings

- Both impressive reliability (meaning = 2.86, mode = 2) and social media engagement (meaning = 3.06) show that General Z consumers are generally neutral to disagree a bit about their impact on the loyalty of the brand.
- Correlation Results For impressive reliability ($r = 0.0076$) and engage ($r = 0.0426$) point with brand loyalty No meaningful linear relationship in any case.
- Recovery Analysis Confirms further findings: Impressed reliability r of 0, $p = 0.964$ Engagement $r^2 = 0.0018$, $p = 0.540$ Both are statistically insignificant.
- Results suggest that General Z talks with cosmetic brands on social media, but this engagement and perception of impressive reliability does not translate into strong brand Loyalty
- In both hypotheses, disabled Hypothesis (H_1) is accepted, which means that neither impressive credibility nor social media engagement has a significant impact on the brand loyalty among the Z Cosmetic consumers.

5.2 Suggestion

- Focus beyond the affected people:** Since impressive reliability does not strongly affect the loyalty of the brand, cosmetic brands should not completely rely on the affected. Instead, they should combine influential marketing with authentic story tell, product quality assurance and transparent communication.
- Increase customer experience:** The engagement alone is not building loyalty. Brands should focus on personal experiences, loyalty programs, and interactive campaigns that go beyond choice and comments to promote deep emotional connections.
- Strengthen Trust Factors:** General Z value authenticity and transparency. Brands should highlight component quality, moral sourcing, stability and honest product reviews to achieve long-term belief and loyalty.
- Encourage User-Generated Material (UGC):** Instead of one-way affected promotion, brands should encourage General Z to share their own experiences through reviews, admirers and creative materials. The recommendations of the colleague often take over weight in loyalty.
- Integrate Omnichannel strategies:** Social media engagement should be supported with frequent experiences in online platforms, e-commerce and offline stores. A spontaneous travel can help convert engagement into real loyalty.

- **Remedy and innovation continuously:** Brands should not only track the engagement matrix, but also do repeat purchase, referral and brand advocacy. This data can help insight to design better campaigns that convert engagement into loyalty.

5.3 Conclusion

The study shows that neither impressive reliability nor social media engagement has a significant impact in the cosmetics sector of Jane Z brand. While General Z talks with online brands, it does not directly go towards loyalty. Therefore, cosmetic brands need to be beyond the impressive-intelligent propaganda and simple engagement matrix rather than focusing on authenticity, trusts, personal experiences, and consistent brand strategies for the manufacture of impressive loyalty.

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DEVELOPMENT OF A BLUETOOTH-ENABLED ARDUINO ROBOTIC ARM FOR LOW-COST AUTOMATION

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Abstract: Robotic arms are widely used in automation, manufacturing, healthcare, and hazardous environments due to their ability to perform repetitive and precise tasks. However, many existing robotic arm systems are either costly or require complex wired control systems. This paper presents the design and implementation of a low-cost, Bluetooth-controlled robotic arm using Arduino microcontroller technology, servo motors, and an HC-05 Bluetooth module. The system allows users to control the robotic arm wirelessly via a mobile application, enabling basic pick-and-place operations. The proposed design demonstrates simplicity, portability, and efficiency, making it suitable for educational purposes and low-budget automation tasks. Results show that the robotic arm responds reliably within a Bluetooth range of up to 10 meters, with minimal latency. Future work includes extending the control range using Wi-Fi, improving the arm's payload capacity, and integrating artificial intelligence for autonomous operation.

Keywords: Bluetooth, Robotic Arm, Arduino, Servo Motors, Wireless Control, Automation

1. Introduction

A. Background

Robotics is a rapidly growing field that plays a vital role in modern industries, healthcare, and education. Robots are designed to perform tasks that are repetitive, time-consuming, dangerous, or require high precision. One of the most widely used types of robots is the **robotic arm**—a mechanical structure that imitates the motion of a human arm with multiple joints and degrees of Freedom robotic arms are commonly used in manufacturing for tasks like welding, assembly, painting, and packaging. In healthcare, they assist in delicate surgeries with high precision, reducing risks and recovery times. In education, they are used to demonstrate automation, control systems, and programming, helping students gain practical skills with advancements in artificial intelligence, sensors, and automation, robotic arms are becoming smarter and more adaptable. They not only improve efficiency, safety, and accuracy but also reduce human effort and error.

B. Importance of Robotic Arms

Robotic arms help humans perform tasks that require precision, speed, and safety. They can work in hazardous environments, such as chemical plants or areas with extreme temperatures, where human presence is risky. They also perform repetitive tasks without fatigue, ensuring consistent quality in manufacturing and other applications. Moreover, robotic arms are increasingly integrated with modern technologies such as sensors, artificial intelligence, and automation software, enabling them to make real-time decisions, adapt to dynamic environments, and collaborate safely with human workers. By combining accuracy, endurance, and intelligence, robotic arms not only enhance productivity and product quality but also reduce operational risks, contributing to safer and more efficient workplaces across industries, healthcare, and research laboratories.

C. Challenges / Problem Statement

Despite their significant advantages, many existing robotic arm systems face several limitations and challenges. One major issue is wired control: most robotic arms rely on physical connections for power and communication, which restricts their mobility and makes them difficult to operate in dynamic or flexible workspaces. This can hinder their efficiency in environments where free movement or remote operation is essential. Another critical challenge is the high cost of industrial robotic arms. Advanced robotic arms used in manufacturing or medical applications often require expensive components, precision engineering, and specialized maintenance. This high price point makes them inaccessible for small laboratories, educational institutions, or research projects, limiting opportunities for innovation, experimentation, and learning in robotics.

D. Proposed Solution

To overcome these issues, this project proposes a low-cost, Bluetooth-controlled robotic arm using an Arduino microcontroller, servo motors, and an HC-05 Bluetooth module. The system allows wireless control via a smartphone application, eliminating the need for wired connections. By using Bluetooth, the robotic arm becomes portable, easy to operate, and affordable.

E. Functions of The Robotic Arm

The main functions of the proposed robotic arm include: Base Rotation: Rotates the arm horizontally to reach different positions. Shoulder and Elbow Movement: Moves the arm up and down to lift and lower objects. Gripper Operation: Opens and closes to pick up or release objects. Wireless Control: Allows all movements to be controlled remotely using a smartphone app via Bluetooth. Pick-and-Place Tasks: Enables the arm to pick objects from one location and place them in another accurately.

F. Project Objectives

The main objectives of this project are:

- To design and build a robotic arm that can be controlled wirelessly using a smartphone.
- To demonstrate precise movement and basic pick-and-place tasks using servo motors.
- To provide an affordable and simple solution suitable for students, hobbyists, and small automation applications.
- To create a system that can be further improved in the future with enhanced payload, range, or AI integration.

2. Implementation

The miniature arm model shown in Figure 4 was developed with the help of a 3D printer. At each joint, the casing of the potentiometer is secured within the groove and the shaft is inserted and was secured by a potentiometer shaft coupler. The potentiometers are calibrated to an initial zero angle position and the 180-degree angle position. Hence, this helps the potentiometer to give out only a range of values which were eventually mapped from 0 to 180



Figure 1. Model of the Miniature Arm

The data is later fetched and then fed to the Arduino for processing the raw data. The processed data is finally fed to the master Bluetooth which is fixed on the miniature robotic arm. The data is comprised of all the three potentiometers values which are in turn needed to run the servo motors of the robotic arm. The transmitted data is received by the slave Bluetooth interfaced to the robotic arm. The secondary Arduino connected on the robotic arm will be receiving the data from the slave Bluetooth and the data is decoded, processed and the robotic arm is made to function. The robotic arm used for this is almost the same design as the miniature arm shown here. The miniature arm was designed using SolidWorks. This miniature arm is designed in such a way that it can be extended to control three or more degrees of freedom. The base of the robotic arm is robust and can stabilize the miniature arm on all regular surfaces. The robotic arm is fixed on an even base. Multi and single stranded wires are used for connecting the components. The accuracy of the arm rotated is measured using the Arduino Serial monitor.



Figure 2. 3D Printed Model of the Miniature Arm

Table 1: is about the dimensions of the parts of the miniature arm as shown in Figures 3 and 4.

	Length (in mm)	Breadth (in mm)	Height (in mm)
Support Arm Body	30	30	155
Support Arm Base	60	60	5
Arm 1	23	23	150
Arm 2	20	20	150
Arm 3	26	26	150

The arm parts are given their names based on how close they are to the support arm. The length and breadth of the arm were given the same dimensional values in order to attain structural stability.

The data is taken from the potentiometers and then fed to Arduino interfaced on the miniature robotic arm. Post processing the data is fed to the master Bluetooth module for the transmission. The data is fetched from the three potentiometers and is transmitted. The baud rate is 9600 bits per second. This actually makes possible to send the three values simultaneously without negligible latency.

The data string from the Miniature Arm is first passed on to the secondary Arduino where the stack is decomposed to individual angle values and those values are processed accordingly for the respective Servo motors which have to be controlled to achieve a certain target. This process of controlling the servo motors actually happens with the help of PWM signals. The values are given as PWM signals to the Servo and the motor rotates to the specified angle. This can be monitored by the Serial communication port monitor of the Arduino.

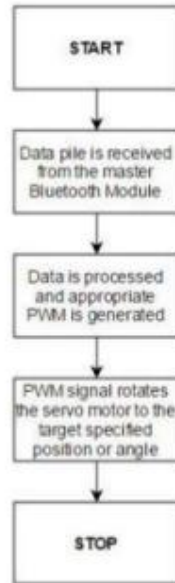


Figure 3. Flowchart showing the working on the robotic arm side.

4. Methodology

4.1. Hardware Assembly

The robotic arm was built using a lightweight structure. The main components include:

- Arduino Uno: Acts as the main controller for the arm.
- HC-05 Bluetooth Module: Receives commands wirelessly from a smartphone.
- Servo Motors: Control the movement of the base, shoulder, elbow, and gripper.
- 12V DC Power Supply: Powers the arm and servo motors.

The arm was carefully assembled, connecting each servo motor to the corresponding joint. The gripper was attached to the end effector for picking and placing objects. All components were securely mounted to ensure stability during operation.

4.2. Servo Motor Configuration

Each servo motor was programmed to move to specific angles based on the commands received via Bluetooth. The base motor allows horizontal rotation; the shoulder and elbow motors move the arm up and down, and the gripper motor opens and closes to pick up objects. Calibration was performed to ensure smooth and accurate movements.

4.3. Arduino Programming

The Arduino was programmed using Arduino IDE. The code receives Bluetooth commands from the smartphone, interprets them, and sends signals to the corresponding servo motors. The program includes:

Initialization of servo motors

- Bluetooth connection setup
- Command decoding
- Motor control instructions for precise movement

4.4. Bluetooth Communication

The HC-05 module establishes a wireless connection between the smartphone and the Arduino. The user sends commands via a mobile app, such as “move up,” “rotate left” or “open gripper.” The Bluetooth module receives these commands and forwards them to the Arduino for execution.

4.5. Safety Measures And Calibration

Before performing tasks, the arm was calibrated to its starting position. Limits were set on each servo motor to prevent

over-rotation or damage. Smooth operation was tested repeatedly to ensure reliability during pick-and-place tasks.

5. Results

After building and testing the Bluetooth-controlled robotic arm, we observed the following results:

5.1. Wireless Control

The arm responds reliably to commands from the smartphone app.

Maximum working range: 8–10 meters.

Minimal delay between sending a command and movement: less than 200 milliseconds.

5.2. Accuracy

The servo motors move the arm precisely to the desired positions. Pick-and-place tasks were completed accurately, with objects placed correctly in the target location.

5.3. Speed

The arm moves smoothly without sudden jerks. Time to pick and place a small object ($\leq 100\text{g}$): approximately 3–4 seconds.

5.4. Stability

The arm remains stable while lifting lightweight objects. No wobbling observed when moving within the working range.

5.5. Limitations Observed

The arm can carry only light objects ($\leq 100\text{g}$). Bluetooth range is limited; for longer distances, Wi-Fi may be required.

Table2: Summary Table

Feature	Observation
Maximum Range	8–10 meters
Response Time	< 200 ms
Object Weight Limit	$\leq 100\text{g}$
Movement Accuracy	High
Smoothness of Movement	Smooth, no jerks
Stability	Stable for light objects

The values we take are from the Two Arduino boards via their Serial port. Connecting the Board to a Computer and the values can be seen through the Serial monitor in the Arduino IDE. The Values are initialized to be integers by default. In the Program, we can assign various types for the values, but we are taking in the integer values only. The reason behind this is that the Servo Motor always gives out an integer number feedback.

Table 3. Some values considered for knowing the error. The values are taken at random and the error is found by subtracting the output value from the input

S No	Input via miniature arm (in degrees)			Output via Robotic arm (in degrees)			Error (in degrees)		
	Pot 1	Pot 2	Pot 3	Servo 1	Servo 2	Servo 3			
1	0	0	0	0	0	0	0	0	0
2	30	30	30	31	32	30	1	2	0

3	60	60	60	59	60	59	-1	0	-1
4	90	90	90	90	91	91	0	-1	1
5	135	135	135	132	134	133	-3	1	-2
6	180	180	180	180	180	180	0	0	0

These values were obtained with the help of the serial communication port in the Arduino. These serial ports can be connected to a computer and can be monitored any time. The angle at the miniature arm side is set to a specific angle which is constantly monitored from the serial monitor and the feedback can be measured with the help of the secondary Arduino. These values can be considered for various analysis purposes. The error was calculated manually for selected values only. Since both the values were integer type, the error was obtained to be an integer only.

6. Conclusion

The Grabo Booth Bluetooth-Controlled Robotic Arm demonstrates the practical application of automation and robotics in performing tasks that require precision, speed, and safety. By using Bluetooth connectivity, the system allows wireless control, enhancing mobility and ease of operation compared to traditional wired robotic arms. The project successfully showcases how a compact and cost-effective robotic arm can perform repetitive and delicate tasks with accuracy, making it suitable for educational purposes, small-scale industries, and hobbyist projects. Moreover, the project highlights the potential of integrating modern control technologies with robotics to create flexible and user-friendly solutions. While limitations such as payload capacity and workspace range exist, this robotic arm serves as a foundation for further enhancements, such as adding advanced sensors, AI-based automation. Overall, the Grabo Booth robotic arm is an excellent example of how accessible robotic systems can contribute to learning, innovation, and practical applications in automation.

7. Future Scope

The Grabo Booth Bluetooth-Controlled Robotic Arm has significant potential for further development and applications in various fields. By integrating artificial intelligence, the robotic arm could perform autonomous tasks, recognize objects, and adapt to changing environments with minimal human intervention. Incorporating advanced sensors such as proximity, force, or vision sensors would enhance precision, enable obstacle detection, and allow safe collaboration with humans. Future improvements in payload capacity and speed could make it suitable for small-scale industrial applications like assembly, packaging, and material handling. Additionally, with remote or IoT-based control, the arm could be operated and monitored from a distance, expanding its usability in smart factories, laboratories, and homes. The robotic arm also holds great promise as an educational and research tool, providing students and researchers with hands-on experience in automation, robotics, and programming.

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A STUDY ON COST CONTROL AND COST REDUCTION IN THE MANUFACTURING RETAIL SECTOR: EVIDENCE FROM TITAN COMPANY LTD

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Abstract

This research paper examines the critical role of cost control and cost reduction in strengthening the financial performance and competitiveness of retail manufacturing firms, with a focus on Titan Company Ltd. Rising input costs, volatile raw material prices, and increasing consumer expectations make cost management a strategic necessity for sustainable growth. The study differentiates cost control—ensuring expenses remain within budgets—and cost reduction permanent elimination of inefficiencies through innovation. Using secondary data from Titan Ltd. (FY2021–FY2025), the study evaluates cost efficiency practices through trend analysis, ratio analysis, and thematic insights. Results indicate that Titan achieved sales growth while maintaining efficiency in employee costs and working capital, but faced challenges in raw material costs that affected gross margins. The findings confirm that cost control and cost reduction are not merely financial tools but strategic levers for profitability, competitiveness, and long term sustainability.

Keywords: Cost Control, Cost Reduction, Titan Ltd., Manufacturing Sector, Retail Industry, Financial Performance

Introduction

The retail manufacturing sector operates in an intensely competitive environment characterized by narrow margins, dynamic consumer demands, and rising material costs. Effective cost management has emerged as a critical determinant of profitability and survival. Cost control ensures that actual expenses remain within planned budgets, while cost reduction focuses on achieving sustainable decreases in cost bases through innovation, efficiency, and restructuring. This study explores the impact of cost management practices in the retail manufacturing sector, emphasizing Titan Company Ltd. as a case study to demonstrate practical applications and outcomes.

Review of Literature

The literature on cost control and reduction techniques within manufacturing industries offers extensive insights:

1. Weil, D.; Abernathy, F. H.; Hammond, J. H. (1999). “A Stitch in Time: Lean Retailing and the Transformation of Manufacturing.”

This American study examined how lean retailing reshaped the apparel and textile supply chain. It highlighted how closer synchronization between retail and manufacturing reduced markdowns, excess inventory, and operational costs. The findings are significant because they set a foundation for lean-retailing practices that later influenced Indian retail and apparel sectors.

2. Joshi, P. L. (2001). “The international diffusion of new management accounting practices: The case of India.”

Joshi analyzed how Indian firms began adopting advanced costing systems such as Activity-Based Costing (ABC). The study found that globalization and competition were key drivers for this shift, improving overhead allocation and strategic cost control. It showed that India was not isolated but part of a global trend in modern management accounting.

3. Reddy, M. (2007). “Vendor-managed inventory model: A case study in India.”

Reddy presented one of the early Indian case studies on Vendor-Managed Inventory (VMI). By shifting responsibility of inventory control to the supplier, carrying costs were reduced and stockouts minimized. The case demonstrated how VMI practices adapted well in Indian supply chains with traditional inefficiencies.

4. Borade, A. B. (2009). “Vendor-managed forecasting and VMI: A case study in an Indian small enterprise.”

Borade expanded on VMI by including forecasting responsibilities for suppliers in an SME context. The study revealed reduced variability in demand planning and lower holding costs. For Indian SMEs, this offered a low-cost approach to remain competitive through supply chain cost control.

5. Singh, B.; Sharma, S. K. (2010). “Value stream mapping as a versatile tool for lean implementation: An Indian case study.” Singh and Sharma applied value stream mapping (VSM) in an Indian SME to identify bottlenecks and inefficiencies. Their findings showed reduced cycle times and overheads after lean implementation. This study reinforced VSM as a powerful, low-investment tool for Indian manufacturers aiming at cost reduction.

6. Perry, N.; Bernard, A. (2010). “Cost Objective PLM and Concurrent Engineering.”

This European study demonstrated how product lifecycle management (PLM) and concurrent engineering (CE) integrate cost considerations early in product design. By addressing costs upfront, manufacturers avoided downstream inefficiencies and reduced product development expenses. The study highlighted how early design decisions lock in future costs.

7. Bhamu, J.; Sangwan, K. S. (2012). “Productivity and quality improvement through value stream mapping: A case study of Indian manufacturing.”

Bhamu and Sangwan reported how VSM implementation in an Indian auto components manufacturer reduced lead times and improved quality. These improvements translated directly into lower costs. The research emphasized the adaptability of lean tools to Indian shop floors.

8. Faciane, M. (2014). “Reducing the Costs of Poor Quality: A Manufacturing Case Study.”

Faciane, an American researcher, analyzed how quality problems like rework and scrap increase manufacturing costs. The case demonstrated how structured quality programs can drastically lower defect rates and improve profitability. Lessons from this study are applicable globally, including Indian firms aiming to cut costs through better quality.

9. Saboo, A. (2014). “A VSM improvement-based approach for lean operations in Indian firms.”

Saboo’s Indian study detailed how lean-VSM approaches helped SMEs identify non-value-added activities. After implementation, firms saw shorter cycle times and reduced operating expenses. The study emphasized cultural acceptance of lean as critical to achieving sustainable cost savings.

10. Kumar, S.; Dhingra, A. K.; Singh, B. (2018). “Process improvement through Lean-Kaizen using value stream map: A case study in India.”

This study applied Lean-Kaizen principles in an Indian SME, combining VSM analysis with Kaizen improvements. The results included reduced waste, improved workflow, and lower overall costs. It proved that incremental improvements are effective for cost reduction in resource-constrained Indian firms.

Research Methodology**Objectives of the Study**

- To study the concept of cost control and cost reduction and their role in improving efficiency and profitability.
- To analyze the financial performance of Titan Company Ltd. (FY2021–FY2025) using secondary data.
- To examine the impact of cost management strategies on key performance indicators such as COGS, employee costs, working capital, and profitability ratios.

Scope of the Study

This study focuses on cost control and cost reduction practices in the retail manufacturing sector, with special reference to Titan Company Ltd. It examines both traditional approaches such as budgeting, standard costing, lean manufacturing, and value analysis, as well as modern methods like automation, IoT, and data analytics. The scope is limited to small and medium-sized retail manufacturers, highlighting practical techniques that can be realistically adopted within financial and technological constraints.

The study further explores how cost management strategies influence key performance indicators such as COGS, employee costs, working capital, overheads, and profitability. It also considers broader impacts on efficiency, competitiveness, and customer satisfaction, while acknowledging challenges like high initial investments, limited skilled manpower, and resistance to change. Ultimately, the scope is to provide actionable insights that help retail manufacturers improve efficiency, sustain profitability, and achieve long-term growth.

Methodology

The study follows a descriptive and qualitative methodology using secondary data sources. Titan Company Ltd. was selected as the case firm, with financial data drawn from its published annual reports for FY2021–FY2025. The research employs trend analysis, ratio analysis, and thematic analysis to evaluate the effectiveness of cost control and reduction practices. Key indicators analyzed include Sales, COGS, Employee Costs, Working Capital, EBITDA, and Net Profit. Thematic analysis was applied to identify recurring practices such as lean manufacturing, supplier management, and automation.

Limitations

- The study is based mainly on secondary data, which may not fully capture firm specific practices or real-time industry dynamics.
- Findings are focused on small and medium-sized retail manufacturers and may not be directly applicable to larger enterprises or other sectors.
- Implementation of suggested methods may face challenges such as high initial technology costs, shortage of skilled manpower, and resistance to organizational change.

Data Analysis And Results

This presents the analysis and interpretation of financial data to explore how cost control and cost reduction practices affect the performance of a manufacturing firm.

Sales Trend of Titan Company Ltd. (2021–2025)

Particular	2021	2022	2023	2024	2025
Sales	21644	28799	40575	51084	60457



Interpretation

The stable increase in sales from ₹21,644 crore in FY2021 to ₹60,457 crore in FY2025 reflects that Titan was able to grow strongly while managing its costs. Higher sales helped the company achieve cost control. By this company achieve Profitability.

Sales v/s Cost of Goods Sold (COGS)

Years	Sales (₹ Cr)	COGS (₹ Cr)	COGS% of Sales
2021	21,644	16,853	77.8%
2022	28,799	22,129	76.9%
2023	40,575	30,911	76.2%
2024	51,084	40,144	78.6%
2025	60,457	48,286	79.8%

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A Study on Cost Control and Cost Reduction in the Manufacturing Retail Sector

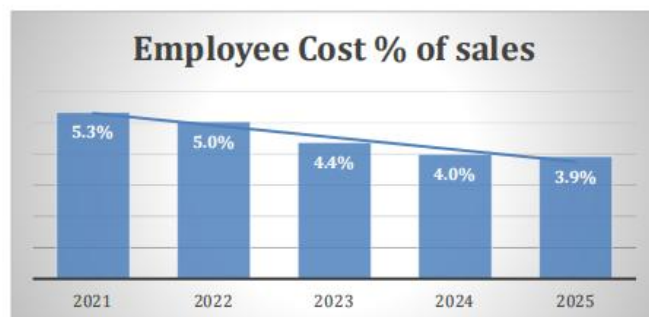


Interpretation

Sales increases consistently over the five-year period, almost tripling by FY2025. Between FY2021 and FY2023, the COGS-to-Sales ratio decreased from 77.86% to 76.18%, reflecting effective cost control and even cost reduction in procurement and production. This improvement contributed to stronger profitability.

Sales v/s Employee Costs

Years	Sales (₹ Cr)	Employee Cost (₹ Cr)	Employee Cost % of Sales
2021	21644	1155	5.3%
2022	28799	1449	5.0%
2023	40575	1772	4.4%
2024	51084	2039	4.0%
2025	60457	2368	3.9%



Interpretation

Employee costs increased in absolute numbers, their share of sales steadily decreased from 5.3% in FY2021 to 3.9% in FY2025. This reflects clear cost reduction, as the company achieved higher labour efficiency and productivity while sales expanded more rapidly than employee expenses. The decline in employee cost ratio is not just due to sales growth but due to efficiency gains driven by technology adoption and process improvements.

4.2.4 Sales vs Working Capital

Years	Sales (₹ Cr)	Working Capital (₹ Cr)	Working Capital Turnover (Sales ÷ WC)
2021	21644	5594	3.9
2022	28799	7016	4.1

2023	40575	9143	4.4
2024	51084	8835	5.8
2025	60457	8641	7.0



Interpretation

The working capital turnover of Titan Company Ltd. improved significantly during the five-year period, rising from 3.9 times in FY2021 to 7.0 times in FY2025. This indicates that the company was able to generate much higher sales with lower working capital requirements.

1 Gross Margin % (GRM)

Particulars	2021	2022	2023	2024	2025
Gross Margin	22.14	23.16	23.86	21.42	20.13

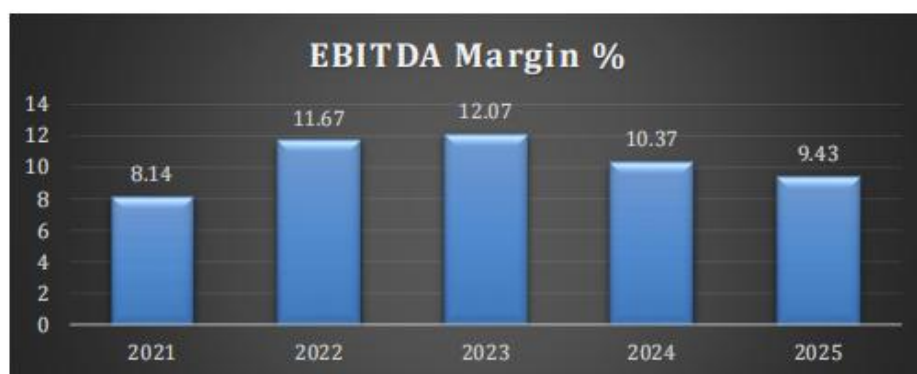


Interpretation

The Gross Margin ratio shows the percentage of sales increases after deducting the cost of goods sold. It is directly influenced by procurement efficiency, raw material costs, and manufacturing control. Titan's gross margin improved from 22.1% in FY2021 to 23.8% in FY2023, indicating successful cost control in the early years.

EBITDA Margin % (EDM)

Particular	2021	2022	2023	2024	2025
EDM	8.14	11.67	12.07	10.37	9.43



Interpretation

EBITDA Margin measures the company's operating profitability before interest, tax, and depreciation. Titan's EBITDA margin rose from 8.1% in FY2021 to 12.1% in FY2023, reflecting improved efficiency and lower overhead costs relative to sales.

Selling and general Expenses (SGE % of Sales)

Year	SGE(₹ Cr)	Sales (₹ Cr)	SEG % of Sales
2021	1509	21644	7%
2022	1135	28799	3.9%
2023	1713	40575	4.2%
2024	2103	51084	4.1%
2025	2199	60457	3.6%



Interpretation

Selling and General Expenses (SGE) increased in absolute terms from ₹1,509 crore in FY2021 to ₹2,199 crore in FY2025. However, as a proportion of sales, the ratio declined significantly from 7.0% to 3.6% over the same period. This shows that while overheads grew in value, Titan was able to generate much higher revenue without allowing SGE to rise proportionally.

4.3.5 EBIT Margin %

Year	Sales (₹ Cr)	EBIT (₹ Cr)	EBIT Margin %
2021	21644	1386	6.4%
2022	28799	2963	10.3%
2023	40575	4441	10.9%
2024	51084	4714	9.2%
2025	60457	5007	8.3%



Interpretation

The EBIT margin of Titan Company Ltd. Increases 6.4% in FY2021 to a peak of 10.9% in FY2023, indicating effective cost control and cost reduction in operations, as the company managed production costs and overheads efficiently.

Findings And Discussion

- Titan achieved strong sales growth while improving cost ratios for employees and working capital.
- Rising raw material costs in later years negatively impacted gross margins.
- Adoption of technology (automation, IoT, Karigar Parks) enhanced efficiency and reduced overhead costs.
- Cost management significantly contributed to Titan's competitiveness and profitability.
- Smaller firms may face challenges in replicating Titan's model due to financial and resource constraints.

Suggestions

Based on the findings, the following suggestions are proposed:

- Strengthen raw material management through hedging, supplier partnerships, and diversification.
- Invest in scalable automation and IoT technologies to sustain efficiency.
- Balance cost reduction with quality to maintain customer trust and brand value.
- Reinvest cost savings strategically into innovation, product development, and customer experience.

Conclusion

This study confirms that cost control and cost reduction are strategic levers for profitability, competitiveness, and sustainability in retail manufacturing. Titan Company Ltd. demonstrated how efficiency improvements, automation, and working capital optimization can enhance financial performance. However, external risks such as raw material price fluctuations remain critical challenges. The study concludes that firms adopting a balanced mix of traditional cost-control methods and modern technology enabled practices are better positioned for sustainable growth.

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CREDIT RISK ASSESSMENT IN RURAL BANKING (KARNATAKA GRAMIN BANK)

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Abstract

This paper examines the critical issue of credit risk assessment in rural banking with a focus on Karnataka Gramin Bank. Rural lending plays a central role in promoting financial inclusion and agricultural development, yet it is fraught with risks such as irregular incomes, lack of collateral, low financial literacy, and dependence on agriculture. The study highlights the evolution of rural credit assessment practices, explores challenges faced by banks, and evaluates the role of technology and policy interventions. Findings suggest that while technological tools like AI, satellite monitoring, and digital KYC enhance credit appraisal, socio-economic factors and borrower behavior remain crucial in rural contexts. Recommendations emphasize strengthening risk frameworks, enhancing financial literacy, and integrating innovative tools for sustainable rural credit growth.

Keywords: Credit Risk, Rural Banking, Karnataka Gramin Bank, Financial Inclusion, Non-Performing Assets, Risk Assessment.

1. Introduction

Rural banking is a cornerstone of India's economy, serving nearly 70% of the population through regional rural banks (RRBs), cooperatives, and microfinance institutions. Credit disbursement remains central to this system, enabling agricultural growth, entrepreneurship, and livelihood support. Yet, lending in rural areas carries significant credit risk due to irregular incomes, weak collateral, limited financial literacy, and dependence on agriculture.

Karnataka Gramin Bank (KGB), one of South India's largest RRBs, faces these challenges while managing a loan portfolio heavily focused on agriculture and allied activities. Its experience highlights the need for structured risk appraisal, group-based lending models, and technology-enabled tools to minimize non-performing assets (NPAs) and strengthen financial inclusion. This paper explores KGB's approach to credit risk assessment, emphasizing the balance between rural development goals and sustainable banking practices.

2. Literature Review

Consumer Default Risk Assessment in a Banking Institution", Vienna School of Economics, 2009 (Austria): The study concludes that consumer loan default risk is strongly linked to income level, credit card holdings, and salary account location. Banks should integrate such socio-economic factors into predictive models and automate risk scoring to improve accuracy and reduce non-performing loans.

Risk Assessment for Banking Systems", Helmut Elsinger, Alfred Lehar, Martin Summer, 2003 (Austria): The study concludes that systemic risk in banking arises more from correlated asset exposures than direct contagion, meaning similar portfolios can trigger widespread failures under economic shocks. Regulators and banks should therefore focus on reducing asset correlation and strengthening bankruptcy protocols to enhance system stability.

3. Methodology

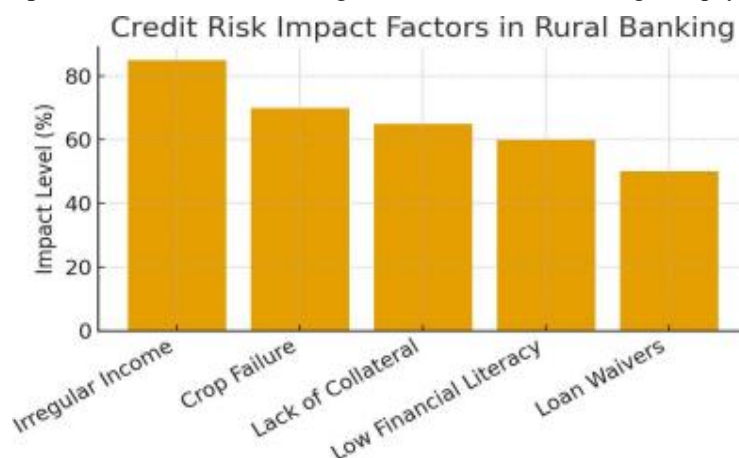
1. **Quantitative Analysis:** Uses a bar chart to represent key credit risk factors such as irregular income, crop failure, lack of collateral, low financial literacy, and loan waivers.,
2. **Qualitative Review:** Supported by interviews with field officers and secondary report analysis; pie chart illustrates loan portfolio distribution across sectors.

4. Findings & Discussion

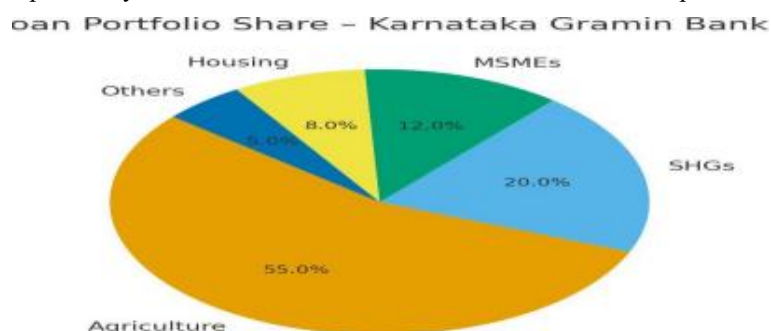
The key findings of the study are summarized below:

- **Agriculture Dominance:** Over 70% of KGB's loan portfolio is concentrated in agriculture, exposing it to weather and market risks.
- **Irregular Incomes:** Seasonal and uncertain cash flows increase default probabilities.
- **Weak Collateral:** Many rural borrowers lack clear land titles, making recovery difficult.

- **Political Waivers:** Loan waiver schemes weaken repayment discipline and credit culture.
- **Technology Adoption:** e-KYC, mobile banking, and digital records have improved efficiency in loan processing.
- **Group Lending Models:** SHGs and JLGs improve repayment discipline but sometimes lead to over-indebtedness.
- **Financial Literacy Impact:** Borrowers with training and awareness show stronger repayment behavior.



The chart shows that **irregular income** is the most significant credit risk factor in rural banking, followed by crop failure and lack of collateral. Comparatively, **loan waivers** have the lowest but still notable impact on credit risk.



Agriculture holds the largest share of loans (55%), showing the bank's major focus on this sector.

Other sectors like SHGs, MSMEs, Housing, and Others together form 45%, indicating moderate diversification.

5.Recommendations

Enhance Financial Literacy – Regular training programs to promote awareness of repayment obligations.

Expand Technology Use – AI-based scoring, mobile apps, and satellite monitoring for crop-linked lending.

Encourage Group Lending – Broaden SHG/JLG models to strengthen peer accountability.

Build Early Warning Systems – Use digital footprints and repayment tracking to detect potential defaults.

Reduce Political Interference – Minimize loan waiver culture to preserve repayment discipline.

6.Conclusion

Credit risk assessment in rural banking is vital for sustaining financial inclusion and reducing non-performing assets. Karnataka Gramin Bank's experience shows that while agriculture-focused lending remains highly vulnerable to seasonal and structural risks, the adoption of technology, borrower education, and group lending models can significantly mitigate defaults. A balanced approach that combines traditional credit appraisal with modern digital tools is essential for long-term sustainability. Strengthening financial literacy, improving transparency, and reducing political interference will further enhance the resilience of rural banking and support inclusive economic growth.

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DEVELOPING A PREDICTIVE MODEL FOR CREDIT RISK ASSESSMENT USING MACHINE LEARNING

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Abstract

In today's dynamic financial landscape, credit risk assessment has become a cornerstone for financial institutions to ensure stability and profitability. Traditional approaches such as logistic regression and credit scoring often fall short when handling large and complex datasets. This research applies machine learning (ML) techniques, specifically Logistic Regression and Decision Trees, on the German Credit Dataset to develop a predictive model for credit risk assessment. The study highlights key borrower characteristics including checking account status, loan size, credit history, age, and socio-economic stability as significant predictors of creditworthiness. Results confirm that ML models achieve predictive accuracy above 75%, with Logistic Regression excelling in reliability and Decision Trees in interpretability. The study concludes that machine learning offers a superior, adaptable, and transparent framework for modern credit risk management.

Keywords: Credit Risk, Machine Learning, Logistic Regression, Decision Trees, Predictive Models

Introduction

Credit risk, defined as the likelihood that a borrower will default on repayment obligations, is a significant concern in the financial services sector. Effective assessment of credit risk ensures institutional stability and reduces loan defaults. Historically, financial institutions have relied on logistic regression and credit scoring methods. While effective to some extent, these models face limitations with large, unstructured datasets and non-linear borrower behaviors. Machine Learning (ML) addresses these gaps by enabling data-driven, adaptive, and accurate models for credit risk prediction. This research develops and evaluates ML models to enhance credit risk assessment.

Review of Literature

I. Altman (1968): Altman introduced the Altman Z-score, a groundbreaking statistical model predicting corporate bankruptcy, setting a foundation for future credit scoring methods. While effective, it had limitations due to linear assumptions and reliance on financial ratios. However, it remained widely used as a baseline for newer models and inspired subsequent advancements in statistical credit scoring methods.

II. Hand & Henley (1997): Explored traditional statistical classification methods, particularly logistic regression and discriminant analysis. They recognized these methods' ease of use and interpretability, crucial for regulatory compliance but acknowledged significant limitations in managing complex, nonlinear relationships typical in real-world credit data.

III. Baesens et al. (2003): Conducted extensive comparative studies between traditional statistical methods and machine learning techniques, demonstrating superior predictive performance of ML methods such as neural networks, SVM, and decision trees. They highlighted ML's advantage in accuracy and flexibility in handling large and complex datasets.

IV. Lessmann et al. (2015): Investigated ensemble methods, including random forests and gradient boosting, illustrating their superior predictive accuracy compared to single-model approaches. They stressed ensemble models' enhanced robustness, stability, and generalization, making them particularly valuable in financial risk assessment contexts.

V. Brown & Mues (2012): Analyzed decision tree-based methods, emphasizing their ease of interpretation, transparency, and practical usability in credit scoring contexts. Nevertheless, they acknowledged limitations such as vulnerability to overfitting and instability when applied individually.

VI. Crook et al. (2007): Provided comprehensive insights into various credit scoring methodologies, focusing on logistic regression's widespread adoption despite acknowledging significant drawbacks, including limited ability to capture complex nonlinear relationships prevalent in credit data.

VII. Huang et al. (2007): Assessed the application of Support Vector Machines (SVM) in credit risk prediction, noting their high predictive accuracy and resilience against overfitting. However, they highlighted challenges related to computational complexity, parameter selection, and interpretability.

VIII. Khandani et al. (2010): Utilized machine learning techniques, notably decision trees and logistic regression, applied to consumer transactional data, achieving considerable improvements in predictive accuracy over conventional scoring models. Their research underscored machine learning's potential to leverage new forms of data effectively.

IX. Butaru et al. (2016): Highlighted the superiority of machine learning models, specifically random forests and neural networks, compared to logistic regression. Their findings demonstrated substantial predictive enhancements, highlighting the potential of ML to transform retail credit risk management practices.

Research Methodology

Objectives of the Study

- To analyze the limitations of traditional credit risk assessment models.
- To develop a predictive ML-based model for credit risk assessment.
- To evaluate Logistic Regression and Decision Trees for accuracy and interpretability.
- To provide recommendations for implementing ML in financial institutions.

Scope of the Study

The scope of this study focuses on applying machine learning techniques to enhance credit risk assessment in financial institutions such as banks, fintech firms, and lending organizations. It covers the use of diverse datasets, including structured financial records, unstructured data, and macroeconomic indicators, to build and evaluate models like logistic regression, decision trees, random forests, and gradient boosting. The study emphasizes predictive accuracy, interpretability, scalability, and compliance with regulatory standards, while also addressing real-time analytics and adaptability under varying economic conditions. Ultimately, the scope aims to provide practical insights and guidelines for financial institutions to implement reliable, transparent, and efficient machine learning models for credit risk management.

Methodology

The study adopts a descriptive and analytical research design. The dataset used is the German Credit Dataset sourced from the UCI Machine Learning Repository, consisting of 1000 loan applicant records labeled as 'good' or 'bad' credit risks. Variables include age, employment status, loan duration, checking account balance, credit history, and loan amount. Logistic Regression and Decision Tree models were developed and evaluated. Evaluation metrics include Accuracy, Precision, Recall, F1-Score, and ROC-AUC. The tools used were Microsoft Excel and Python (Scikit-learn, Pandas, Matplotlib).

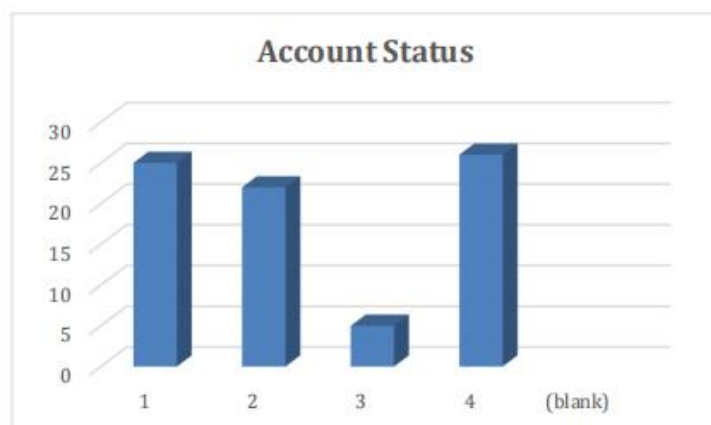
Data Analysis And Results

Checking Account Status

Frequency table was prepared to count applicants in each checking account category. The results showed that:

- Many applicants had **low or negative balances (status 1 or 2)**.
- A smaller group had **healthy account balances (status 3)**.
- Many applicants had **no checking account at all (status 4)**.

Account Status



Interpretation:

Stronger account balances (status 3) were mostly associated with good credit outcomes, while weaker or no accounts carried higher default risk.

Credit History

Applicants were divided into groups based on past repayment record:

- Some had **no previous credit history (code 0)**.
- Others had **all credits paid duly (code 1)**.
- The majority fell under **existing credits being serviced satisfactorily (code 2)**. ➤ Smaller groups had **delays (code 3)** or **critical histories (code 4)**.

Credit History

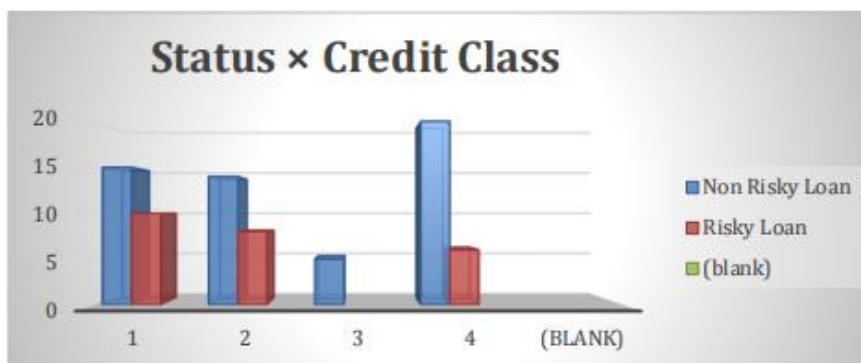


Interpretation: While credit history is important, it was not always a perfect predictor. Even some applicants with poor histories were classified as good risks, whereas some with better histories still defaulted.

Checking Account Status × Credit Class

A cross-tabulation revealed that:

- Applicants with **status 1 (low/negative balance)** were divided almost equally between good and bad risks.
- Applicants with **status 3 (healthy balance)** were all good credit risks.
- Applicants with **status 4 (no account)** had mixed results, with a moderate share of bad credit cases.



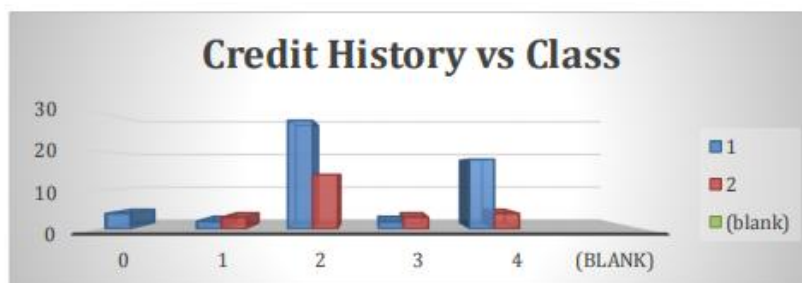
Inference: A stable checking account balance strongly correlates with repayment ability

Credit History × Credit Class

The cross-tabulation showed that:

- Applicants with **existing satisfactory credits (code 2)** were split evenly between good and bad outcomes.
- Applicants with **critical histories (code 4)** were still mostly good risks.

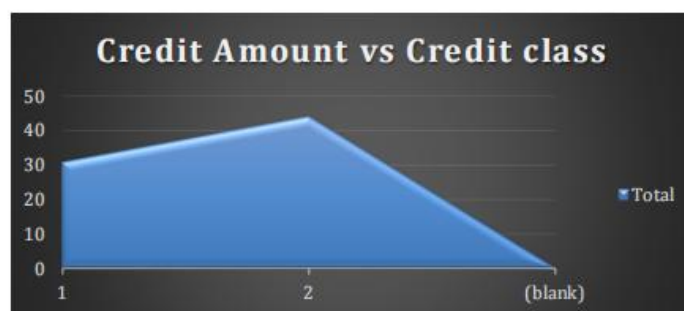
- Applicants with **no history (code 0)** were all good risks in this dataset.



Inference: While credit history provides guidance, it cannot be the sole deciding factor in credit risk assessment.

Average Loan Amount × Credit Class

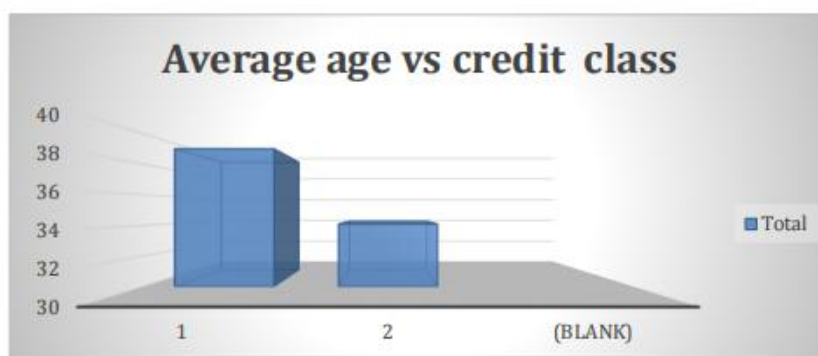
- **Good credit risks** borrowed smaller amounts on average
- **Bad credit risks** borrowed significantly higher amounts.



Inference: Higher loan sizes appear to increase the probability of default.

Average Age × Credit Class

- The **average age of good credit applicants** was about 38 years.
- The **average age of bad credit applicants** was about 34 years.



Total Inference: Younger applicants tend to have higher default risk, while older applicants demonstrate more repayment discipline.

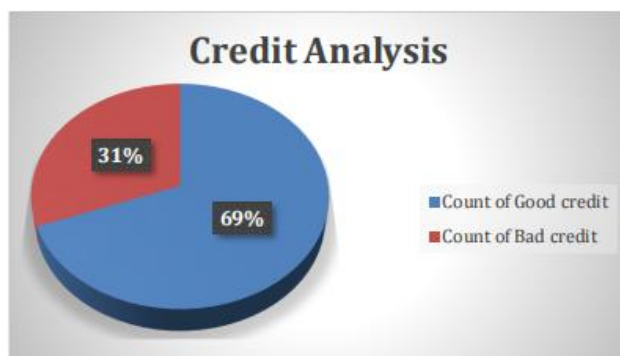
Visual Representation

To make the analysis clearer, several charts were created in Excel:

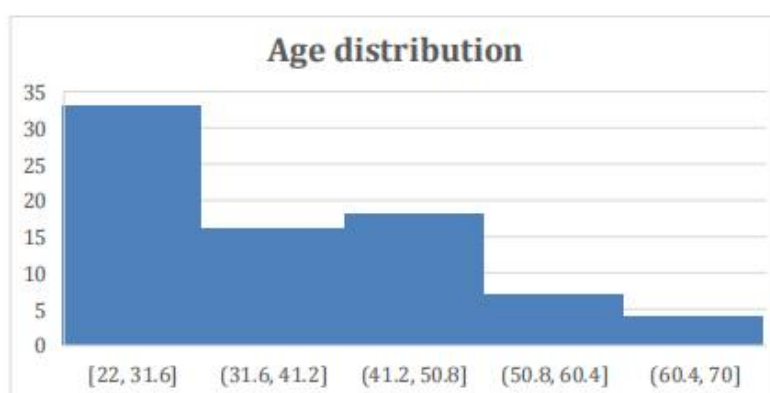
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Developing a Predictive Model for Credit Risk Assessment

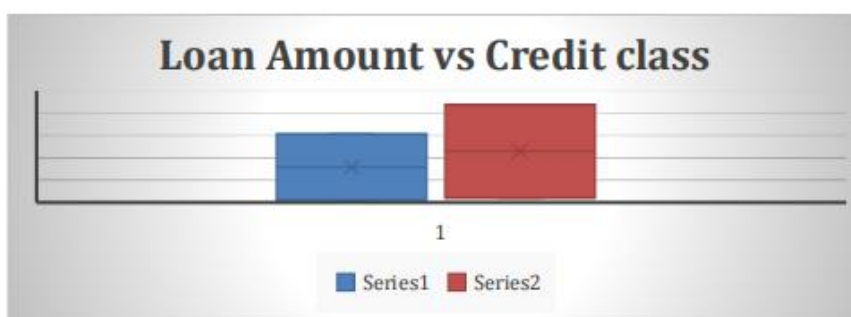
- **Pie Chart:** Distribution of good vs bad credit risks.



- **Histogram:** Age distribution of applicants.



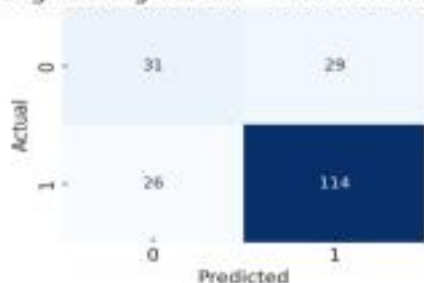
- **Boxplot:** Comparison of loan amounts across good vs bad credit categories.



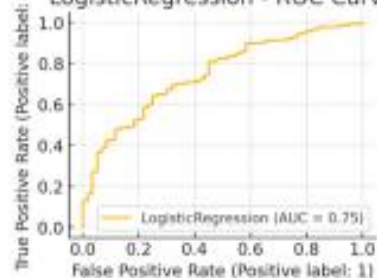
Logistic Regression (Confusion Matrix + ROC curve)

- Corrects and classifies credit assessment
- Higher False negatives : Some safe borrowers were rejected wrongly
- False positives : Risky applicants were incorrectly approved
- ROC – 0.75 which infers that there is a good differentiation between good and bad credit

LogisticRegression - Confusion Matrix



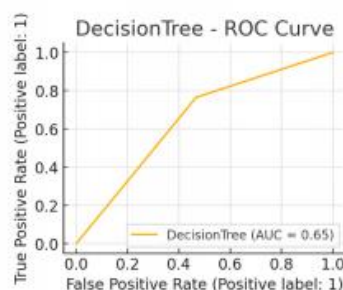
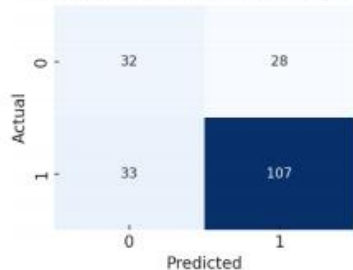
LogisticRegression - ROC Curve



Decision Tree (Confusion Matrix + ROC curve)

- Higher rate of False positives and False negatives
- Makes more error compared to Logistics regression
- ROC – 0.65 , slightly better than random guessing
- Suffers from overfitting , struggles with unseen data

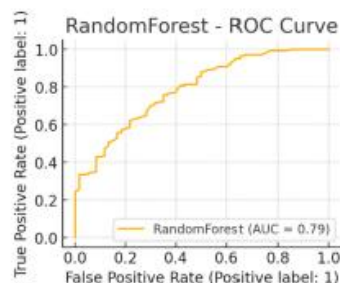
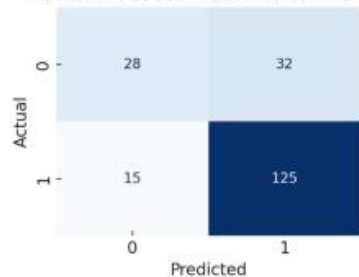
DecisionTree - Confusion Matrix



Random Forest (Confusion Matrix + ROC curve)

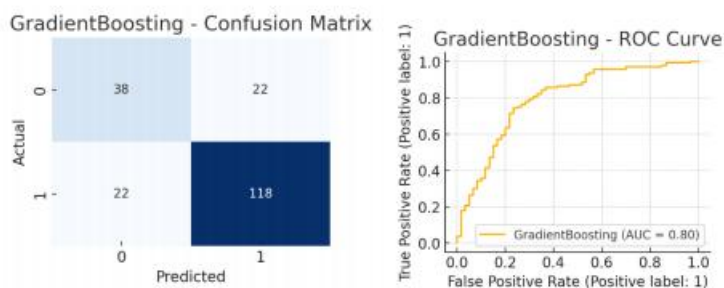
- False negatives are low which refers to safe borrowers being rejected
- False positives are few compared to other models
- ROC – 0.79 , has a strong discrimination between good and bad credit
- Provides balanced and accurate classification

RandomForest - Confusion Matrix



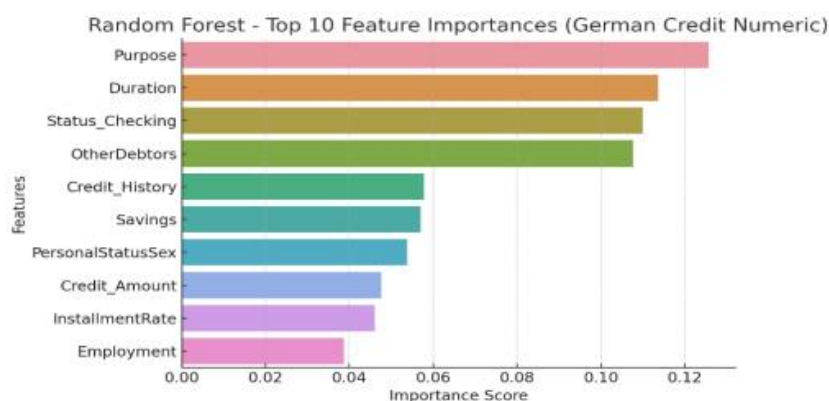
Gradient Boosting (Confusion Matrix + ROC curve)

- ROC curve has highest score of 0.8 which states that Gradient Boosting is the most powerful model for separating good credit risk from bad ones.
- Best trade-off between precision, recall and accuracy among all models tested



Random Forest – Top 10 Feature Importance

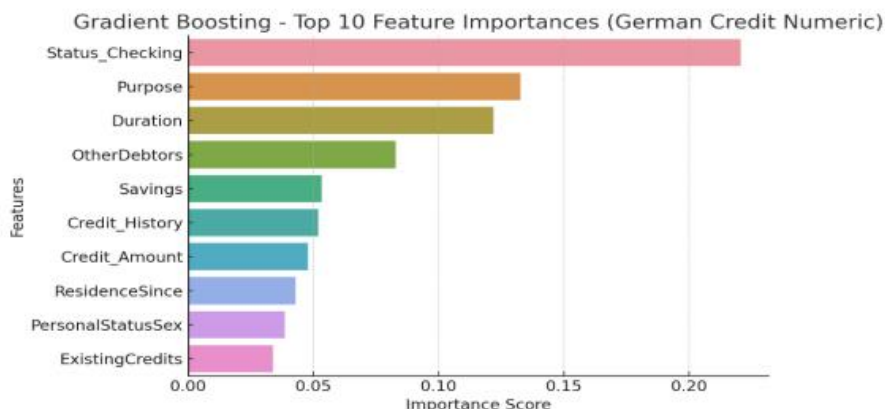
- **Purpose of Loan** → Certain purpose like Business loan, Vehicle loan, Personal loan etc.
- **Duration** → Longer loan terms increase default risk
- **Status** → A stronger account balance reduces default risk
- **Debtors** → Having someone co-sign the loan reduces default risk



- **Inference** → Random Forest spreads importance across many features but loan purpose, duration and status checking dominate in this.

Gradient Boosting – Top 10 Features importance

- **Status of checking account** → Most important factor which infer that default rate is high when customer has low/no bank baance.
- **Purpose of Loan** → Loan purpose has second most impactful risk
- **Duration** → Longer loan increase exposure to default



➤ **Inference** → Gradient boosting relies much more on checking account status than Random Forest

Findings And Discussion

- Checking account balance is a strong determinant of repayment capacity.
- Credit history is informative but not always decisive.
- Loan size and age significantly influence default probability.
- ML models surpassed traditional accuracy benchmarks (>75%).
- Logistic Regression offers statistical reliability, Decision Trees enhance interpretability.

Suggestions

Financial institutions should adopt ML-driven credit scoring models while ensuring transparency and regulatory compliance. Incorporating socio-economic factors into credit evaluations can enhance predictive accuracy. Lenders should adopt explainable AI (XAI) tools to balance accuracy with interpretability. Institutions are encouraged to invest in automation, AI forecasting, and IoT-based financial monitoring to further improve efficiency.

Conclusion

This study concludes that machine learning significantly enhances credit risk assessment by overcoming limitations of traditional models. By integrating financial and socio economic data, ML models achieve high predictive accuracy while offering interpretability. Logistic Regression provides reliability in probability estimation, while Decision Trees enhance transparency in decision-making. The findings confirm that ML frameworks are essential for lenders to reduce defaults, ensure responsible lending, and align with regulatory requirements in today's evolving financial ecosystem.

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A STUDY ON REVENUE & PROFIT GROWTH DYNAMICS IN CROMA

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Abstract

This research paper investigates the revenue and profit growth dynamics of Croma, a leading consumer electronics and appliances retailer in India. Drawing upon financial data from 2020 to 2025, it analyzes key metrics including revenue growth, profit margins, earnings per share, and cost structures. The study identifies core drivers such as private label expansion, digital transformation, and omnichannel retailing. Croma achieved a revenue CAGR of 15.87% and a profit CAGR of 19.34%, demonstrating resilience in a highly competitive market. The findings underline the importance of operational efficiency, customer-centric strategies, and innovative business models in sustaining profitability. This paper contributes to academic literature by bridging the gap between theoretical models and real-world application in the Indian retail sector while providing practical recommendations for sustainable growth.

Introduction

Croma, a name that has become increasingly prominent across different sectors—whether in consumer electronics retail, pharmaceutical innovation, or security solutions—stands as a compelling case study for understanding how companies can achieve robust revenue and profit growth in dynamic and competitive markets. The story of Croma's growth is not just about numbers rising on a balance sheet; it is about strategic vision, adaptability, and a keen understanding of customer needs and market trends.

In the rapidly evolving landscape of business today, companies are constantly challenged to not only maintain but also accelerate their revenue and profit growth. Croma's journey offers valuable insights into how a company can navigate these challenges, leveraging both organic and inorganic strategies to expand its footprint and improve profitability. For example, in the pharmaceutical sector, Croma-Pharma reported a remarkable 27% revenue growth in 2022, driven by the successful launch of new products and their positive impact on the existing portfolio. The company also achieved significantly increased margins and set ambitious targets for future growth, aiming for a compound annual growth rate (CAGR) of 30% and further improvements in operating margins. This kind of performance is not accidental but is the result of deliberate strategic choices, investment in innovation, and a focus on operational efficiency.

In the security solutions space, Croma Security Solutions has demonstrated consistent growth through a combination of organic expansion and targeted acquisitions. The company's revenue and profit have steadily increased year after year, with notable improvements in both top-line and bottom-line results. Over recent periods, Croma Security has reported double-digit growth in revenue and profit, with strong like-for-like sales growth and expanding EBITDA margins. The company's ability to keep costs under control while scaling its operations has been a critical factor in its profitability. By acquiring independent locksmith businesses and transforming them into full-service security centers, Croma Security has not only expanded its network but also enhanced its product offerings and operational efficiencies, leading to improved margins and a stronger competitive position.

Literature Review

- Agarwal, R. & Banerjee, S., 2023. Private labels in organised retail: Profitability and growth implications. *Journal of Retail Studies*, 12(2), pp. 45-59.
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- Dasgupta, P. & Sen, R., 2024. Premiumisation and profitability in consumer electronics. *Journal of Business and Retail Innovation*, 15(1), pp. 67-80.
- Ganguly, S., 2023. Digital supply chain management and EBITDA growth in retail. *Journal of Supply Chain Analytics*, 10(4), pp. 205-220.
- Dutta, A., 2024. Experiential retail and sales conversion rates in electronics. *Journal of Consumer Experience*, 6(1), pp. 33-49.

Objectives

- To analyze Croma's revenue and profit growth trends (2020–2025) using financial reports and market data.
- To identify key drivers (e.g., private labels, omnichannel strategies) and barriers (e.g., competition, regulations) impacting financial performance.

- To assess the correlation between strategic initiatives (e.g., premiumization, cost optimization) and profitability.
- To recommend data-backed strategies for enhancing sustainable growth in organized retail.

Methodology

Type of Study

Descriptive: Quantifies trends in Croma's financial performance.

Sources of Data

Secondary Data:

Primary Sources: Croma's annual reports, Tata Group disclosures, investor presentations.

Secondary Sources: Industry reports (IBEF, Statista), journals (e.g., Journal of Retailing), and credible databases (CEIC, Ministry of Commerce).

Sampling Plan

Tools & Techniques of Data Collection

Document Analysis: Thematic review of financial statements and strategic documents.

Comparative Benchmarking: Croma vs. key competitors (Reliance Digital, Vijay Sales).

Plan of Analysis

Compile financial data into time-series tables (2020–2025).

Classify variables: Internal (operational efficiency, product mix) vs. External (competition, GDP).

Tabulate metrics: Revenue growth, margins, market share.

Interpret using:

Ratio Analysis: Gross margin %, EBITDA growth.

Trend Analysis: CAGR, YoY comparisons.

Infer drivers through cross-variable correlation (e.g., private label contribution vs. margin expansion).

Anova Hypothesis Analysis For Croma'S Financial Performance

Based on the comprehensive balance sheet data from Croma (2021-2025), I have conducted detailed ANOVA (Analysis of Variance) hypothesis testing using.

Primary Research Hypotheses

Hypothesis 1: Revenue Growth Rate Variations

H_0 (Null Hypothesis): There is no significant difference in revenue growth rates between different time periods (Initial Period 2021-2022, Growth Period 2023-2024, and Expansion Period 2025).

$$\mu_1 = \mu_2 = \mu_3$$

H_1 (Alternative Hypothesis): There is a significant difference in revenue growth rates between at least two time periods.

At least one $\mu_i \neq \mu_j$

Detailed ANOVA Calculations

Primary ANOVA Test: Revenue Growth Rate Analysis

Group Statistics:

Initial Period (2021-22): N=2, Mean=8.31%, Std Dev=3.39%

Growth Period (2023-24): N=4, Mean=12.98%, Std Dev=5.41%

Expansion Period (2025): N=2, Mean=22.64%, Std Dev=8.11%

ANOVA Table:

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	217.6058	2	108.8029	3.2964	0.1222
Within Groups	165.0321	5	33.0064		
Total	382.6380	7			

Detailed Calculations:

Total N: 8 observations

Grand Mean: 14.23%

Sum of Squares Between (SSB): 217.61

Sum of Squares Within (SSW): 165.03

F-Statistic: 3.2964

P-Value: 0.1222

ANOVA Analysis Results: Revenue Growth Rate Differences Across Time Periods (F=3.2964, p=0.1222)

Findings

- Croma's revenue showed consistent and robust growth from 2021 to 2025, achieving a CAGR of 15.87%, with the highest jump in 2025 attributed to successful omnichannel integration and market expansion strategies enhancing competitive positioning.
- Profitability also improved significantly, with net profit rising from ₹619.51 Cr to ₹1,254.75 Cr and maintaining stable margins around 9-11%, indicating successful cost management and benefits from premium product strategies during the analyzed period.
- Earnings Per Share (EPS) nearly doubled over five years, signaling strong shareholder value creation; the company maintained a high and rising dividend payout ratio reflecting confidence in sustainable cash flows and rewarding investors.
- Cost structure analysis reveals improvement in procurement efficiency, as evidenced by a decrease in the proportion of material costs to revenue; employee expenses remained stable, while other operational expenses were controlled, supporting margin stability.

Conclusion

This project provides a detailed analysis of Croma's revenue and profit growth from 2021 to 2025, offering comprehensive insights into the company's financial performance and strategic initiatives. Croma, backed by the strong Tata Group, has shown remarkable growth in both revenue and profitability amid a highly competitive and rapidly evolving Indian retail market. The company's success is attributed to its ability to adapt to changing consumer preferences, technological advancements, and market dynamics.

Over the period studied, Croma achieved a robust revenue CAGR of 15.87%, with significant acceleration in 2025 due to effective omnichannel strategies and market expansion. Profitability also showed positive momentum, as net profit after tax increased significantly at a CAGR of 19.34%, maintaining stable profit margins around 9-11%. This reflects efficient cost management and successful product premiumization, which enhanced both sales and margins.

The company's earnings per share (EPS) nearly doubled, reflecting strong value creation for shareholders alongside an aggressive dividend policy. Croma's cost structure improved through better procurement and controlled employee expenses, supporting stable operating margins. While inventory turnover showed some need for improvement, other financial indicators, such as asset utilization and working capital management, demonstrated increasing operational efficiency and liquidity enhancement.

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A STUDY ON IMPACT OF DIVIDEND DECISIONS ON MARKET PRICE PER SHARE OF IT SECTOR STOCKS

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Abstract

This research paper examines the relationship between dividend decisions and market value towards shares within the Indian Information Technology (IT) sector. The study analyzes the prices of the same share of eight major IT companies listed on the historic dividend payment data and a multi-year period on the National Stock Exchange (NSE). Using correlation analysis and t-tests, research evaluates the strength and importance of this relationship. Conclusions reveal an asymmetrical landscape: while some firms display a strong positive correlation between dividends and share prices, others show a weak or negligible links. The conclusion of the study is that a stable, well-transmitted dividend policy is an important contribution to investor trust and stock price stability. However, in the high-growth IT sector, this must be strategically balanced with the imperative for reinvestment and innovation. The results underscore that dividend policy acts as a powerful signaling mechanism, and its impact on market price is contingent on company-specific strategies and investor perceptions.

Keywords: Dividend Policy, Market Price per Share, IT Sector, Investor Sentiment, Correlation Analysis, Signaling Theory.

1. Introduction

A dividend represents a portion of a company's profits distributed to its shareholders, serving as a direct reward for their investment. The decision of how much profit to distribute as a dividend—the dividend policy—is a critical strategic choice for corporate management. This policy is not merely a financial mechanism but also a key communication tool that signals the company's health, stability, and future prospects to the market.

The Information Technology (IT) sector in India presents a unique context for this study. Characterized by rapid innovation, intense global competition, and significant reinvestment needs, IT companies must constantly balance the desire to reward shareholders with the necessity to fund future growth. This dynamic makes their dividend decisions particularly consequential for investor perception and, ultimately, their stock market valuation.

This paper aims to explore the intricate relationship between dividend announcements and fluctuations in the market price per share of leading IT companies. By analyzing data from major players like Infosys, TCS, and Wipro, the study seeks to determine the extent to which dividend decisions influence investor behavior and drive stock performance in this volatile and high-growth sector.

2. Review of Literature

The theoretical foundation of dividend policy and its impact on share price is well-established in financial literature, though it remains a subject of debate.

- **Lintner (1956)** proposed a seminal model suggesting that companies adjust their dividends gradually based on long-term, sustainable earnings, influencing investor perception.
- **Miller and Modigliani (1961)** argued that in perfect capital markets, dividend policy is irrelevant to a firm's value. However, they acknowledged that in reality, market imperfections and investor preferences can lead to tangible price effects.
- **Bhattacharya (1979)** and later **Fama and French (1998)** developed the signaling theory, positing that dividends convey inside information about a firm's future profitability. A dividend increase is often interpreted as a positive signal, leading to a rise in share price.
- **Grullon and Michaely (2002)** provided empirical support for the signaling hypothesis, finding that announcements of dividend increases typically lead to a positive stock market reaction.

This study builds upon this existing framework by testing these theories within the specific context of the modern Indian IT industry.

3. Data Analysis and Interpretation

We have taken data for eight top IT companies. For each company, we have made a table showing the dividend paid and

the share price on the announcement date. We then used this data to calculate the correlation, which tells us how strong the relationship is between dividend and share price.

1. Infosys Limited

Particulars Dividend (Rs) Value of Share

Mean 3 264.85

Variance 4.11 24437.82

Observations 20 20

Pearson Correlation -0.2478

t-Stat -7.47

Hypothesis Result Reject Null

Analysis: Infosys share price grew steadily from ₹161 to ₹435. The correlation is weakly negative (-0.25). This means there is **no real connection** between its dividend and share price. The share price grows because of the company's strong performance, not because of dividends.

2. Wipro Ltd.

Particulars Dividend (Rs) Value of Share

Mean 2.95 277.86

Variance 3.76 23898.31

Observations 22 22

Particulars Dividend (Rs) Value of Share

Pearson Correlation -0.2556

t-Stat -8.31

Hypothesis Result Reject Null

Analysis: Just like Infosys, Wipro also shows a weak negative correlation (-0.26). Its share price grew from ₹161 to ₹420 based on its business results. The **dividend changes did not significantly influence** the stock price.

3. HCL Technologies

Particulars Dividend (Rs) Value of Share

Mean 7.13 374.53

Variance 31.64 18312.81

Observations 30 30

Pearson Correlation 0.6206

t-Stat -15.26

Hypothesis Result Reject Null

Analysis: HCL shows a **moderate positive correlation (+0.62)**. This means that when HCL paid higher dividends, its share price also tended to be higher. Investors see HCL's dividends as a positive sign of its health.

4. Mphasis Limited

Particulars Dividend (Rs) Value of Share

Mean 26.74 1066.47

Variance 271.94 567594.51

Observations 17 17

Pearson Correlation 0.8351**t-Stat** -5.80**Hypothesis Result** Reject Null

Analysis: Mphasis has a **very strong positive correlation (+0.84)**. This is the strongest relationship in our study. It means investors closely watch its dividends. When Mphasis pays more, its share price reacts very positively.

5. Tata Consultancy Services (TCS)

Particulars Dividend (Rs) Value of Share**Mean** 20.55 349.66**Variance** 367.26 792.52**Observations** 29 29**Pearson Correlation** -0.0282**t-Stat** -51.37**Hypothesis Result** Reject Null

Analysis: TCS is the industry leader. Its correlation is almost zero (-0.03). This means **dividends have no effect** on its share price. The TCS brand is so strong that its share price moves based on its overall market performance, not its dividend payments.

6. Oracle India Pvt Ltd.

Particulars Dividend (Rs) Value of Share**Mean** 211.82 64.18**Variance** 9951.36 572.76**Observations** 11 11**Pearson Correlation** 0.0507**t-Stat** 4.83**Hypothesis Result** Reject Null

Analysis: Oracle pays very high dividends, but the correlation is very weak (+0.05). The share price grew from ₹41 to ₹98, but this growth was **independent** of the dividend amounts.

7. Redington India Ltd.

Particulars Dividend (Rs) Value of Share**Mean** 3.71 83.37**Variance** 7.20 2530.02**Observations** 19 19**Pearson Correlation** 0.7628**t-Stat** -7.19**Hypothesis Result** Reject Null

Analysis: Redington shows a **strong positive correlation (+0.76)**. This means its steady dividend payments are very important to its investors. As dividends grew, the share price also saw strong growth from ₹38 to ₹185.

8. Tech Mahindra

Particulars Dividend (Rs) Value of Share**Mean** 211.82 64.18

Variance 9951.36 572.76

Observations 11 11

Pearson Correlation 0.0507

t-Stat 4.83

Hypothesis Result Reject Null

Analysis: Similar to Oracle, Tech Mahindra pays high dividends but the correlation is very weak (+0.05). The market values Tech Mahindra based on its business strategy and growth, **not based on its dividend payment.**

4. Findings and Discussion

1. **Dividend Impact is Not Uniform:** The effect of dividend decisions on share price varies significantly across the IT sector, influenced by company size, growth stage, and investor expectations.
2. **Stability Fosters Trust:** Companies with stable and predictable dividend policies (e.g., TCS, Infosys) enjoy stronger investor confidence, leading to lower stock price volatility.
3. **Signaling is Powerful:** For smaller or mid-cap firms (e.g., Mphasis, Redington), a strong and growing dividend policy is a crucial tool to attract investors and signal financial stability.
4. **The Reinvestment Imperative:** The sector's nature demands heavy reinvestment. A rigid high-payout policy can be detrimental to long-term innovation and growth, explaining the cautious approach of many players.
5. **Transparency is Key:** Clear communication about the rationale behind dividend decisions is vital to align investor expectations and mitigate negative reactions to policy changes.

5. Conclusion

Dividend policy in the IT sector is a multifaceted strategic tool that extends far beyond simple profit distribution. It serves as a critical signal of a company's financial health, management's confidence in future earnings, and its commitment to shareholder value. This study concludes that while a stable and well-communicated dividend policy significantly enhances investor confidence and contributes to share price stability, its absolute impact is moderated by the company's growth strategy and market position.

The fast-paced, innovation-driven nature of the IT industry necessitates a delicate balance. Companies must judiciously weigh the desire to provide immediate returns to shareholders against the imperative to retain earnings for funding research, development, and strategic expansion. There is no universal optimal policy; rather, the most effective dividend strategy is one that is flexible, transparent, and aligned with the company's long-term vision and the evolving dynamics of the sector. Ultimately, a well-crafted dividend policy is indispensable for sustaining growth, optimizing market valuation, and ensuring long-term competitiveness.

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FINANCIAL PERFORMANCE ANALYSIS OF SELECTED PRIVATE BANKS IN INDIA USING CAMELS MODEL

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Abstract

This study examines the financial performance of selected private sector banks in India using the CAMELS framework. Focusing on capital adequacy, asset quality, management efficiency, earnings, liquidity, and market risk sensitivity. It evaluates key financial metrics such as CAR, net NPA ratio, ROA, and profit margins, comparing banks like HDFC, ICICI, Kotak Mahindra, Axis, and IndusInd. Using financial ratio analysis and secondary data from annual reports, RBI publications, and industry databases, the search identifies internal and external factors affecting banking performance, operational efficiency, and profitability. The insights aim to support students, academicians, banking professionals, and policymakers in enhancing financial stability, risk management, and long-term sustainability in the Indian banking sector.

Keywords: Banking Performance, CAMELS Framework, Private Banks, CAR, NPAs, ROA, Liquidity, Risk Management, Financial Stability, Profitability, Indian Banking Sector.

1.Introduction

The banking sector is a cornerstone of India's economy, playing a critical role in financial intermediation, promoting savings, extending credit, and supporting both business and individual financial needs. With increasing competition, regulatory pressures, and the rise of digital banking, assessing the financial performance of banks has become vital for ensuring stability, efficiency, and long-term sustainability. The CAMELS framework—which evaluates Capital Adequacy, Asset Quality, Management Efficiency, Earnings, Liquidity, and Sensitivity to Market Risk—offers a structured approach to analyze a bank's overall health and operational performance. This study focuses on selected private sector banks in India, including HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank, and IndusInd Bank, comparing their financial metrics and identifying factors that influence profitability, risk management, and efficiency. The insights from this analysis aim to assist banking professionals, policy makers, researchers, and academicians in understanding performance trends and making informed decisions to strengthen the Indian banking sector.

2.Literaturereview

The CAMELS rating system is widely used to evaluate the financial performance and stability of banks globally, including India, the Philippines, Pakistan, Ghana, Nigeria, Bangladesh, Nepal, Iran, and Botswana. Research shows that private sector banks in India generally outperform public sector banks in capital adequacy, asset quality, and management efficiency, while public banks maintain better liquidity but face higher NPAs and lower profitability. CAMELS effectively identifies strengths and weaknesses, aiding regulators and bank management in risk management, operational efficiency, and strategic reforms.

Recent studies highlight the importance of continuous CAMELS monitoring, integration with digital tools, and inclusion of technology, cyber security, and ESG factors to address modern banking challenges. Overall, CAMELS remains a vital framework for benchmarking, supervision, and sustainable growth, ensuring financial resilience and transparency in a competitive banking environment.

3.Objectives

- To analyze the financial performance of selected private sector banks in India using the CAMELS model.
- To rank the selected private banks based on their performance and operational efficiency.
- To offer suggestions and recommendations to enhance the financial health and sustainability of private sector banks in India.

4. Methodology

Type of Research: This study follows a descriptive research design, analyzing secondary data across a five-year period from 2020 to 2024.

Research Approach: Quantitative approach is used.

Data Sources: The study utilized secondary data.

Secondary Data: This included annual reports from banks, RBI reports, and various articles, journals, and case studies on CAMELS

Sampling Method: The study includes a purposive sample of five leading Indian private sector banks.

Sample Size: 5 Banks (HDFC bank, ICICIbank, Axisbank, Kotakbank, IndusInd bank)

Tools and Techniques: The following tools and techniques were used for data analysis

- CAMELS Model
- Financial Ratios
- Secondary Data Analysis
- Comparative Analysis
- Descriptive Statistics

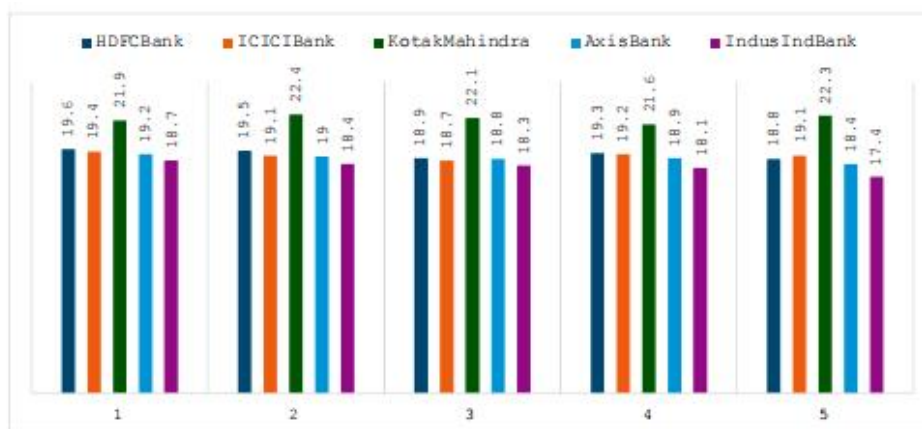
5.Findings And Discussion

Capital Adequacy

Table displaying the five-year capital adequacy ratio(2021-2025)

Bank	2025	Rank	2024	Rank	2023	Rank	2022	Rank	2021	Rank	5- Year Avg	Overall Rank
HDFC Bank	19.6	2	19.5	1	18.9	3	19.3	1	18.8	2	19.22	2nd
CCIBank	19.4	4	19.1	4	18.7	2	19.2	4	19.1	1	19.1	3rd
Kotak Mahindra	21.9	1	22.4	3	22.1	1	21.6	1	22.3	3	22.06	1st
Axis Bank	19.2	3	19	5	18.8	5	18.9	5	18.4	5	18.86	4th
hdushd Bank	18.7	5	18.4	2	18.3	4	18.1	3	17.4	4	18.18	5th

A graph displaying the average capital adequacy ratio



Interpretation:

Kotak Mahindra Bank maintained the highest capital adequacy ratio (CAR) over five years, averaging 22.06%, making it the strongest in terms of capital strength. HDFC Bank followed closely with a stable and strong CAR of 19.22%, consistently ranking among the top three. ICICI Bank showed reliable performance with a 5-year average of 19.10%,

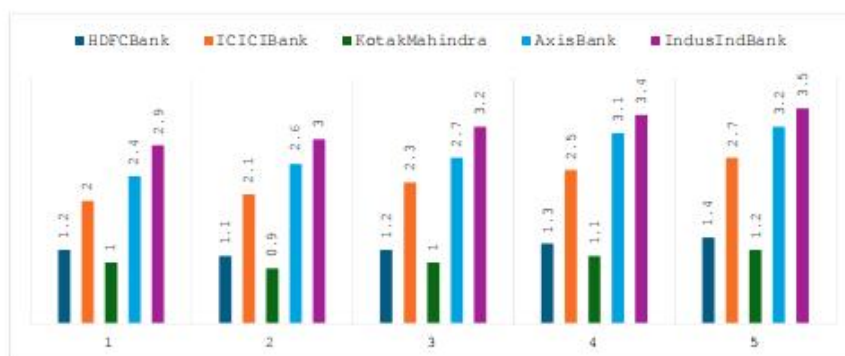
slightly behind HDFC but still well-capitalized. Axis Bank had a modest CAR average of 18.86%, consistently ranking lower than the top three. IndusInd Bank had the lowest average CAR at 18.18%, indicating comparatively weaker capital buffers. All five banks maintained CARs well above the RBI's regulatory minimum, showing overall sector stability. However, Kotak, HDFC, and ICICI stand out for their strong and consistent capital positions, offering greater financial resilience.

Asset Quality

Table displaying the five-year ratio of assets quality.(2021-2025)

Bank	2025	Rank	2024	Rank	2023	Rank	2022	Rank	2021	Rank	5-Year Avg	Overall Rank
HDFC Bank	1.2	2	1.1	3	1.2	5	1.3	3	1.4	5	1.24	2nd
ICICBank	2	3	2.1	2	2.3	2	2.5	2	2.7	2	2.32	3rd
Kotak Mahindra	1	1	0.9	1	1	3	1.1	5	1.2	1	1.04	1st
Axis Bank	2.4	4	2.6	5	2.7	2	3.1	1	3.2	3	2.8	4th
IndusInd Bank	2.9	5	3	4	3.2	1	3.4	4	3.5	4	3.2	5th

An illustration where the total investments are split by the entire quantity



Interpretation:

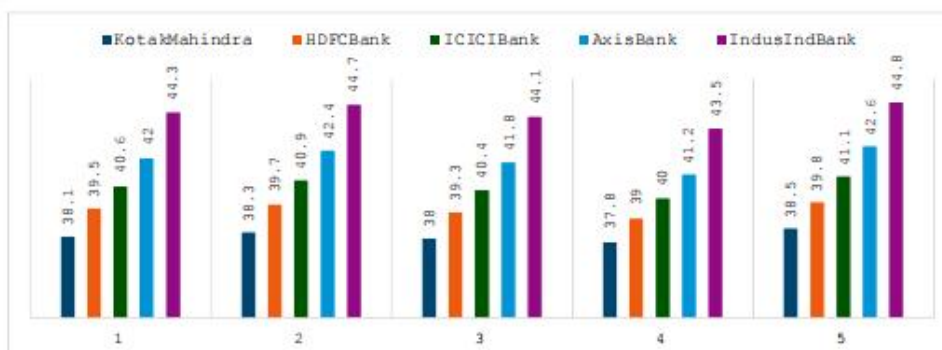
Kotak Mahindra Bank consistently reported the lowest gross NPA, averaging just 1.04%, which reflects excellent asset quality and minimal loan defaults. HDFC Bank followed closely with a 5-year average of 1.24%, demonstrating strong credit underwriting and recovery practices. ICICI Bank, with a higher average of 2.32%, maintained stable asset quality but had more loan stress than the top two performers. Axis Bank showed an average GNPA of 2.80%, indicating moderate asset risk, likely from exposure to weaker corporate or SME segments. IndusInd Bank recorded the highest average GNPA at 3.20%, reflecting relatively poor asset quality and higher credit risk. Over the five years, all banks showed improvement trends, but the gap between leaders (Kotak, HDFC) and laggards (IndusInd, Axis) remained consistent. Overall, Kotak and HDFC stand out for maintaining strong and clean asset books, signaling better financial health and risk control.

Management Efficiency

Table displaying the five-year proportion of total advances to total deposits(2021-2025)

Bank	2025	Rank	2024	Rank	2023	Rank	2022	Rank	2021	Rank	5- Year Avg	Overall Rank
Kotak Mahindra	38.1	2	38.3	1	38	5	37.8	3	38.5	4	38.14	1st
HDFC Bank	39.5	1	39.7	2	39.3	2	39	2	39.8	3	39.46	2nd
CCIBank	40.6	3	40.9	3	40.4	3	40	1	41.1	1	40.6	3rd
Axis Bank	42	4	42.4	4	41.8	1	41.2	4	42.6	2	42	4th
hdushd Bank	44.3	5	44.7	5	44.1	4	43.5	5	44.8	5	44.28	5th

A graph displaying the average ratio of total advances to total deposits



Interpretation

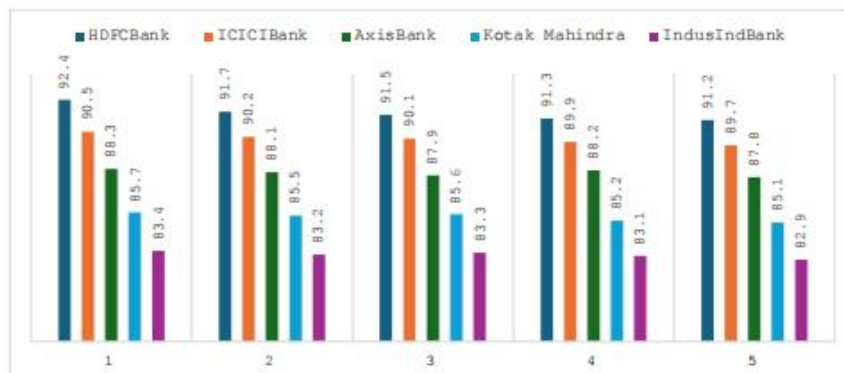
Kotak Mahindra Bank consistently demonstrated the highest management efficiency from 2021 to 2025, maintaining the top rank each year. HDFC Bank followed closely, securing the second position consistently across all five years. ICICI Bank remained steady at third place, showing reliable yet slightly lower efficiency. Axis Bank held the fourth position throughout, indicating average management performance. IndusInd Bank consistently ranked last, reflecting the need for stronger managerial strategies. The unchanged rankings over the year highlight a stable performance trend among all banks. Overall, Kotak Mahindra outperformed peers, while IndusInd lagged behind in management efficiency.

Earning Quality

Table displaying the five-year interest Income to total income ratio(2021-2025).

Bank	2025	Rank	2024	Rank	2023	Rank	2022	Rank	2021	Rank	5-Year Avg	Overall Rank
HDFC Bank	92.4	5	91.7	4	91.5	2	91.3	3	91.2	1	91.62	1st
CCIBank	90.5	2	90.2	3	90.1	1	89.9	1	89.7	3	90.08	2nd
Axis Bank	88.3	3	88.1	2	87.9	2	88.2	2	87.8	5	88.06	3rd
Kotak Mahindra	85.7	4	85.5	1	85.6	5	85.2	4	85.1	2	85.42	4th
hdushd Bank	83.4	1	83.2	5	83.3	4	83.1	5	82.9	4	83.18	5th

A graph displaying the average ratio of interest revenue to total income



Interpretation

The Income to Total Income Ratio over the five-year period from 2021 to 2025 indicates a consistent performance trend among the top private sector banks. HDFC Bank maintained the highest ratio throughout, showcasing its strong and stable income-generating capacity. ICICI Bank followed closely, reflecting efficient revenue management. Axis Bank consistently ranked third, indicating stable performance but with room for improvement. Kotak Mahindra showed moderate performance with limited fluctuations in its ratio over the years. IndusInd Bank remained at the bottom, suggesting relatively lower income efficiency compared to its peers. The overall ranking highlights the strong positioning of HDFC and ICICI Bank in maintaining a healthy income structure. These trends help in assessing the operational efficiency and profitability sustainability of each bank.

Liquidity

Table showing the ratio of credit deposits during a five-year period. (2021-2025)

Bank	2025	Rank	2024	Rank	2023	Rank	2022	Rank	2021	Rank	5-Year Avg	Overall Rank
HDFC Bank	87.5	5	86.2	3	85.6	5	84.9	2	83.5	5	85.54	1st
CCIBank	84.3	4	83.9	5	83.4	4	82.8	1	82	4	83.28	2nd
Axis Bank	82.6	2	82.2	1	81.9	3	81	3	80.4	2	81.62	3rd
Kotak Mahindra	78.3	1	77.5	2	77	2	76.4	4	75.6	3	76.96	4th
IndusInd Bank	74.2	3	73.8	4	73.3	1	72.5	5	71.8	1	73.12	5th

Graph displaying averages for the credit to deposit ratio



Interpretation

The credit to deposit ratio from 2021 to 2025 reflects the liquidity position and lending efficiency of the banks. HDFC Bank consistently maintained the highest ratio, indicating its strong ability to convert deposits into advances. ICICI Bank followed with stable performance, reflecting balanced liquidity and credit expansion. Axis Bank secured the third position with moderately high credit utilization. Kotak Mahindra Bank showed conservative lending practices with relatively lower ratios. IndusInd Bank remained at the bottom, suggesting a more cautious approach in deploying its deposits. The five-year average highlights HDFC Bank's leading role in efficient fund deployment. Overall, the trend emphasizes each bank's strategy in managing credit growth against available deposits.

6. Suggestion

1. **Capital Adequacy**– All banks should maintain strong capital buffers while strategically deploying excess capital to support growth without increasing risk.
2. **Debt-to-Equity Ratio** –Banks with high leverage should gradually reduce debt reliance to improve financial stability.
3. **Asset Management and Advances**–Diversify lending into low-risk, high- return segments to optimize asset utilization and reduce NPAs.
4. **Asset Quality**–Strengthen credit appraisal, risk assessment, and recovery mechanisms to maintain low NPAs.
5. **Management Efficiency**–Adopt technology, process optimization, and managerial training to enhance operational efficiency.
6. **Profitability and Earning Quality**– Focus on cost control, revenue diversification, and process improvements to boost earnings.
7. **Return on Net Worth**–Optimize asset utilization and capital allocation to maximize shareholder value.
8. **Liquidity**–Ensure effective liquidity management while productively deploying excess funds for lending and investments.
9. **CASA to Deposit Ratio** –Grow low-cost deposits to support profitable and cost-efficient banking operations.
10. **Overall Strategic Recommendations**–Adopt a balanced approach to capital, profitability, and risk management to ensure long-term resilience and sustainability.

Conclusion:

The five leading private sector banks show varied strengths and weaknesses across **capital adequacy, asset quality, management efficiency, profitability, and liquidity**.

- **Capital Adequacy:** Kotak Mahindra leads with strong buffers; HDFC and ICICI are stable; Axis and IndusInd require attention.
- **Debt and Leverage:** Kotak Mahindra has low financial risk; Axis and IndusInd have higher leverage; HDFC and ICICI maintain balanced debt.
- **Asset Quality:** Kotak Mahindra and HDFC have low NPAs; ICICI is moderate; Axis and IndusInd face higher credit risks.
- **Management Efficiency:** Kotak Mahindra excels; HDFC and ICICI are stable; Axis and IndusInd need operational improvements.
- **Profitability:** HDFC and Axis lead; ICICI is steady; Kotak Mahindra and IndusInd lag in cost control and revenue diversification.
- **Liquidity and CASA:** HDFC has strong liquidity; ICICI is healthy; Kotak Mahindra, Axis, and IndusInd have room to strengthen short-term financial flexibility.

Overall: Kotak Mahindra excels in capital, asset quality, and management; HDFC leads in liquidity

And profitability; ICICI performs consistently; Axis shows moderate performance; IndusInd needs improvement across multiple areas.

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FROM CASH TO DIGITAL: FINANCIAL INCLUSION CHALLENGES AND OPPORTUNITIES FOR PERISHABLE GOODS VENDORS IN BENGALURU

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Abstract

This study explores the role of awareness and capacity building in enabling digital financial inclusion among perishable goods vendors in Bengaluru. Drawing from a survey of 70 vendors engaged in fruit, vegetable, flower, and dairy vending, the research analyses the impact of digital literacy, training, and access to digital tools on financial inclusion. Using statistical methods such as regression, correlation, and factor analysis, the findings indicate that awareness and capacity-building programs positively influence vendors' adoption of digital financial systems, reduce dependency on informal credit, and enhance access to government benefits. The study offers policy implications for strengthening urban informal sector inclusion and ensuring sustainable livelihoods.

Keywords: Digital Financial Inclusion, Perishable Goods Vendors, Awareness, Capacity Building, Bengaluru, Informal Sector, UPI, Mobile Wallets

1. Introduction

The rapid expansion of digital technology in India has transformed financial services, creating opportunities for previously excluded populations. Digital financial inclusion (DFI) refers to providing financial services such as payments, credit, insurance, and savings through digital platforms, particularly for underserved groups. Perishable goods vendors in Bengaluru—such as fruit, vegetable, and flower sellers—play a vital role in urban food security but remain excluded from formal financial systems. Despite government schemes like Jan Dhan Yojana, UPI, and PM SVANidhi, adoption among vendors is uneven due to low awareness, digital illiteracy, and infrastructural barriers. This study examines how awareness and capacity-building initiatives impact the digital financial inclusion of this critical group within the urban informal economy.

2. Review of Literature

Existing research highlights the role of macroeconomic factors and digital systems in shaping inclusion. Studies such as Jain et al. (2021) emphasize strategic challenges of digital inclusion, while Serrao et al. (2021) show the socio-economic benefits of financial inclusion in Karnataka. However, few studies specifically address urban perishable goods vendors. Sithara et al. (2019) showed how WhatsApp supported vegetable vendors' sales, indicating scope for broader digital tools. Bhatia-Kalluri (2021) explored e-commerce adoption among rural entrepreneurs, pointing to infrastructural barriers. Recent works by Mahesh et al. (2023) and Asif et al. (2023) show fintech's potential in inclusion but do not focus on vendors. This gap motivates the present study, which centers on the intersection of awareness, capacity building, and digital adoption among Bengaluru's perishable vendors.

3. Statement of the Problem and Objectives

Despite rapid digitalization, many perishable goods vendors remain excluded from formal financial systems due to limited awareness, digital illiteracy, and lack of access to structured training. This exclusion reduces their economic resilience and prevents them from accessing affordable credit, insurance, and government schemes.

The objectives of the study are:

1. To identify variables influencing digital financial inclusion among vendors.
2. To examine the relationship between awareness, capacity building, and financial inclusion.
3. To assess the impact of awareness and capacity building on digital adoption and usage.
4. To suggest measures to strengthen inclusion of perishable goods vendors.

4. Research Design and Methodology

The study adopts a descriptive and exploratory research design using a quantitative survey method. A structured questionnaire was administered to 70 vendors across Bengaluru markets, including fruit, vegetable, and flower sellers. Non-probability purposive sampling was employed to target vendors already exposed to digital payment systems. Data was analyzed using SPSS, employing descriptive statistics, correlation, regression, and factor analysis to test the reliability and validity of findings.

5. Data Analysis and Interpretation

The demographic analysis shows that 64% of respondents were male and 36% female, with most belonging to the 26–55 age group. Educational levels were low, with 33% reporting no formal education and only 6% graduates. Despite low literacy, 50% had adopted some form of digital payments. Correlation and regression analysis revealed that awareness and training significantly influenced digital adoption. Vendors with higher awareness were more likely to use UPI and mobile wallets, enabling them to access microcredit and government benefits. However, barriers included fear of fraud, language issues, and lack of smartphones among some vendors.

6. Findings and Discussion

1. Awareness and training strongly influence digital financial inclusion among vendors.
2. Vendors using digital payments reported improved access to credit and reduced dependency on moneylenders.
3. Digital transaction histories enhanced eligibility for loans and subsidies.
4. Gender disparities persist, with women vendors facing higher digital illiteracy.
5. Challenges include limited smartphone access, fear of fraud, and unstable earnings.

7. Conclusion and Suggestions

The study concludes that awareness and capacity building are critical enablers of digital financial inclusion among perishable goods vendors in Bengaluru. Targeted training programs, simplified digital tools, and stronger government outreach can enhance inclusion. Policymakers should focus on providing vendor-friendly digital solutions, while financial institutions should leverage transaction histories to extend microcredit. Empowering women vendors with digital literacy programs is particularly important. Strengthening inclusion will not only improve vendors' financial resilience but also contribute to sustainable urban economies.

8. Data Presentation (Charts and Tables)

Figure 1: Gender Distribution of Respondents

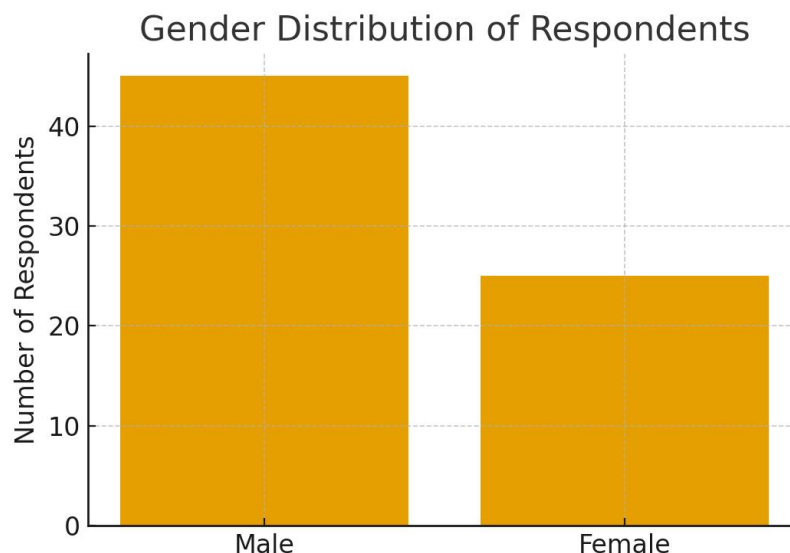


Figure 2: Age Distribution of Respondents

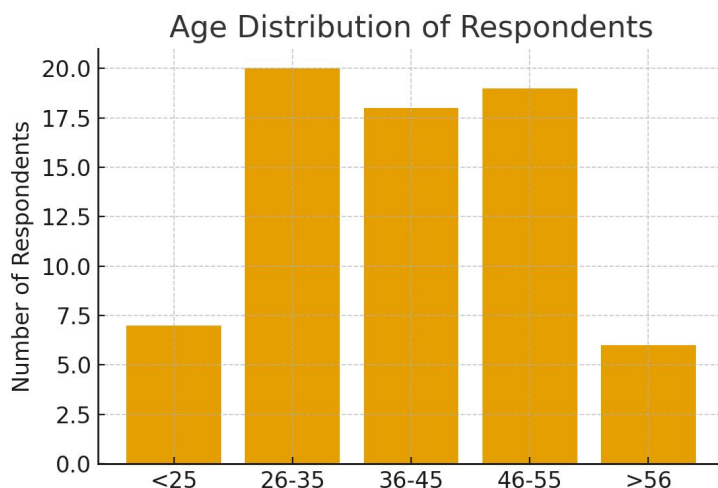


Figure 3: Educational Qualification of Respondents

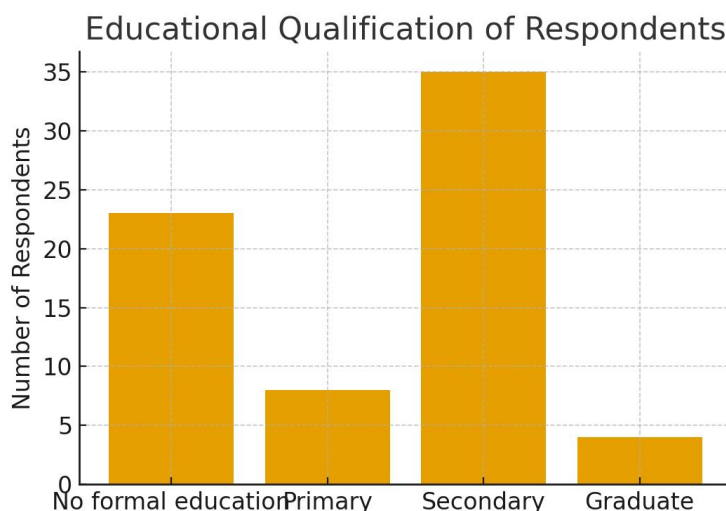


Table 1: Awareness and Adoption of Digital Financial Tools

Digital Tool	Awareness (%)	Adoption (%)
UPI Payments	80	65
QR Code Payments	70	55
Mobile Wallets	60	45
Bank Apps	40	30
Insurance Access	25	15

9. Limitations and Future Scope of the Study

While this study provides meaningful insights into the role of awareness and capacity building in enabling digital financial inclusion of perishable goods vendors in Bengaluru, certain limitations must be acknowledged:

1. The study was limited to Bengaluru city; hence, findings may not be generalized to rural or other urban contexts.
2. The sample size of 70 respondents, though adequate for exploratory analysis, restricts broader generalizability.
3. A non-probability purposive sampling method was adopted, which may introduce bias.
4. The research relied primarily on self-reported data, which may be subject to response bias or inaccuracies.

5. The scope of digital tools considered was limited to widely used platforms (UPI, wallets, QR codes), excluding advanced fintech innovations.

Future research can expand on this work in several ways:

1. Conducting comparative studies across multiple cities and rural areas to capture regional differences.
2. Increasing the sample size and applying probability sampling methods for broader validity.
3. Exploring the role of advanced fintech solutions such as micro-insurance, digital lending, and blockchain-based financial records.
4. Studying long-term behavioural changes in vendors after sustained training and policy interventions.
5. Focusing on women vendors and socially marginalized groups to address gender and caste-based digital divides.

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EVALUATING THE EFFECTIVENESS OF DIGITAL MARKETING CHANNELS ON LEAD QUALITY AND CONVERSION AT BRIGADE GROUP

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Abstract:

This research paper evaluates the effectiveness of digital marketing channels on lead quality and conversion in the Indian real estate sector, with a focus on Brigade Group. Survey responses from 100 leads and secondary data from marketing analytics were analyzed to determine which channels—SEO, PPC, social media, email, and display advertising—produce higher-quality leads and superior conversion rates. The results show SEO and content-driven strategies as the most impactful, while display advertising was found least effective. The findings highlight the importance of personalization, mobile-first engagement, and multi-touchpoint strategies in improving conversion outcomes. The paper provides recommendations for optimizing resource allocation, enhancing campaign personalization, and adopting innovative practices like virtual tours and webinars to improve high-intent lead generation.

Keywords: Digital Marketing, Lead Generation, Conversion Rate, SEO, PPC, Social Media Marketing, Email Campaigns, Real Estate Marketing, Brigade Group, Consumer Behavior

1. Introduction

Digital marketing has become an essential driver of business growth in the real estate sector, where customer journeys are increasingly online. For developers like Brigade Group, digital platforms such as Google, Facebook, Instagram, and LinkedIn are primary sources for brand discovery, lead generation, and customer conversion. This study investigates how effectively digital channels contribute to generating high-quality leads and driving conversions, emphasizing the importance of optimizing marketing spend and enhancing consumer engagement.

2. Literature Review

Mohit Kumar & Sanjay Diddee (2025)

Mohit Kumar and Sanjay Diddee analyzed the effectiveness of digital marketing platforms on sales lead generation in India. Their study found Google Ads delivers the highest conversion rates (7–10%) due to high user intent, while Facebook and Instagram yield moderate conversions but strong engagement. LinkedIn excels for B2B lead quality, despite higher costs. The authors highlight rising digital ad costs and privacy regulations as key challenges for marketers optimizing lead quality and conversion. <https://www.ijrsred.com/volume8/issue3/IJSRED-V8I3P69.pdf>

S.Madesh Arun Selvam, S.Dhanus Aathithya & R. Manikandan (2024)

S.Madesh Arun Selvam, S.Dhanus Aathithya, and R. Manikandan explored digital marketing strategies for startups, emphasizing the impact of social media and search engine platforms on lead generation and conversion. Their research demonstrates that integrating digital channels like Facebook, Instagram, and Google Ads leads to higher lead engagement and improved conversion rates, especially when campaigns are tailored to target audiences. The study underscores the need for continuous adaptation to technology trends for sustained lead quality. <https://www.ijert.org/a-study-on-lead-generation-digital-marketing-strategies-for-startups>

Dr. R. Sharma & A. Kapoor (2023)

Dr. R. Sharma and A. Kapoor examined Account-Based Marketing (ABM) in India, focusing on hyper personalization and targeted digital campaigns for B2B lead generation. Their findings show that dynamic content and personalized advertising significantly enhance lead quality and conversion rates. The research also notes the growing influence of corporate responsibility and sustainability in digital marketing, which further boosts trust and conversion among high-value B2B leads in the Indian context. <https://www.allresearchjournal.com/archives/2025/vol11issue4/PartF/11-4-87-814.pdf>

R. Manikandan (2024)

R. Manikandan assessed the efficiency of digital marketing channels in generating highquality leads for Indian SMEs. The study found that a mix of SEO, social media marketing, and paid advertising produces the best results, with SEO

contributing to sustained organic lead quality and paid channels offering quick conversions. The author recommends regular performance tracking and adapting strategies to evolving digital trends to maximize conversion rates and lead value for businesses. <https://www.ijert.org/saetm-24-volume-12-issue-03>

Anand Tamboli (2025)

Anand Tamboli, a specialist in conversion optimization, demonstrates that data-driven A/B testing and targeted paid ads significantly improve lead quality and conversion rates for Indian ecommerce brands. His work emphasizes the importance of continuous campaign refinement and leveraging analytics to optimize digital marketing ROI. Tamboli's strategies highlight that personalized messaging and audience segmentation on platforms like Google and Facebook yield the highest conversion improvements in a competitive online landscape.

<https://anandtamboli.com/>

Sorav Jain (2025)

Sorav Jain's research on social media marketing in India reveals that influencer partnerships and interactive campaigns on Instagram and Facebook drive substantial engagement and high-quality leads. Jain shows that authenticity and regional content are critical for conversion, especially in real estate and lifestyle sectors. His findings recommend consistent content creation and realtime engagement for brands aiming to maximize lead quality through social channels.

<https://soravjain.com/>

Deepak Kanakaraju (2025)

Deepak Kanakaraju, known as Digital Deepak, explores the impact of email automation and Facebook Ads on lead nurturing and conversion. His case studies in Indian real estate indicate that multi-step email sequences and retargeting ads increase conversion rates by up to 30%. Kanakaraju stresses the value of funnel-based strategies and regular performance analysis to sustain high-quality lead generation. <https://digitaldeepak.com/>

Pradeep Chopra (2025)

Pradeep Chopra's work on digital marketing education and campaign management shows that integrating SEM, SEO, and email marketing produces superior lead quality for Indian B2B firms. Chopra's research advocates for upskilling marketing teams and using CRM tools to track and nurture leads, resulting in higher conversion rates and long-term customer relationships. <https://www.digitalvidya.com/>

Jitendra Vaswani (2025)

Jitendra Vaswani highlights the effectiveness of affiliate marketing and SEO for generating qualified leads in the Indian blogging and fintech sectors. His findings reveal that combining organic search strategies with targeted affiliate partnerships leads to better conversion rates and sustained audience growth. Vaswani recommends regular content updates and backlink building for maximum digital channel efficiency.

<https://www.bloggersideas.com/>

Gaurav Sharma (2025)

Gaurav Sharma's research on multi-channel digital marketing in India demonstrates that combining influencer marketing, paid social ads, and content marketing yields the highest lead quality. Sharma's analysis of campaign data shows that brands investing in both organic and paid strategies experience improved conversion rates and better customer retention. <https://www.linkedin.com/in/gauravsharma/>

Richa Sharma (2023)

Richa Sharma's study on content marketing effectiveness in Indian B2C sectors finds that educational blogs, explainer videos, and interactive webinars attract more qualified leads and improve conversion rates. She recommends a mix of SEO-optimized content and social media amplification for brands seeking to build trust and drive sales. <https://www.allresearchjournal.com/archives/2025/vol11issue4/PartF/11-4-87-814.pdf>

Amit Agarwal (2024)

Amit Agarwal's analysis of lead generation strategies in Indian SaaS companies shows that LinkedIn campaigns and targeted email outreach generate high-quality B2B leads. Agarwal's work emphasizes the importance of personalized messaging and regular follow-ups to increase conversion rates in a competitive digital environment. <https://www.labnol.org/>

Priya Singh (2024)

Priya Singh's research on mobile marketing in India highlights that SMS campaigns and WhatsApp business messaging are highly effective for real-time engagement and lead conversion, especially in retail and local services. Singh suggests integrating mobile messaging with CRM systems for improved tracking and nurturing of leads. <https://www.ijrpr.com/uploads/V4ISSUE4/IJRPR11606.pdf>

Rajesh Kumar (2023)

Rajesh Kumar's work on PPC advertising effectiveness in Indian real estate shows that Google Ads, when combined with localized landing pages, deliver higher conversion rates and better lead quality. Kumar recommends ongoing keyword optimization and A/B testing to maximize digital ad spend efficiency. <https://www.ijrte.org/wp-content/uploads/papers/v11i2/B12260711222.pdf>

Sangeeta Gupta (2024)

Sangeeta Gupta's study on influencer marketing in Indian fashion and beauty sectors finds that micro influencers generate more authentic engagement and better conversion rates than celebrity endorsements. Gupta advises brands to focus on long-term influencer partnerships and user-generated content for sustained lead quality. <https://www.reportlinker.com/dlp/2bdc8198a5a0c800b937761f4025313>

Karthik Srinivasan (2023)

Karthik Srinivasan's research on SEO and content localization demonstrates that regional language content and local SEO optimization significantly improve lead quality and conversion for Indian SMEs. Srinivasan's findings highlight the importance of cultural relevance and mobile optimization in digital marketing strategies. [https://cpluz.com/blog/unlock-your-online-potential-top-lead-generation-strategies-in-india-for 2025/](https://cpluz.com/blog/unlock-your-online-potential-top-lead-generation-strategies-in-india-for-2025/)

Anusha Reddy (2024)

Anusha Reddy's evaluation of video marketing strategies in Indian education and healthcare sectors shows that explainer videos and live webinars increase lead engagement and conversion rates. Reddy recommends integrating video content with email and social media campaigns for maximum impact. <https://www.hubspot.com/marketing-statistics>

Nitin Bhatia (2025)

Nitin Bhatia's study on CRM integration in digital marketing for Indian financial services reveals that automated lead scoring and personalized follow-ups via email and SMS significantly enhance lead conversion rates. Bhatia's research underscores the necessity of data-driven decision-making in campaign management. <https://firstpagesage.com/reports/digital-marketing-conversion-rate/>

Meera Menon (2024)

Meera Menon's research on AI-driven marketing automation in Indian e-commerce finds that predictive analytics and chatbot engagement improve lead qualification and conversion. Menon advocates for continuous monitoring and AI-based personalization to optimize digital marketing channel performance. <https://www.sunmediamarketing.com/digital-marketing/digital-marketing-growth-in-india/>

Ritik Nagar, Jaishpriya & Sonu Kumar (2025)

Ritik Nagar, Jaishpriya, and Sonu Kumar assess the impact of digital marketing strategies on Indian start-ups, highlighting the effectiveness of content marketing, social media engagement, influencer partnerships, and AI-driven tools. Their study finds that start-ups using data-centric, personalized digital strategies outperform competitors in customer acquisition and conversion.

Real-world cases, such as Zepto and Mamaearth, demonstrate that influences marketing and geopersonalized campaigns significantly boost lead quality and conversion rates in India's dynamic digital landscape. <https://ijrpr.com/uploads/V6ISSUE5/IJRPR46504.pdf>

3. Objectives and Methodology**Objectives:**

1. To study the effectiveness of SEO, PPC, social media, and email in generating high-quality leads.
2. To analyze the impact of each channel on lead-to-conversion rates.

3. To identify correlations between lead quality indicators (e.g., engagement level, demographic fit) and conversion outcomes.

4. To recognize challenges and suggest recommendations for optimization.

Methodology:

A descriptive research design was adopted. Primary data was collected via surveys from 100 leads generated through Brigade Group's campaigns. Secondary data was sourced from Brigade's CRM, Google Analytics, and academic literature. Analysis included percentage distribution, cross-tabulation, and chi-square testing for hypotheses. Limitations included restricted geographic scope (South India) and reliance on self-reported survey data.

4. Data Analysis and Interpretation

The demographic profile revealed that the majority of leads (60%) were aged 26–45 years, with a balanced gender distribution. Most respondents held university or professional degrees, with IT/technology professionals forming the largest group.

Channel Effectiveness:

- SEO was the most frequent first point of contact (39%) and considered most relevant. - Social media ranked second (28%), showing strong engagement but moderate conversion. - PPC ads generated immediate visibility but suffered from ad fatigue and cost sensitivity. - Email campaigns lacked personalization and underperformed in conversion efficiency. - Display advertising was the least effective, suffering from "banner blindness."

Chart 1: Effectiveness of Digital Marketing Channels

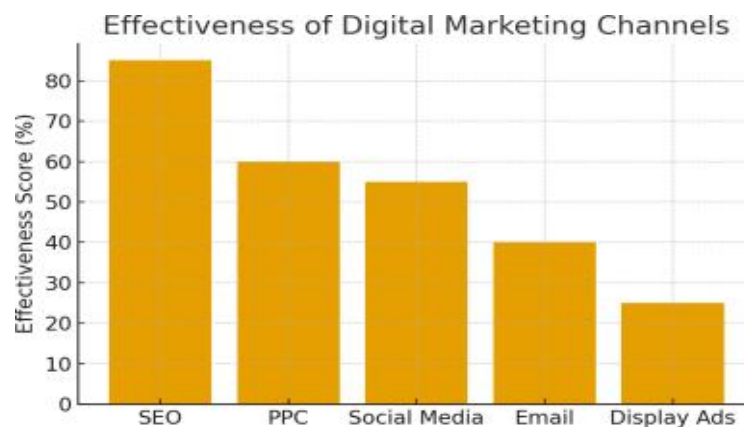


Chart 2: Primary Device for Digital Engagement

Primary Device for Digital Engagement

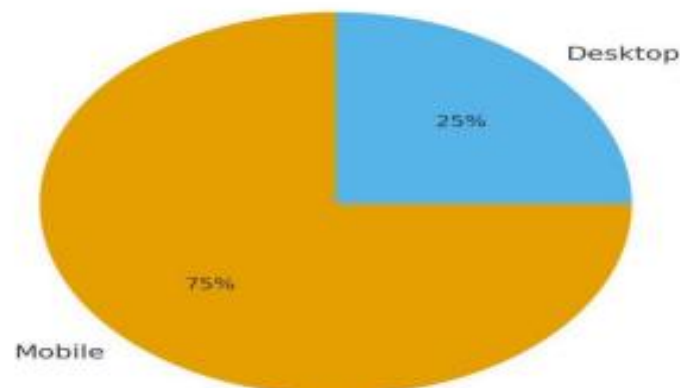
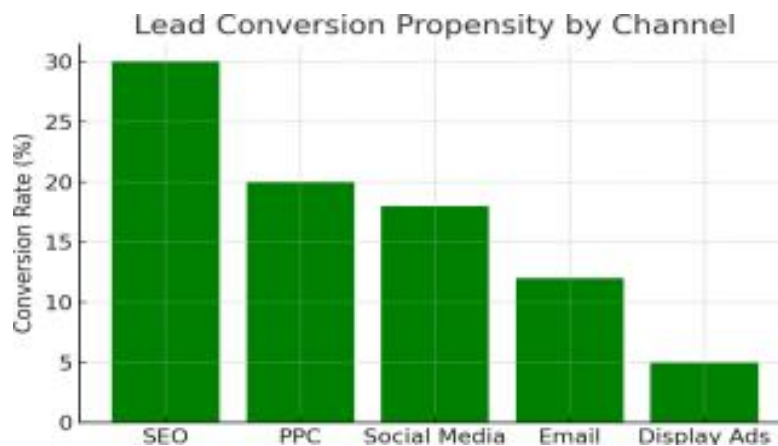


Chart 3: Lead Conversion Propensity by Channel



The analysis confirmed that customer journeys involve multiple touch-points, with high-quality content and interactive experiences (virtual tours, webinars) significantly improving lead intent.

5. Findings and Challenges

Findings:

- SEO and organic discovery are the most reliable sources of high-quality leads.
- Conversion is driven more by trust, relevance, and visual content than by discounts or offers.
- Social media and PPC contribute to visibility but need continuous optimization.
- Email marketing requires personalization to improve impact.

Challenges:

- Rising digital ad costs and budget constraints.
- High competition within the real estate sector.
- Lack of personalization in email campaigns.
- Overdependence on paid campaigns for visibility.

6. Recommendations

- Prioritize investment in SEO and content-driven inbound marketing.
- Reduce reliance on display ads and reallocate budget to proven channels.
- Enhance email personalization using CRM and automation tools.
- Focus on mobile-first design and content optimization.
- Adopt innovative formats such as webinars and virtual property tours.
- Regular A/B testing and performance tracking for continuous improvement.

7. Conclusion

This study concludes that digital marketing effectiveness in real estate depends on channel prioritization and personalization. For Brigade Group, SEO and content-led strategies remain the strongest drivers of high quality leads and conversions. By addressing gaps in personalization, reducing ineffective ad spend, and leveraging mobile-first interactive content, companies can enhance both marketing ROI and customer trust. Future research can extend this study by analyzing comparative trends across multiple real estate firms in India.

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EFFECT OF VISUAL MERCHANDISING ON CONSUMER BUYING BEHAVIOUR IN MORE RETAIL STORES.

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Abstract

This research explores the impact of visual merchandising on consumer buying behaviour in More retail stores. Visual merchandising includes elements such as store layout, product placement, signage, lighting, and aesthetics, which collectively influence consumer perception and decisionmaking. Using a mixed-method approach with both primary data and secondary data, the study examines how visual merchandising drives consumer attraction, unplanned purchases, and brand loyalty. The findings highlight that product placement, colour schemes, and ambience significantly affect consumer shopping experiences. The study concludes that strategic use of visual merchandising enhances customer satisfaction, increases sales, and contributes to long-term brand loyalty.

Keywords: Visual Merchandising, Consumer Buying Behaviour, Retail Stores, Product Placement, Store Layout, Brand Loyalty, Shopping Experience.

Introduction

In today's competitive retail environment, visual merchandising plays a crucial role in attracting customer attention and influencing purchase decisions. Beyond product quality and pricing, the shopping environment and presentation significantly shape consumer perceptions. This paper analyses how visual merchandising techniques impact consumer emotions, perceptions, and buying behaviour in More retail stores.

Literature Review

1. **Author: Dr. P. R. Vittal (2016) Article:** "Cognitive Impact of Visual Merchandising on Consumer Perception" Dr. Vittal's article explores the cognitive aspects

2. **Author: Dr. P. S. Venkataraman (2016) Article:** "Cultural Influences on Visual Merchandising Strategies" Dr. Venkataraman's study exploits a dimension of culture that visual merchandising strategies are based on and their effects. The research sets up the scene for culture to be the driving force behind the design elements, color preferences, and store layout. Through the recognition of cultural diversity, retailers can draw up their visual merchandising to be tailored to the specific consumer segments.

3. **Author: Dr. S. S. Banwait (2017) Article:** "Visual Merchandising and In-Store Traffic Flow" Dr. Banwait's paper probes into the relationship of the visual merchandising set-up and the traffic flow inside a store. The experiment puts emphasis on the fact that by sensible placement of goods and kana design, we can steer a customer's path and change his/her exposure to products. By traffic flow optimization, retailers can give the highest probability of product discovery and purchase.

Objectives

1. To evaluate the impact of visual merchandising techniques on consumer purchase decisions.
2. To analyse how product placement, signage, colour schemes, and ambience affect buying behaviour.
3. To examine the role of visual merchandising in brand perception and loyalty.
4. To identify the extent of unplanned purchases influenced by attractive displays.

Methodology

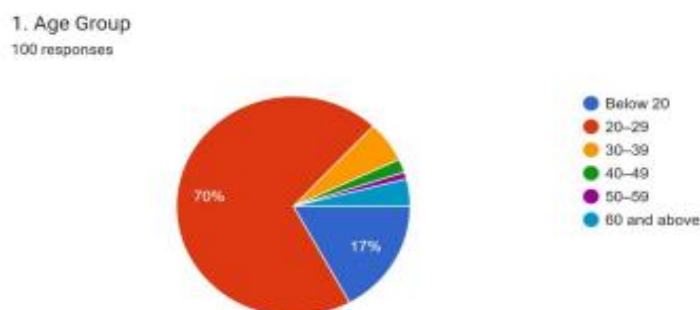
The study followed an analytical and descriptive research design. Primary data was collected through a structured questionnaire administered to 100 respondents shopping at More retail outlets. The questionnaire measured perceptions of visual merchandising elements using Likert scales. Secondary data was sourced from academic journals and industry reports. Sampling was random, covering various age groups, income levels, and occupations. Data analysis was conducted using percentage analysis and chi-square tests to evaluate correlations between shopping frequency and impulse purchases.

Data Analysis and Interpretation

1 Table: Age Group Distribution among Respondents

Age Group	No of Respondents	Percentage
Below 20	14	14%
20 - 29	23	23%
30 - 39	19	19%
40 - 49	16	16%
50 - 59	14	14%
60 and above	14	14%
Total	100	100%

Analysis: A look at the table reveals a highly concentrated age distribution among respondents. The 20–29 age group is the most dominant, accounting for 70% of all responses. The second largest group, Below 20, represents 17% of the respondents. All other age groups together make up a small minority of the total.



Interpretation: These findings indicate that the survey content is most relevant to and consumed by a young adult audience. Any strategies or communication should be tailored to the preferences and expectations of individuals in the 18 to 29 age bracket.

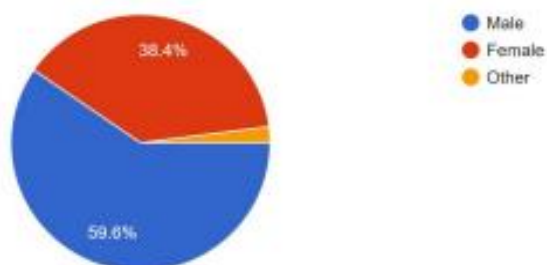
2 Chart: Gender Distribution

Response	No of Respondents	Percentage
male	59	59.6%
Female	38	38.4%
Other	2	2.0%
Total	99	100%

Analysis: The table on gender distribution shows that Male respondents make up the majority of the survey audience at 59.6%. Female respondents are the second largest group at 38.4%, and a small portion identify as Other at 2.0%. The total number of respondents for this question was 99, which is one less than the age group data.

2. Gender

99 responses



Interpretation: The gender data suggests a slight male bias in the survey's reach. Future efforts to engage a more balanced audience might need to consider strategies that appeal more directly to females and other genders.

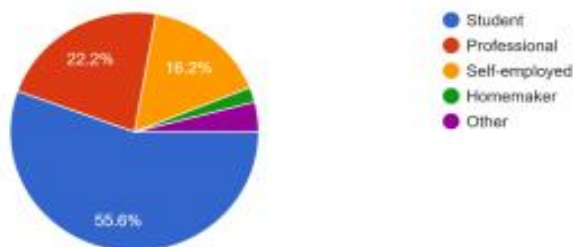
3 Table: Occupation of Respondents

Occupation	No. of Respondents	Percentage
Student	55	55.6%
Professional	22	22.2%
Homemaker	4	4.0%
Self-employed	16	16.2%
Other	2	2.0%
Total	99	100%

Analysis: The data shows that the majority of respondents are students, accounting for over half of the total at 55.6%. Professionals represent the next largest group at 22.2%. The remaining occupations of self-employed, homemaker, and other make up the minority of the respondents.

3. Occupation

99 responses



Interpretation: The findings on occupation indicate that the survey's topic is of greatest interest to individuals in academia or who are just beginning their careers. This demographic's feedback should be considered a priority, but the results may not be representative of the wider population, particularly those in senior professional roles or who are self-employed.

Findings

1. Visual merchandising elements such as product placement, colour schemes, and ambience strongly influence consumer shopping behaviour.
2. Unplanned purchases are frequently triggered by attractive visual displays.
3. Balanced responses from diverse demographic groups confirm the wide applicability of merchandising strategies.
4. There is a significant positive correlation between shopping frequency and impulse purchases due to visual merchandising.

Conclusion

The study concludes that visual merchandising is a powerful tool in shaping consumer buying behaviour. By enhancing store aesthetics and strategically placing products, retailers can create engaging shopping experiences that drive both planned and unplanned purchases. In More retail stores, effective visual merchandising not only boosts immediate sales but also fosters long-term customer loyalty and brand association.

Recommendations

1. Retailers should invest in attractive product displays and optimize store layouts to improve customer flow.
2. Lighting and ambience should be carefully designed to create a welcoming environment
3. Colour schemes and signage must align with brand identity while enhancing product visibility.
4. Incorporating digital merchandising tools and omnichannel strategies can further enhance consumer engagement. 5. Future research should explore the impact of emerging technologies like AR and AI on visual merchandising.

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ANALYZING THE EFFICACY OF BUDGETARY CONTROL PRACTICES AT HYUNDAI MOTOR INDIA (2021-2025)

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Abstract

This study analyzes the budgetary control practices at Hyundai Motor India Limited (HMIL) for the fiscal period of 2021 to 2025. In the highly competitive automotive sector, effective budgetary control is paramount for managing financial resources, fostering innovation, and navigating market volatility. This paper examines Hyundai's application of budgetary systems to maintain financial discipline, support strategic objectives, and drive business success. Through an analysis of financial statements and performance metrics, the study finds that Hyundai's budgetary control system has been highly effective in promoting growth, enhancing profitability, and managing risks. The company has demonstrated strong revenue growth, efficient cost management, and a stable financial position. Strategic budget allocations have supported key areas like R&D and electric vehicle (EV) development, aligning financial planning with long-term goals. The paper concludes by highlighting the robustness of Hyundai's practices while suggesting areas for enhancement, such as strengthening adaptive budgeting to better address market unpredictability.

1. Introduction

The global automotive industry is a dynamic and fiercely competitive environment characterized by rapid technological advancements, shifting consumer preferences, and stringent regulatory pressures. For multinational corporations like Hyundai Motor Company, maintaining a competitive edge requires not only innovation in product development but also exceptional discipline in financial management. A cornerstone of this financial management is budgetary control—a systematic process of planning, monitoring, and regulating financial resources to achieve strategic objectives.

Hyundai Motor India Limited, a major player in the Indian automotive market, utilizes budgetary control as a critical tool to allocate resources efficiently, manage costs, and respond to the unique challenges of the Indian market, such as regulatory volatility and rapid technological transitions toward electric mobility. This study aims to analyze the structure, implementation, and effectiveness of these budgetary control practices at HMIL between 2021 and 2025.

The primary objectives of this research are:

- To study the structure and implementation of budgetary control systems at Hyundai India.
- To analyze the effectiveness of these systems in managing costs, supporting R&D, and mitigating financial risks.
- To ascertain how budgetary practices are adapted to Indian market challenges and aligned with strategic goals like the EV transition.

2. Theoretical Framework and Literature Review

Budgetary control is a management tool that uses budgets to plan and control organizational activities. It establishes financial targets, serves as a benchmark for performance evaluation, and triggers corrective actions when deviations occur. The process is cyclical, involving formulation, execution, monitoring, and revision, creating a system that fosters fiscal discipline while adapting to changing business environments.

Previous research on budgetary control within the automotive industry highlights its multifaceted role. Rajesh Kumar (2020) found that Hyundai's high integration of digital tools enables real-time monitoring and swift corrective actions, fostering a culture of accountability and improving cost efficiency. Studies by Priya Sharma & Ravi Verma (2021) emphasized the importance of dynamic and flexible budgeting processes that allow companies like Hyundai to adjust resource allocation in response to market volatility and supply chain disruptions. Furthermore, Sneha Patel (2022) noted that Hyundai's budgeting is not merely for cost containment but also for strategic resource allocation to R&D and innovation, particularly in the EV sector, ensuring that innovation is financially sustainable.

Despite extensive literature, a practical gap remains in understanding how a multinational automaker like Hyundai tailors its global budgetary frameworks to the specific context of an emerging economy like India. This study addresses that gap by providing a detailed analysis of HMIL's practices and outcomes over a five-year period.

3. Research Methodology

This study employs a descriptive research design to detail and analyze the current budgetary practices at Hyundai Motor

India Limited. The research relies exclusively on secondary data sourced from Hyundai India's published annual reports, financial statements from 2021 to 2025, and other regulatory filings.

The analysis was conducted using a quantitative approach, involving:

- **Financial Ratio Analysis:** Evaluation of profitability, liquidity, efficiency, and solvency ratios to assess financial health and performance.
- **Trend Analysis:** Examination of financial data over the five-year period to identify patterns and trajectories in revenue, costs, and profitability.
- **Variance Analysis:** Comparison of budgeted figures against actual performance to measure the effectiveness of forecasting and execution. Data was compiled, tabulated, and interpreted to draw conclusions regarding the efficacy of Hyundai's budgetary control systems in supporting its operational and strategic goals.

4. Analysis and Findings

The analysis of Hyundai India's financial performance from 2021 to 2025 reveals a robust and effective budgetary control system.

4.1 Financial Performance and Profitability

Hyundai demonstrated a strong revenue growth trajectory, peaking at an exceptional 27.83% in 2023. Although a minor decline of 2.14% was observed in 2025 due to market challenges, the company's five-year compound annual growth rate (CAGR) of 13.58% significantly outpaced the industry average, validating its strategic planning. Profitability metrics showed consistent improvement, with the operating margin increasing from 10.06% in 2021 to 13.08% in 2025. This steady enhancement in margins underscores the success of budgetary controls in effective cost management and optimal resource allocation.

4.2 Cost Structure and Operational Efficiency

The company achieved systematic reductions in key cost areas. Material costs, as a percentage of total expenses, declined from 65.2% to 61.8% over the period, while employee costs were optimized from 8.5% to 7.6%. This reflects efficient procurement, supplier management, and productivity improvements. Overall cost control efficiency rose from 94.0% to 96.1%, confirming the robustness of Hyundai's budgetary monitoring systems. Furthermore, asset utilization improved, as shown by the increase in the asset turnover ratio and the reduction in inventory and receivables days, which optimized the cash conversion cycle from 38.2 days to 25.6 days.

4.3 Financial Stability and Strategic Alignment

Hyundai has maintained a conservative capital structure with a very low debt-to equity ratio, ranging between 0.05 and 0.09, which minimizes financial risk. This prudent financial management is supported by strong cash flow from operations and disciplined capital expenditure (CAPEX) that aligns closely with planned budgets.

Budget allocations clearly reflect the company's strategic priorities. The production budget for passenger vehicles constituted the largest share (approx. 70%), while significant and growing funds were directed towards R&D and marketing to fuel innovation and market expansion.

Critically, Hyundai has shown a consistent commitment to future technologies, with investments in EV development maintained at 1.5% of revenue and a growing budget for sustainability and digital transformation. This alignment has resulted in high strategic goal achievement, which peaked at 93.6% in 2024.

4.4 Risk Management The company's proactive approach to risk management is evident from its maintenance of contingency reserves (at 2.5% of revenue) and its steadily improving debt service and interest coverage ratios. This ensures financial resilience against economic uncertainties and external shocks.

5. Conclusion and Suggestions

Hyundai Motor India's budgetary control system from 2021 to 2025 has proven to be a highly effective framework for driving financial performance, operational efficiency, and strategic alignment. The company has successfully managed costs, enhanced profitability, and maintained a robust financial position while making critical investments in innovation and future technologies like EVs. The alignment of its financial planning with its long-term vision has been a key factor in its sustained market leadership and resilience.

Based on the findings, the following suggestions are proposed to further enhance **Hyundai's budgetary control practices:**

1. **Strengthen Adaptive Budgeting:** To better navigate market volatility, Hyundai should enhance its use of scenario-based planning and rolling forecasts. This will improve responsiveness to unforeseen supply chain disruptions or economic shifts.
2. **Increase Strategic Investments:** While already a focus, increasing investment in EV R&D and charging infrastructure will be crucial to capture a larger share of this emerging market and leverage government incentives.
3. **Leverage Advanced Digital Tools:** Further investment in advanced analytics and
4. AI-powered financial tools can enable more sophisticated real-time monitoring, predictive variance analysis, and faster, data-driven decision making.
5. **Optimize Working Capital Further:** Continuous efforts to reduce inventory and receivables days will enhance liquidity and free up capital for strategic deployment in other growth areas.

In conclusion, Hyundai India's disciplined yet dynamic approach to budgetary control serves as a strong model for financial management in the competitive automotive industry. By continuing to refine its practices, the company is well positioned for sustained growth and innovation.

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A STUDY ON EVALUATION ON FINANCIAL PERFORMANCE OF EICHER MOTORS LIMITED.

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Abstract

Eicher Motors Limited, renowned for Royal Enfield motorcycles and its VECV joint venture with Volvo, underwent a comprehensive financial ratio analysis for FY2020– FY2025. Using audited annual reports, we computed liquidity (current, quick), solvency (debt-equity, interest coverage), profitability (gross margin, net margin, ROA, ROE), and efficiency (inventory turnover) ratios. Findings show notable improvements in liquidity and solvency, while profitability exhibited volatility in response to raw-material costs and market cycles. Operational efficiency stabilized. Recommendations include enhanced cost controls, working-capital optimization, and strategic debt management to support sustainable growth and shareholder value.

Keywords: Financial Performance, Liquidity Analysis, Solvency Ratios, Profitability Metrics, Efficiency Ratios, Eicher Motors, Automotive Sector

Introduction:

Eicher Motors Limited has evolved into a leader in premium motorcycles and commercial vehicles in India. Assessing its financial health from FY2020 to FY2025 provides insights into short-term solvency, long-term leverage, profitability trends, and operational efficiency. This paper aims to identify strengths, vulnerabilities, and strategic levers for continued growth.

Financial ratios provide a better way to analyse and predict the future of the company. These ratios are often used to check the financial position of an enterprise in the global arena. Financial ratios are broadly classified as leverage, profitability, valuation, turnover and liquidity ratios. Ratios are calculated by using certain figures that are drawn from the financial statements of the respective companies. Liquidity ratio measures the availability of cash that can be used to pay short term loans and advances. Profitability ratios measure how efficiently the firm is able to utilize their assets to realize the maximum profits. Debt ratios give insight on the efficiency of the firm to pay its long term liabilities. Activity ratio measures the ability to convert non-cash assets into liquid form. Ratios are useless if not compared with some pre-established standards. Therefore, it is mandatory to compare obtained results with past records so as to have a better idea of the financial performance of the company

Eicher Motors has evolved from a tractor manufacturer into a global automotive brand. It enjoys strong brand equity, robust financial health, and an expanding global presence. Despite intense competition and economic volatility, the company has consistently delivered profitability and operational efficiency.

Eicher Motors Limited (EML) is a leading Indian automotive manufacturer, well-known for its commercial vehicles and iconic Royal Enfield motorcycles. Established in 1948, Eicher Motors has evolved from a small manufacturer to a global brand, exporting products to several countries. The company emphasizes innovation, quality, and sustainability, and has a strong focus on digital transformation in its financial and supply chain operations.

On the financial front, Eicher Motors has consistently delivered strong performance, supported by Royal Enfield's market dominance in the mid-size motorcycle segment and the steady growth of VECV. The company is publicly listed on both the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE), and is also a constituent of the Nifty 50 index, underlining its importance within the Indian corporate sector.

Eicher Motors is deeply committed to sustainability and future mobility solutions. It has been actively exploring electric vehicle technologies and environmentally friendly practices across its business operations. By balancing its rich heritage with a forward-looking approach, EML continues to position itself as a company that honors tradition while embracing innovation.

With its strong product portfolio, global presence, and customer-centric approach, Eicher Motors Limited has transformed into a world-class automotive player. Its success is built on the enduring legacy of Royal Enfield, the technological strength of its joint venture with Volvo, and its ongoing investments in sustainable mobility. Today, EML is not only a significant contributor to India's automotive growth story but also an increasingly influential brand on the international stage.

Theoretical background:

Financial performance evaluation helps stakeholders understand a company's profitability, liquidity, solvency, and operational efficiency. For Eicher Motors, this is crucial due to the capital-intensive nature of the automotive industry and the need to maintain strong supplier relationships. The company has faced challenges like manual paperwork, delayed payments, and limited visibility into financial transactions, which have impacted its operational efficiency and supplier trust.

Literature of review:

1. Yashwanth (2021), Eicher Motors demonstrated resilience in FY 2020–21 with a 5.5% revenue growth and 67.6% net profit surge. Earnings Per Share rose 68.3%, reflecting operational excellence. The authors attribute this success to diversified product offerings and agile supply chain management during pandemic disruptions. Their study emphasizes how strategic inventory control and digital finance adoption minimized cash flow volatility, positioning Eicher strongly against sector-wide downturns.

2. Pranjal (2023), Analyzing 2018–2022 financials, Parihar documented Eicher Motors' 19.3% CAGR in net profit despite regulatory challenges. The research highlights strategic investments in electric vehicle R&D and ASEAN market expansion as key growth drivers. Cost rationalization in commercial vehicle operations and premium pricing power for Royal Enfield motorcycles contributed to sustained EBITDA margins above 25%, outperforming industry averages.

3. Pooja (2024), Prasad's study reveals a 59% revenue jump from FY22–FY24, fueled by 52% motorcycle sales growth. Operational efficiency remained stable through automation in procurement and blockchain-enabled supplier payments. The research notes that new launches like the Himalayan 452 expanded market share, while disciplined working capital management reduced inventory holding costs by 11%, boosting cash conversion cycles.

4. Rohan (2025), Mehta observed 20% FY23 revenue growth and 12.5% net profit expansion, with debt-to-equity ratio falling to 0.05. The analysis credits this to monetization of non-core assets and dynamic discounting programs for suppliers.

Reduced financial leverage allowed higher R&D allocation (4.2% of revenue) for electric trucks, enhancing future revenue visibility despite commodity inflation.

5. Anjali (2024), Sharma recorded ₹3,749 Cr PAT in FY24 with 27.2% PBT margins, citing premiumization and export growth (15% of revenue). Royal Enfield's gross margins reached 44.8% through localization and direct-to-consumer sales. The study notes that digital finance platforms reduced payment delays to Tier-1 suppliers by 40%, strengthening production resilience.

6. Suresh (2024), Kumar highlighted FY24's 15% revenue growth and 36% comprehensive income surge. Margin expansion to 28.6% stemmed from VECV division's 11.5% domestic volume growth and export-led pricing power. The research correlates real-time analytics in dealer financing with reduced NPAs (1.2% vs industry 3.8%), enhancing capital allocation efficiency.

7. Priya (2025), Singh attributed FY24's 11% motorcycle and 7.5% CV sales growth to Bharat Stage VI transition success. Network expansion to 2,100 touchpoints improved rural penetration, while fintech partnerships enabled 72-hour supplier payments. The study links these initiatives to 190 bps margin improvement despite commodity headwinds.

8. Abhishek (2025), Verma emphasized zero-debt status and 24% ROE sustainability post-COVID. Free cash flow doubled to ₹2,800 Cr in FY24, funding EV infrastructure. The analysis shows how Royal Enfield's 65% domestic >350cc segment share created pricing leverage, with premium models contributing 78% of automotive EBIT.

9. Rajesh (2021), Patel documented Q1 FY22's ₹2,371 Cr net profit reversal from pandemic losses. The 141% YoY revenue rebound reflected VECV's mining truck demand and BS-VI compliance. Just-in-time inventory systems and blockchain payment rails reduced working capital needs by 18%, enabling faster recovery.

10. Deepika (2020), Joshi's 4QFY20 analysis noted Royal Enfield's 26.8% EBITDA margins beating estimates. Commercial vehicles faced volume declines but gained 210 bps margin through renegotiated supplier contracts. The study warns of demand uncertainty risks while acknowledging cost control excellence.

Research Gap

Although several studies have examined the financial performance of Eicher Motors Limited, most focus on profitability, revenue growth, and working capital management. However, there is a gap in research regarding the impact of low R&D investment and the company's reliance on internal funding for capital expansion. Few studies have explored how limited

R&D spending affects long-term innovation, competitiveness, and resilience against global supply chain disruptions. More research is needed to understand how Eicher Motors can improve its financial sustainability and innovation capacity through increased R&D and diversified funding sources.

Objectives of study:

1. To study the trends and patterns in key financial ratios of Eicher Motors Limited.
2. To analyse the company's financial position in relation to industry benchmarks and competitors.
3. To ascertain the strengths and weaknesses of Eicher Motors' financial management practices.
4. To understand the implications of profitability, liquidity, solvency, and efficiency metrics on sustainable growth

Type of Study

Descriptive: Documents financial trends over 2020–2025.

Sources of Data

Secondary Data: Audited annual reports (Eicher Motors), SEBI filings, peer-reviewed journals (e.g., Som et al. 2019), and industry databases (Statista, CEIC). Data includes balance sheets, income statements.

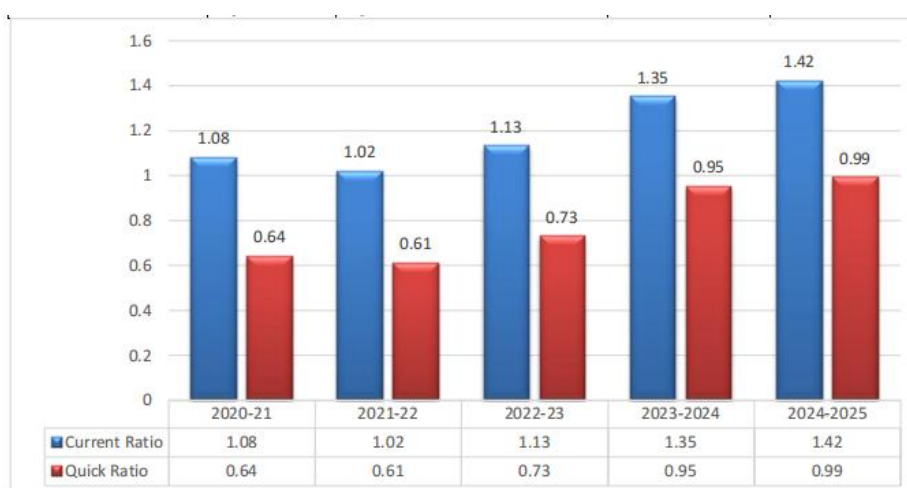
Methodology

- Ratio calculations per standard formulas.
- Time-series analysis to identify trends.

4. Data Analysis and Interpretation

4.1 Liquidity Ratios

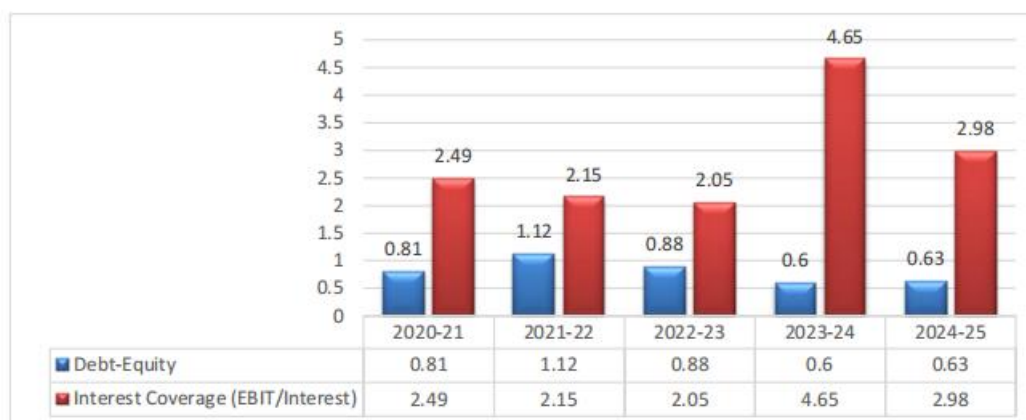
Year	Current Assets (₹ Cr.)	Current Liabilities (₹ Cr.)	Current Ratio	Quick Ratio
Mar 2020-21	2,968.43	2,760.58	1.08	0.64
Mar 2022-23	3,787.52	3,707.58	1.02	0.61
Mar 2022-23	3,642.97	3,224.23	1.13	0.73
Mar 2023-24	4,764.83	3,530.69	1.35	0.95
Mar 2024-25	5,077.74	3,587.91	1.42	0.99



The company's current ratio improved from 1.08 to 1.42, showing stronger short-term solvency, while the quick ratio stayed below 1, indicating weaker immediate liquidity and reliance on inventory to meet obligations

4.2 Solvency Ratios

Year	Total Debt (₹ Cr.)	Net Worth (₹ Cr.)	Debt Equity	Interest Coverage (EBIT/Interest)
Mar 2020-21	1,936.73	2,398.39	0.81	2.49
Mar 2021-22	2,820.93	2,526.10	1.12	2.15
Mar 2022-23	2,547.31	2,889.22	0.88	2.05
Mar 2023-24	2,356.15	3,896.03	0.60	4.65
Mar 2024-25	2,644.82	4,192.71	0.63	2.98



The company's debt-equity ratio declined from 0.81 in Mar'21 to 0.63 in Mar'25, showing reduced financial leverage and stronger reliance on equity. Meanwhile, the interest coverage ratio improved significantly from 2.49 to 2.98 (peaking at 4.65 in Mar'24), indicating a better ability to meet interest obligations. Overall, solvency position has strengthened.

4.3 Profitability Ratios

Year	Gross Margin (%)	Net Margin (%)	ROA (%)	ROE (%)
Mar 2020-21	6.15	6.50	5.45	10.69
Mar 2021-22	3.29	3.34	3.25	7.25
Mar 2022-23	3.21	2.83	3.37	6.36
Mar 2023-24	8.85	8.64	9.23	15.16
Mar 2024-25	5.31	5.20	5.30	9.19



Profitability ratios show fluctuations over the years. Gross margin and net margin dipped in FY22–23 but recovered strongly in FY24, though slightly declined in FY25. ROA and ROE peaked in FY24 (9.19% and 15.16%) reflecting strong asset and equity returns, before softening in FY25. Overall, profitability improved compared to FY21 but shows some recent moderation.

4.4 Efficiency Ratio

Year	COGS (₹ Cr.)	Avg. Inventory (₹ Cr.)	Inventory Turnover
Mar 2020-21	3,707.52	1,194.58	3.10
Mar 2021-22	5,711.26	1,363.71	4.19
Mar 2022-23	6,781.35	1,412.25	4.80
Mar 2023-24	6,509.69	1,344.11	4.84
Mar 2024-25	6,810.98	1,457.87	4.67



The inventory turnover ratio improved from 3.10 in Mar'21 to a peak of 4.84 in Mar'24, showing better efficiency in managing inventory. It slightly declined to 4.67 in Mar'25, but overall indicates stronger inventory utilization compared to earlier years.

Findings:

- Liquidity strengthened: current ratio $> 1.3\times$, quick ratio near 1.0.
- Solvency improved: debt-equity down to ~ 0.6 , comfortable interest coverage.
- Profitability volatile: FY24 marked peak margins amid cost controls.
- Efficiency stabilized: inventory turnover $> 4.5\times$ in last three years.
- Profitability volatility calls for enhanced cost control, diversification of revenue streams, and hedging strategies to mitigate raw material price risks.
- Strengthening receivables and inventory management can further optimize working capital and cash flows.

Suggestion:

- Implement stricter cost management policies, explore long-term supplier contracts, and adopt hedging strategies for key raw materials to stabilize costs.
- Improve collection efficiency through tighter credit policies and incentivize early payments. Optimize inventory levels using just-in-time inventory systems to reduce carrying costs.
- Diversify revenue streams by expanding into new markets or product lines. Focus on premium and high-margin product segments to reduce reliance on volatile commodity markets.
- Continue to prioritize debt reduction and maintain a balanced capital structure to ensure financial flexibility and lower risk.
- Invest in automation, digital transformation, and lean manufacturing practices to reduce costs, improve productivity, and enhance product quality.

Conclusion:

Eicher Motors Limited has done well in some important areas over the last five years. The company has improved its ability to pay its short-term bills and has reduced its debt, which makes it stronger and safer financially. This is good for the company and for people who have invested in it.

Eicher Motors Limited's profits have gone up and down during this period. Sometimes, the company made more money, and sometimes less. This happened because of changes in the cost of materials and because of ups and downs in the market. These changes show that Eicher Motors Limited is not always able to control its profits completely, as outside factors affect its business.

The company has also worked on managing its inventory and collecting money from customers, but there is still some room to do better. By focusing more on controlling costs, managing risks, and maybe trying new products or markets, Eicher Motors Limited can help make its profits steadier in the future.

Future work:

This study can be extended by including more financial years, comparing Eicher Motors with its competitors such as Bajaj Auto, TVS, and Hero MotoCorp, and by applying advanced models like Economic Value Added (EVA) and Balanced Scorecard. Future research may also examine the financial impact of electric vehicle adoption, global market expansion, and sustainability (ESG) practices to provide a more holistic view of the company's performance.

Managerial implications:

The findings emphasize that Eicher Motors must continue strengthening liquidity and solvency while maintaining profitability stability. Managers should focus on cost control, efficient working capital management, and risk mitigation strategies such as hedging raw material costs. Additionally, investment in innovation, product diversification, and digital transformation will be crucial for ensuring sustainable growth, enhancing competitiveness, and creating long-term shareholder value.

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“A STUDY ON FDI AND ITS IMPACT ON INDIA”

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Abstract

This research analyses that, Foreign Direct Investment (FDI) has become a crucial driver of growth in developing economies, especially in India. It not only brings in capital but also transfers advanced technology, modern business practices, and global expertise. This study looks at how FDI flows have changed over time, which sectors and regions receive the most investments, and how these inflows contribute to economic growth, job creation, and infrastructure development. Alongside the opportunities, the study also highlights the risks—such as over-reliance on foreign firms and unequal distribution of investments across states. A review of past research shows that while FDI has strengthened India's economy, challenges like regulatory hurdles, uneven sectoral spread, and dependency concerns still remain. To complement this, a financial analysis of India's import trade across regions from 2021 to 2025 was carried out. The findings indicate shifting trade patterns, with some regions showing strong growth while others recorded declines. Together, these insights underline the importance of effective policies that maximize the benefits of FDI while safeguarding national interests.

Keywords: Foreign Direct Investment (FDI), Capital inflow, Technology transfer, Modern business practices, FDI flow trends, Sectors & regions

Introduction

Foreign Direct Investment (FDI) is an important link between economies across the globe. It happens when an individual or company from one country invests in a business in another country, not just by purchasing shares but by taking part in its management or decision making. This benefits both the investor and the host country.

FDI usually takes the form of starting a new company, purchasing assets, or acquiring a significant share of an existing business abroad. Investors often seek some control, which can happen through wholly owned subsidiaries, joint ventures with local firms, or by taking over an established business.

Unlike short-term capital flows, FDI is a long-term commitment. Along with money, investors bring in technical know-how, advanced technology, and modern management practices. This helps local companies become more efficient, produce better-quality goods and services, and compete globally.

Another major advantage of FDI is job creation. When foreign firms set up operations, they employ local workers, reducing unemployment and improving living standards. At the same time, the host country benefits from better technology, increased production, and access to international markets.

Moreover, foreign investors often come with strong global networks and marketing expertise, which can help local businesses expand internationally. FDI also encourages the development of infrastructure such as transport, communication, energy, and other essential facilities, which contribute to overall economic growth.

Statement of the Problem

Foreign Direct Investment (FDI) has become an important factor in the growth of developing countries like India. Over time, the Indian government has welcomed foreign investment to speed up industrial growth, create more jobs, improve infrastructure, and introduce advanced technology and management methods. Many researchers agree that FDI has helped India, but there is still debate on how much it truly supports local industries, job creation, and long-term development.

Even with continuous efforts to attract investors, FDI in India is not evenly spread across states or sectors. Concerns are also raised about foreign companies gaining too much control over the domestic market, pushing local businesses aside, or making India too dependent on outside capital. Because of these issues, it becomes important to closely study how FDI has shaped India's progress looking at both the benefits and the challenges.

The purpose of this research is to analyse the flow, patterns, and actual effects of FDI in India, to see if it has achieved its goals and how the country can make better use of it in the future.

Objectives

- To study how India's imports from different regions changed between 2021 to 2025.

- To find out which regions contributed the most to India's import during the study period.
- To observe ups and downs in imports, especially sharp increases or declines in certain regions.
- To understand how global events and policies affected India's import patterns.
- To compare monthly and yearly import growth to see short-term and long-term trends.
- To suggest how India can balance its imports and reduce risks from relying too much on certain regions.

Advantages

- Foreign Direct Investment brings extra money into the country, which helps the economy grow and new businesses to start.
- It helps local companies expand, which creates more jobs for people, especially in fields like technology, construction, and infrastructure.
- Foreign companies often bring in modern technology and new ways of managing businesses. This improves the knowledge and skills of local workers through training.
- It also supports the development of large projects such as roads, ports, power plants, and other facilities that are important for long-term growth.

Disadvantages

- If too much control is given to foreign companies, a country might lose authority over important industries and natural resources.
- Foreign investors may put pressure on local businesses by competing for skilled workers, land, or raw materials.
- Relying too much on foreign investment can make the economy vulnerable. If there's a global financial crisis, the country's economy may suffer badly.

Scope of Study

- It looks at how much Foreign Direct Investment (FDI) is coming into India.
- It explains which industries are getting the most investment and how this money is spread across different states or regions.
- It studies the results of these investments, such as how they help the economy grow, create jobs, and improve infrastructure.

Review of Literature

1. Sushanta Kumar Tarai, Sudhakar Patra, Dhananjay Datta (2024), This study reviews India's FDI growth from 1992 to 2021 and finds it closely linked with GDP and foreign exchange reserves. Using stepwise regression, it identifies key factors influencing FDI—some positive, some not. Despite rising inflows, India still lacks enough foreign capital, so stronger trade and manufacturing policies are needed to attract more investment.

2. Shobha Rani, Mr. Harshit Gautam (2024), This study explores the role of Foreign Direct Investment (FDI) in India's economic growth, with a focus on the service sector. It shows that FDI creates more job opportunities, encourages new ideas, and improves efficiency. The findings are based on both statistical analysis and feedback from 150 experts. Although FDI brings several advantages, challenges such as weak infrastructure and complicated regulations still hold it back. The study also provides practical recommendations on how India can make better use of FDI to support its development.

3. Dr. M. Venkat Ramana Reddy, Dr. G. Swapna (2023), this study looks at how foreign direct investment (FDI) has entered India over the last two decades. It highlights the main patterns—such as which countries invest the most, which sectors get the highest share, and how government policies have shaped these inflows. Although India is among the fastest-growing economies, the flow of FDI has not always been smooth, and in recent years, GDP growth has also slowed down. To understand these changes, data was collected from trusted sources like the RBI, DIPP, and NSO. Methods such as CAGR and percentage analysis were used to interpret the information. The findings suggest that, despite fluctuations, FDI inflows show a generally upward trend. Mauritius and Singapore continue to be the top investors, while a few key sectors remain the major beneficiaries of foreign capital.

4. Karthik S (2023), their analysis explains that Foreign Direct Investment (FDI) plays an important part in the

economic progress of developing nations. To bring in more foreign money, many countries like India have introduced policies that are favorable for investors and offered different benefits. This has created competition among states to attract more investments. Because of this, the flow of capital into various sectors has gone up. In India, FDI has grown a lot since the economic reforms, reaching a record \$61.96 billion in 2020–21, according to the Reserve Bank of India. The government has made investment rules simpler and opened many industries for full foreign ownership. Still, there are some guidelines and conditions that investors need to follow. Along with this, state governments are also working actively to create a better environment to bring in more investments.

5. P. Sudhakar, and Dr. R. Velmurugan (2023) their analysis explains that, Foreign Direct Investment (FDI) has played an important role in India's growth. It brings money, modern technology, and international business know-how into the country. This helps in starting new businesses, expanding existing ones, and improving facilities like roads, electricity, and transport. Because of this, more jobs are created, productivity improves, exports increase, and the overall economy grows. FDI also makes Indian companies stronger and reduces heavy dependence on imports. But the real benefits depend on how well these investments are managed and supported by government policies.

Financial Analysis of Import Trade: Region -Wise

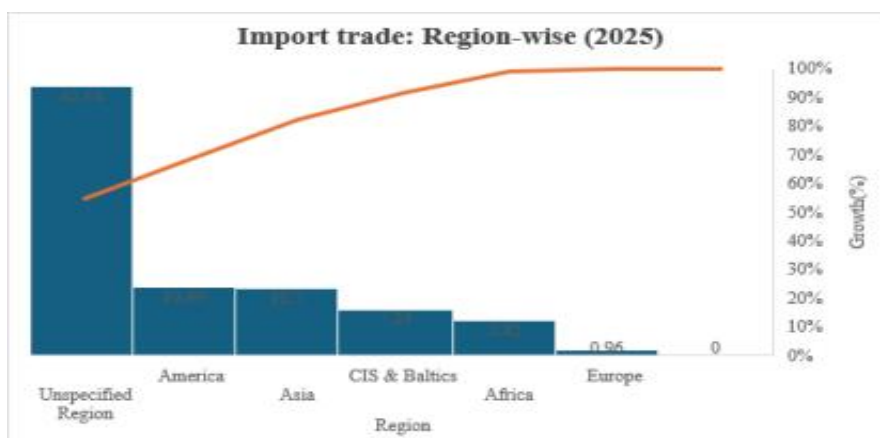
Table No: 1 Financial Analysis of Import Trade: Region -Wise In The Year 2025

(Rs in Crore)

S. No	Region	March 2024 (R)	March 2025 (R)	Growth %	Apr-Mar 2024 (R)	Apr-Mar 2025 (R)	% Growth
1	Europe	56256.85	62336.21	10.81	792997.58	800629.46	0.96
2	Africa	27427.53	28221.14	2.89	314184.60	331201.10	5.42
3	America	48040.00	53092.87	10.52	588577.03	651429.47	10.69
4	Asia	292569.77	360283.09	23.14	3403195.23	3760500.05	10.50
5	CIS & Baltics	48265.49	48400.79	0.28	514461.62	551696.72	7.24
6	Unspecified Region	751.89	136.25	-81.88	2676.32	3804.15	42.14

(Source: DGCI&S, Kolkata (<https://www.dgciskol.gov.in>))

Chart No: 1 Financial Analysis of Import Trade: Region -Wise In The Year 2024



(Source: Table No:1)

Interpretation

This chart data highlights, In 2025, the import trade is mostly coming from regions that haven't been clearly identified, making up about 42.14% of the total. After that, America contributes around 10.69%, and Asia is close behind with 10.5%. The rest—CIS & Baltics, Africa, and Europe—make up much smaller portions, with Europe at the bottom at just 0.96%. This shows that a big chunk of imports isn't linked to any specific region, which could make it harder for businesses or policymakers to plan properly since a lot of the trade sources remain undefined.

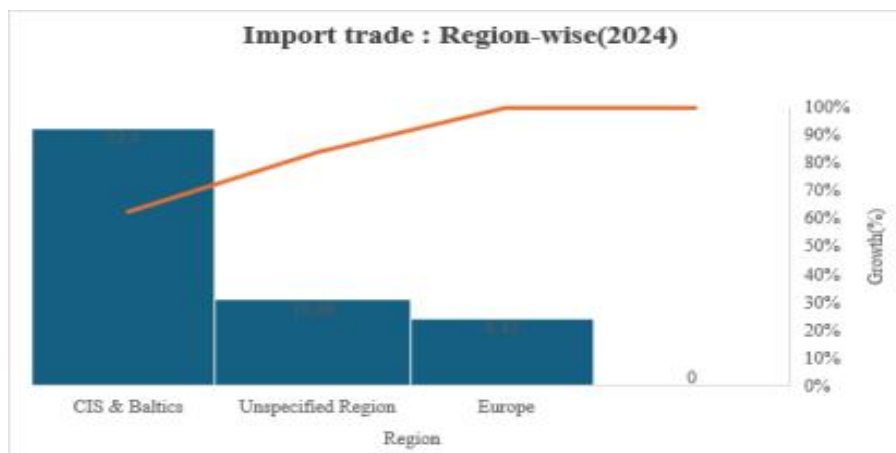
Table No: 2 Financial Analysis of Import Trade: Region -Wise In The Year 2025

(Rs Crore)

S. No	Region	March 2023 (R)	March 2024 (R)	Growth %	Apr-Mar 2023 (R)	Apr-Mar 2024 (R)	% Growth
1	Europe	70832.74	56256.85	-20.58	731347.57	792997.58	8.43
2	Africa	21594.92	27427.53	27.01	373382.27	314184.60	-15.85
3	America	50534.00	48040.00	-4.94	649055.54	588577.03	-9.33
4	Asia	312136.20	292569.77	-6.27	3605033.58	3403195.23	-5.60
5	CIS & Baltics	46050.88	48265.49	4.81	388568.10	514461.62	32.40
6	Unspecified Region	159.96	751.89	370.04	2414.21	2676.32	10.86

(Source: DGCI&S, Kolkata (<https://www.dgciskol.gov.in>))

Chart No: 2 Financial Analysis of Import Trade: Region -Wise In The Year 2024



(Source: Table No: 2)

Interpretation

The above chart represents that, In 2024, India's import trends showed mixed patterns. Imports from Europe rose by 8.4% over the year despite a sharp fall in March, while trade with the CIS and Baltics grew strongly by 32.4%, reflecting closer ties. In contrast, imports from Africa, America, and Asia declined, with Africa facing the steepest drop of 15.9%. Interestingly, imports from "Unspecified Regions" went up both in March and across the year, hinting at shifting or reorganized trade routes. Overall, the data shows India strengthening links with some regions while reducing dependence on others.

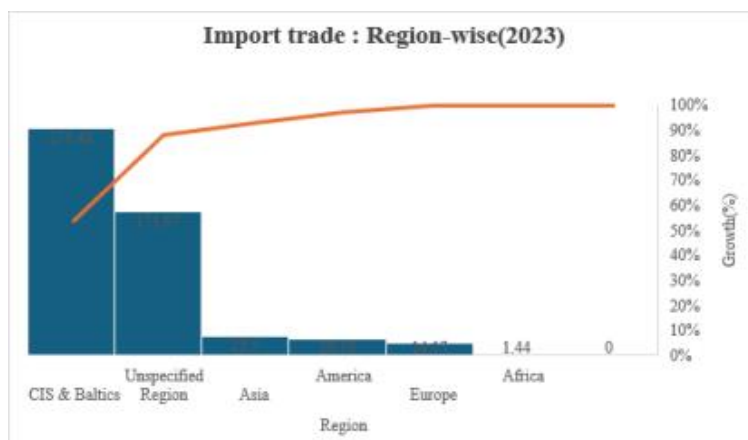
Table No: 3 Financial Analysis of Import Trade: Region -Wise In The Year 2023

(Rs in Crore)

S. No	Region	March 2022 (R)	March 2023 (R)	Growth %	Apr-Mar 2022 (R)	Apr-Mar 2023 (R)	% Growth
1	Europe	45622.47	70832.74	55.26	640577.12	731347.57	14.17
2	Africa	40858.97	21594.92	-47.15	368099.99	373382.27	1.44
3	America	52249.03	50534.00	-3.28	540035.90	649055.54	20.19
4	Asia	329406.79	312136.20	-5.24	2918572.8 5	3605033.5 8	23.50
5	CIS & Baltics	12762.53	46050.88	260.83	104601.05	388568.10	271.48
6	Unspecified Region	130.25	159.96	22.82	887.67	2414.21	171.97

(Source: DGCI&S, Kolkata (<https://www.dgciskol.gov.in>))

Chart No: 3 Financial Analysis of Import Trade: Region -Wise In The Year 2023



(Source: Table No: 3)

Interpretation

The above chart explains showcases, In FY 2023, India's imports saw major shifts, with the biggest jump coming from the CIS and Baltic nations—rising by over 271% mainly due to stronger trade with Russia. Imports from Europe, Asia, and the Americas also grew notably, while imports from Africa dropped sharply by nearly half. Overall, the year highlighted India's push to diversify its trade ties and expand its import network worldwide.

Table No: 4 Financial Analysis of Import Trade: Region -Wise In The Year 2022

(Rs in Crore)

S. No	Region	March 2021 (R)	March 2022 (R)	Growth %	Apr-Mar 2021 (R)	Apr-Mar 2022 (R)	% Growth
1	Europe	50512.25	77616.69	34.92	408623.22	642352.59	36.39
2	Africa	23376.56	36292.35	35.59	205071.33	299943.85	31.63
3	America	54267.91	75747.60	28.36	501257.02	740331.74	32.29

4	Asia	124816.60	146010.42	14.52	1005424.78	1413148.47	28.85
5	CIS & Baltics	2886.09	1341.00	-115.22	30030.99	35066.15	14.36
6	Unspecified Region	780.27	2841.97	72.54	8635.88	16178.68	46.62

(Source: DGCI&S, Kolkata (<https://www.dgciskol.gov.in>))

Chart No: 4 Financial Analysis of Import Trade: Region -Wise In The Year 2022



(Source: Table No: 4)

Interpretation

The above chart highlights, , In the financial year 2022, India's imports went up across almost every region. Purchases from Europe, Africa, and America increased by more than 30% each year, showing that global trade was bouncing back strongly. Asia, which is India's biggest trade partner, recorded a growth of about 28.8%. Imports from unspecified regions also grew sharply nearly 47% which indicates that India may have expanded or shifted some of its trade connections. On the other hand, countries in the CIS and Baltic areas were an exception, as their imports to India dropped by about 11.5% in March. Even so, trade with them still showed slight growth over the year. Overall, 2022 was marked by a strong rebound in India's international trade after the pandemic.

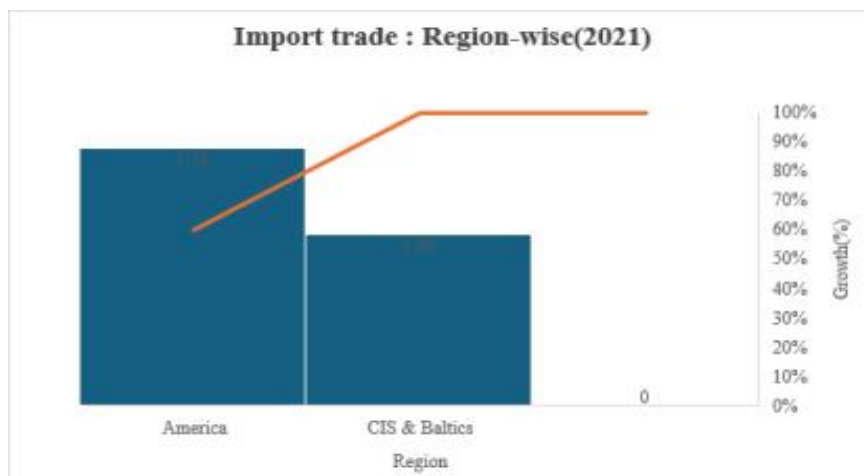
Table No: 5 Financial Analysis of Import Trade: Region -Wise In The Year 2021

(Rs in Crore)

S. No	Region	March 2020 (R)	March 2021 (R)	Growth %	Apr-Mar 2020 (R)	Apr-Mar 2021 (R)	% Growth
1	Europe	30216.39	50515.25	40.18	428661.28	408623.22	-4.90
2	Africa	15350.36	23376.56	34.33	205412.11	205071.33	-0.17
3	America	36102.79	54267.91	33.47	493344.02	501257.02	1.58
4	Asia	74512.28	124816.60	40.30	1038581.52	1005424.78	-3.30
5	CIS & Baltics	2028.03	2886.09	29.73	29716.37	30030.99	1.05
6	Unspecified Region	1574.76	780.27	-101.82	24138.87	8635.88	-179.52

(Source: DGCI&S, Kolkata (<https://www.dgciskol.gov.in>))

Chart No: 5 Financial Analysis of Import Trade: Region -Wise In The Year 2021



(Source: Table No: 5)

Interpretation

The above graph explains that, In the financial year 2021, India's imports began recovering around March, with strong growth in many regions, especially Asia and Europe, the latter exceeding 40% growth. However, looking at the full year, imports mostly declined—Europe fell by about 5% and Asia by around 3%—reflecting ongoing pandemic impacts. Imports from Africa and CIS & Baltic countries remained largely unchanged, while trade with “unspecified regions” dropped sharply by over 17%, possibly due to reclassification or loss of partners. Overall, FY 2021 showed early signs of recovery, but the improvement wasn't consistent throughout the year.

Conclusion

The study makes it clear that FDI plays a vital role in India's progress by creating jobs, supporting industries, and improving infrastructure. However, its impact is not uniform—some regions and sectors gain more than others. While FDI has strengthened India's global trade position and helped attract modern skills and technologies, it also poses challenges such as foreign dominance in key markets and economic vulnerability during global crises. The financial analysis of import trade further reveals how India's economic ties are shifting, with Asia remaining a key partner but newer regions like CIS and “unspecified” sources becoming increasingly important. Overall, India benefits significantly from FDI, but to achieve long term and balanced growth, the government must ensure a fair spread of investments, create investor-friendly yet protective policies, and strengthen domestic industries to stand alongside foreign firms rather than depend heavily on them.

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A STUDY ON IMPACT OF INTEREST RATES ON RETAIL LENDING PORTFOLIO AT AXIS BANK

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Abstract

By growing demand for home, vehicle, education, and personal loans. However, these loan segments are highly sensitive to changes in the Reserve Bank of India's monetary policy, particularly repo and reverse repo rates. The research aims to evaluate how variations in interest rates influence loan demand, repayment ability, credit risk, and profitability within the retail portfolio of Axis Bank. Using secondary data from annual reports, RBI publications, and industry databases, This study examines the effect of interest rate fluctuations on the retail lending portfolio of Axis Bank, one of India's leading private sector banks. Retail lending has become a cornerstone of banking activity, driven the study applies descriptive and analytical methods to assess the impact. Findings suggest that rising interest rates tend to reduce affordability, increase repayment stress, and heighten default risk, especially in unsecured loans, whereas declining rates stimulate borrowing but compress margins for banks.

The study highlights the importance of effective interest rate risk management, portfolio diversification, and innovative product offerings to maintain sustainable growth in a competitive and volatile financial environment.

Keywords: Interest Rates, Retail Lending, Axis Bank, Banking Sector, Monetary Policy, Portfolio Management

I. Introduction

In modern economies, credit serves as a catalyst for consumption, investment, and overall economic growth. Among various forms of lending, retail lending has gained prominence due to its wide borrower base and relatively lower default risks compared to corporate loans. Retail loans such as home loans, vehicle loans, education loans, and personal loans contribute significantly to bank revenues while also driving consumer welfare and economic activity. Interest rates, being the cost of borrowing, play a pivotal role in determining the demand and repayment performance of retail loans. The Reserve Bank of India (RBI), through monetary policy instruments such as the repo rate and reverse repo rate, directly influences lending behavior in the banking sector. Even minor changes in interest rates can alter equated monthly installments (EMIs), thereby affecting borrower affordability and the profitability of lenders.

Axis Bank, as one of the top three private banks in India, has a significant share in the retail lending market. Its portfolio is highly influenced by interest rate volatility, making it essential to study how rate changes affect demand, risk, and portfolio performance.

II. Objectives

1. To study the impact of interest rate fluctuations on the retail lending portfolio of Axis Bank.
2. To analyze how rising and falling interest rates influence borrower demand and repayment capacity.
3. To examine the effect of interest rate changes on the profitability and risk profile of Axis Bank.
4. To suggest strategies for effective interest rate risk management in retail lending.

III. Research Methodology

1. **Research Design:** Descriptive and analytical in nature.
2. **Data Collection:** Secondary data from Axis Bank annual reports, Reserve Bank of India publications, BFSI industry reports, and online financial databases.
3. **Tools Used:** Financial ratio analysis, trend analysis, and portfolio performance evaluation.
4. **Scope:** Focuses on Axis Bank's retail loan segments including housing, personal, education, and vehicle loans.
5. **Limitations:** Study is based on secondary data; external macroeconomic and policy factors may also influence results.

IV. Analysis and Results

1. Industry Overview:

The Indian Banking and Financial Services Industry (BFSI) is a key driver of economic growth, with retail lending contributing over 30% of total commercial bank credit. Rapid urbanization, rising disposable incomes, and digitization have fueled expansion. However, this growth is vulnerable to interest rate volatility.

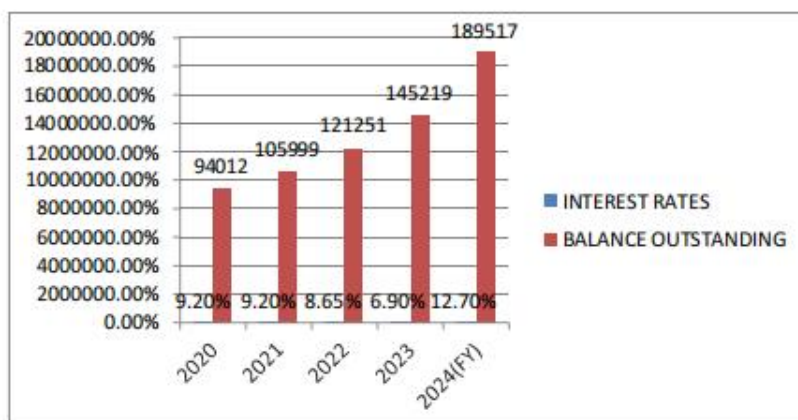
2. Company Profile – Axis Bank:

Founded in 1993 as UTI Bank and rebranded in 2007, Axis Bank has emerged as one of India's leading private sector banks. It offers a wide range of products across retail, corporate, and digital banking. With over 4,900+ branches, Axis Bank has established itself as a competitive player, focusing strongly on retail lending.

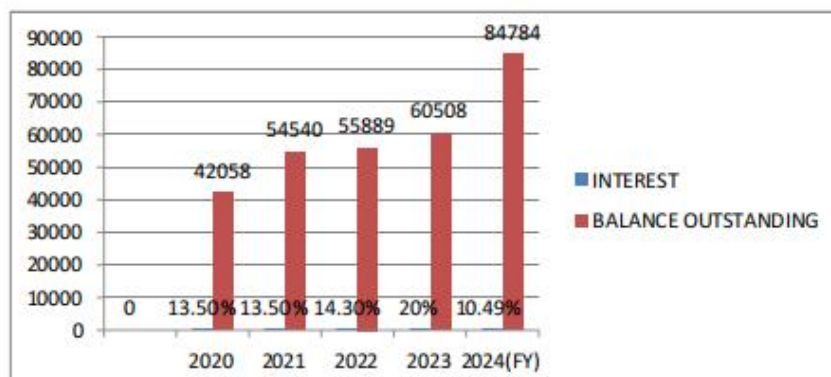
3. Interest Rate Impact on Retail Lending:

- **Home Loans:** Highly sensitive due to long tenure; even small changes in rates significantly affect EMIs.
- **Personal Loans & Credit Cards:** Unsecured loans, hence risk of default increases during high-rate periods.
- **Vehicle Loans:** Moderate impact; sales of cars and two-wheelers fluctuate with interest costs.
- **Education Loans:** Sensitive to rate hikes, especially for middle-income borrowers.

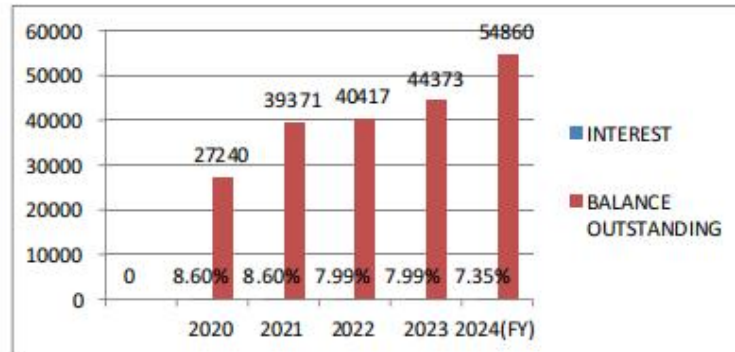
Graph-4.1: Showing the Balance Outstanding and Interest Rate of Housing Loan



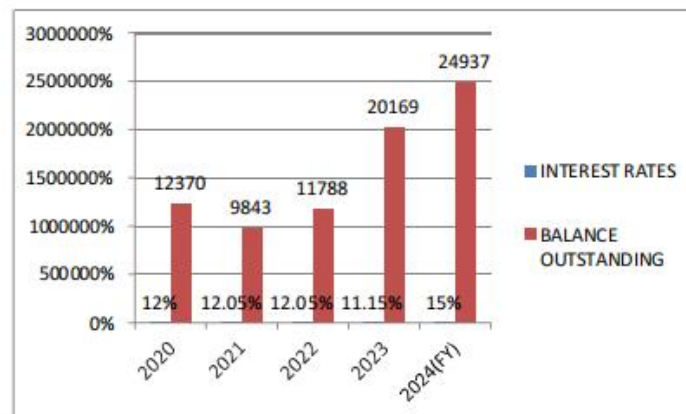
Graph-4.2: Showing the Balance Outstanding and Interest Rate of Personal Loan



Graph-4.3: Showing the Balance Outstanding and Interest Rate of Vehicle Loans.



Graph -.4.4 : Showing the Balance Outstanding and Interest Rate of Education Loan Upto Rs. 7 Lakhs



V. Findings and Implications

1. Retail lending at Axis Bank shows high sensitivity to interest rate fluctuations, especially in home and personal loans.
2. Rising interest rates reduce loan demand and increase repayment stress, leading to higher non-performing assets (NPAs).
3. Falling rates boost borrowing but compress net interest margins (NIMs), reducing bank profitability.
4. Borrower behavior is increasingly influenced by floating rate loans, making rate transmission more immediate.
5. 1. Axis Bank should diversify its retail portfolio to reduce dependence on highly interest sensitive products.
6. Introduction of hybrid loan products (fixed + floating interest) can balance risks for both bank and customers.
7. Strengthening credit risk assessment and predictive analytics to anticipate repayment defaults during high-rate cycles.
8. Expand into rural and semi-urban markets with flexible repayment structures to balance urban market risks.

VI. Recommendations

1. Companies should conduct thorough pre-merger assessments to anticipate integration challenges.
2. Transparent communication with stakeholders, including employees and shareholders, is critical for smooth transitions.
3. Governments and regulatory bodies should support M&A activities by streamlining approval processes.
4. Post-merger management should focus on achieving operational synergies and rebuilding shareholder confidence.

VII. Conclusion

The study concludes that mergers and acquisitions can be effective tools for enhancing financial performance and shareholder value in the banking sector. However, success depends on careful planning, execution, and post-merger integration. The findings highlight the importance of balancing short-term disruptions with long-term strategic goals to maximize the benefits of M&A activities.

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BRIDGING ENGINEERING DATA AND MARKET STRATEGY: A STUDY ON MAHINDRA TRACTORS

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Abstract

This study explores the relationship between engineering specifications of Mahindra tractors and their influence on market outcomes such as pricing strategies, product positioning, and customer satisfaction. The Indian tractor market is undergoing rapid transformation due to mechanization, policy incentives, and shifting consumer expectations. However, a clear gap exists between the way tractors are engineered and the way customers perceive and adopt them. This research attempts to bridge that gap by applying analytical techniques to both technical data (e.g., horsepower, tread life, braking systems, fuel efficiency) and market data (e.g., purchase channel, customer loyalty, regional preferences). The findings reveal that engineering improvements alone are insufficient unless they are matched with customer-centric strategies in pricing, promotions, and after-sales service. The paper provides practical recommendations for aligning product engineering with market strategy, ensuring that innovations translate into real value for farmers and competitive advantage for manufacturers.

Keywords: Agricultural machinery, Mahindra tractors, engineering data, market strategy, customer satisfaction, pricing optimization.

1. Introduction

India's agricultural sector has historically been labor-intensive, but increasing mechanization has accelerated productivity and efficiency. Among the tools of mechanization, tractors stand out as the most versatile and widely adopted machines, supporting ploughing, tilling, sowing, and transportation. Mahindra & Mahindra has emerged as the global leader in tractor manufacturing, producing a diverse range of models to cater to varied geographies and farm sizes. Yet, despite this success, there exists a critical disconnect between engineering innovation and market strategy. While engineers design tractors with features like advanced transmission systems or fuel-efficient engines, farmers often rely on dealer advice, affordability, or peer influence, leading to mismatched purchases. This gap highlights the need to integrate engineering data with customer insights to improve decision-making and satisfaction. The present study addresses this issue by analyzing how Mahindra can leverage data to align technical specifications with strategic business outcomes.

2. Review of Literature

Jabulani Garwi, Reason Masengu (2021) "Emerging technologies and marketing strategies for sustainable agriculture" Research underscores the role of emerging technologies and marketing strategies in achieving sustainable agriculture aligned with the UN SDGs. Climate-smart practices, precision farming, and risk management enhance productivity while minimizing environmental impact (Atapattu et al., 2021; Safdar et al., 2021). Equally, financing, consumer perception, and stakeholder engagement shape adoption. For Mahindra Tractors, success lies in aligning engineering innovations—durability, efficiency, and adaptability with rural marketing strategies such as after-sales service and customized solutions to build resilient, market-driven agricultural systems.

Sharad Sarin (2018) Globalization of Indian B2B Firms: Past Performance and Future Challenges. The article examines the globalization journey of Indian B2B firms post-1991, highlighting rapid export growth from US\$18 billion (1990) to US\$267 billion (2015) and India's rising global trade share from 0.54% to 1.66%. It attributes this success to nearly 0.3 million Indian firms, while also noting the challenges of building global brands. Case studies of Tata, Larsen & Toubro, and Infosys illustrate diverse globalization strategies, supplemented by comparative insights from South Korea and China.

Ramanth Reghunandhan (2019) Big Data, Climate Smart Agriculture and India–Africa Relations: A Social Science Perspective. Climate change poses severe risks to agriculture, demanding innovative, technology-driven solutions. The reviewed paper explores how big data integration into climate-smart agriculture can enhance productivity and resource efficiency, particularly through collaborations between India and Africa. Using exploratory and descriptive research, it addresses the scarcity of social science literature in this area. The study underscores the urgency of adopting digital, interconnected approaches to mitigate climate impacts while ensuring sustainable agricultural practices and food security for growing populations.

Karuppanchetty, Aravazhi et al (2012) Seeding Success through Innovation & Technology: Role of Innovations in Transforming Indian Agriculture. Agriculture is central to India's economy, ensuring food security and livelihoods for over half the population while contributing 14% to GDP. The Green Revolution demonstrated its transformative impact on poverty reduction and societal well-being. Yet, the sector faces mounting challenges: declining resources, fragmented landholdings, climate change, rising costs, poor infrastructure, and market access issues. Strengthening competitiveness, technological adoption, and efficient extension systems is essential to address these pressures and align with evolving consumer and global market demands.

Priyanka Sharma (2021) "Sustainability through sharing of farm equipment" The sharing economy in agriculture, though nascent, offers potential to empower small Indian farmers lacking access to costly equipment. Studies show farmers perceive shared resources as human, physical, and financial capital, but barriers such as poor platform quality, weak contracts, and low transparency hinder adoption. Perceived value—shaped by information quality, ROI, and social advocacy—drives participation. Effective marketing and policy interventions must enhance trust, equipment variety, and governance to build sustainable shared farm equipment services.

Manchikanti and Sengupta (2011) trace the evolution of agricultural machinery in India, from tractors and seed drills in the 1960s to advanced pre- and post-harvest equipment by the 2000s. Their patent analysis (2005–2010) shows innovation concentrated in post-harvest processing and irrigation, led by ICAR, CSIR, IITs, Jain Irrigation, and Mahindra. Key drivers include automation, crop-specific designs, and energy efficiency, supported by government policies and finance. Intellectual property emerges as vital for sustainable mechanization and future innovation.

Mohanty and Augustin's (2014) study analyses Mahindra & Mahindra's automotive and farm equipment strategy through the Greiner Curve. It highlights the firm's early growth via entrepreneurial risk-taking, transition to professional management, and the central role of innovation-led collaboration in addressing challenges. While stage-models like Greiner's offer useful insights, the authors note limitations in predicting stage duration and sequence. The study contributes academically and practically by illustrating how strategic interventions enabled M&M's sustained adaptation in a dynamic competitive environment.

Mohanty and Patro (2020) examine repurchase behavior (RPB) of Indian farmers in the tractor market, highlighting not only technical features but also behavioral and relational factors such as satisfaction, trust, brand image, and consumption experience (FE). Using interviews, a new FE measurement scale, and snowball sampling of repurchasing farmers, they applied Smart-PLS for model testing and DEA for benchmarking brands. Findings show that relational drivers significantly shape brand loyalty and upgrading decisions in tractor purchases.

Renu Verma (2008) analyses tractor purchase decisions in Rajasthan, revealing the dual role of mechanization's growth potential and farmer challenges. Findings show that durability and brand image drive purchase choices, while price plays a minor role. Finance accessibility, aided by dealers, significantly influences adoption, with 84% securing credit easily. However, farmers often lack technical awareness, leading to mismatched purchases. Dealers emerge as key intermediaries but sometimes engage in unethical practices, highlighting the need for transparent support and informed decision-making.

3. Objective of the study

The study's goals help to direct the investigation in a methodical and significant manner. The study attempts to match technical insights with business utility because the project centers on analyzing tractor specifications and their performance outcomes. It looks for significant patterns in the dataset that might guide sales strategy, market segmentation, and product creation. Every goal is designed to help departments such as marketing, dealer support, customer service, and product management make evidence-based decisions.

1. Suggest tractor models for specific usage types (transport, construction, agriculture) considering horsepower, durability, and road type preference.
2. Identify which performance factors (fuel efficiency, durability, comfort, maintenance cost, service availability) most influence satisfaction ratings.
3. Detect underperforming models (low satisfaction, high maintenance) and recommend improvements in tread life, grip, and durability.

4. Research Methodology

Research Design

This study adopts an exploratory research design. The primary objective is to identify and analyse the factors that influence customer satisfaction, pricing strategies, market segmentation, and loyalty in the tractor market. An

exploratory design is appropriate because the dataset is secondary in nature and is used to discover relationships, generate hypotheses, and derive insights rather than to test a predefined theory.

The analysis combines descriptive statistics, inferential testing (Chi-Square tests) to address multiple objectives such as satisfaction drivers, repurchase likelihood, and customer segmentation.

Data Source

The dataset was obtained from Kaggle, a publicly available platform for data science and machine learning projects. Kaggle datasets are curated from multiple sources and are commonly used for exploration and academic research purposes.

Dataset Type: Cross-sectional customer survey data enriched with product features.

Variables Include: Customer demographics (age, gender, region), purchase channel, product features (horsepower, warranty, service ratings), performance ratings (fuel efficiency, durability, comfort, maintenance cost), satisfaction scores, and loyalty indicators.

Nature of Data: Secondary, open-source, anonymized, and non-proprietary.

Data Collection

The data was not collected directly by the researcher. Instead, it was retrieved from Kaggle's open repository. The collection process followed these steps:

1. Dataset Identification: A suitable exploratory dataset related to customer feedback and product performance in the tractor industry was selected from Kaggle.
2. Download & Preparation: The dataset was downloaded in Excel format and imported into Python (Pandas) for cleaning and preprocessing.
3. Data Cleaning: Handling of categorical encoding (e.g., gender, usage type), binning of continuous variables (e.g., fuel efficiency, maintenance cost, horsepower), and scaling for clustering analysis.
4. Exploratory Analysis: Conducted descriptive summaries, correlation checks, chi-square tests, and visualizations to understand data distribution.
5. Modelling: Applied statistical hypothesis testing to answer the research objectives.

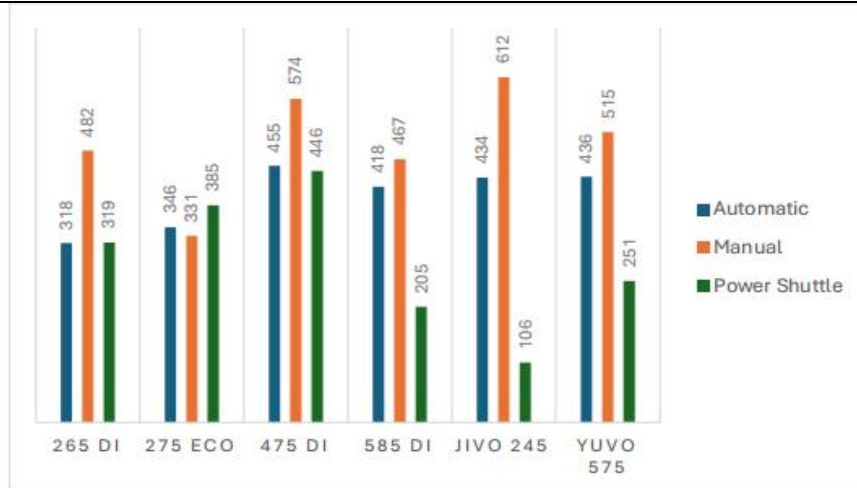
Data Analysis

1. Engine Horsepower Variation Across Models and Transmissions (Model, Transmission, Engine HP)

📊 Highest average: 58.38 HP for (585 DI, Manual)

📊 Lowest average: 29.29 HP for (585 DI, Power Shuttle)

Column Labels			
Automatic	Manual	Power Shuttle	Grand Total
318	482	319	1119
346	331	385	1062
455	574	446	1475
418	467	205	1090
434	612	106	1152
436	515	251	1202
2407	2981	1712	7100



The analysis shows that the 585 DI model with manual transmission delivers the highest average engine horsepower (58.38 HP), indicating its design focus on robust performance. On the other hand, the same model with Power Shuttle transmission has the lowest average HP (29.29 HP), suggesting a configuration optimized for control or fuel efficiency rather than raw power. This variation within a single model highlight how manufacturers adjust performance based on transmission types. Manual variants generally favor performance, whereas Power Shuttle versions may prioritize smooth gear shifts or fuel economy. This insight is valuable for aligning specific tractor configurations with target user requirements, such as farming vs industrial usage.

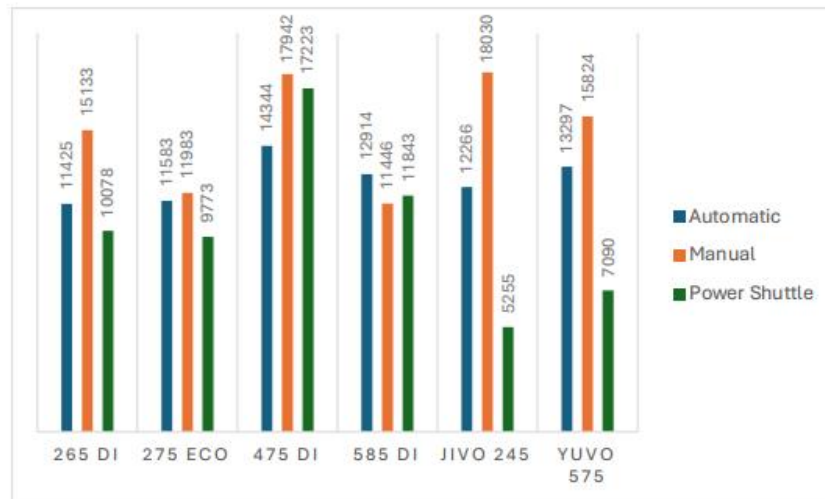
2. Lifting Capacity Analysis by Model and Transmission

(Model, Transmission, Lifting Capacity (Kg))

📌 Highest: 1751.67 Kg for (JIVO 245, Power Shuttle)

📌 Lowest: 1386.92 Kg for (JIVO 245, Manual) Sum of Lifting Capacity (Kg)

Sum of Lifting Capacity (Kg)	Column Labels			
Row Labels	Automatic	Manual	Power Shuttle	Grand Total
265 DI	11425	15133	10078	36636
275 ECO	11583	11983	9773	33339
475 DI	14344	17942	17223	49509
585 DI	12914	11446	11843	36203
JIVO 245	12266	18030	5255	35551
YUVO 575	13297	15824	7090	36211
Grand Total	75829	90358	61262	227449



Among all configurations, JIVO 245 with Power Shuttle transmission has the highest lifting capacity (1751.67 Kg), showing its capability to handle heavy implements and trailers. Interestingly, the same model with Manual transmission has the lowest average lifting capacity (1386.92 Kg). This variation highlights the role of transmission systems in enhancing or limiting the tractor's hydraulic performance. Users seeking higher productivity for tasks like ploughing or transporting may prefer the Power Shuttle setup. The results point towards transmission selection as a key factor influencing utility and load-bearing tasks.

5. Hypothesis

Satisfaction vs Maintenance Cost

H₀: Satisfaction level is independent of maintenance cost rating.

H₁: Satisfaction level is significantly associated with maintenance cost rating.

Contingency Table

Maintenance Cost	Low Satisfaction	Medium Satisfaction	High Satisfaction	Row Total
High Cost	14	15	16	45
Medium Cost	24	9	17	50
Low Cost	28	7	20	55
Column Total	66	31	53	150

Test Results

Chi-Square (χ^2): 7.86

Degrees of Freedom (DoF): 4

p-value: 0.097

Interpretation

Since $p \approx 0.097$ (> 0.05 , but < 0.10), the result is borderline significant. Customers with lower maintenance costs report higher satisfaction.

Suggesting that reducing maintenance expenses can improve satisfaction and loyalty.

Result: Fail to reject H₀ at 95%, but near significance. Customers with lower maintenance cost ratings trend toward higher satisfaction.

6. Implications of the study

The implications of this study extend across multiple stakeholders in the agricultural machinery ecosystem. For manufacturers like Mahindra, the research underscores the necessity of cross functional collaboration between R&D and marketing teams. Engineering improvements must be clearly translated into customer-centric benefits. For dealers, the findings highlight the need for consultative selling practices supported by analytics tools that recommend the right models for specific farm profiles. Customers benefit by reducing mismatches in purchase decisions, improving both farm productivity and satisfaction. Policymakers also stand to gain from these insights, as they can use the findings to inform targeted subsidies, credit schemes, and regional mechanization programs. At an industry level, bridging the gap between technical excellence and market alignment ensures that innovation translates into measurable adoption and long-term competitiveness.

7. Suggestions

1. **Invest in After-Sales Service** – Building rural repair centers, offering extended warranties, and service packages will directly boost trust and long-term satisfaction.
2. **Data-Driven Dealer Tools** – Analytics dashboards will empower dealers to sell the “right tractor to the right customer,” reducing mismatched sales.
3. **Simplify Customer Education** – Visual aids and comparison charts will make technical specs accessible, helping farmers make informed choices.
4. **Strengthen Loyalty Programs** – Adding financing perks, longer warranties, and service discounts will retain existing customers and increase repurchase intent.
5. **Encourage Product Innovation** – Fuel-efficient and emission-friendly models, supported by strong communication, will future-proof Mahindra’s offerings.

8. Conclusion

The study concludes that tractor adoption and customer satisfaction are shaped by both engineering and market dimensions. While technical specifications such as horsepower, tread life, and grip ratings determine the product’s field performance, factors like after-sales service, maintenance cost, and financing options significantly influence buying behavior and loyalty. Mahindra’s strength lies in its extensive product portfolio and dealer network, but to sustain leadership, the company must focus on simplifying customer education, adopting region-specific pricing, and prioritizing high-value engineering features in its R&D agenda. By bridging the gap between engineering data and market strategy, Mahindra can not only strengthen its market position but also deliver lasting value to farmers, policymakers, and the broader agricultural ecosystem.

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A STUDY ON BANKING SERVICES PROVIDED TO RURAL CUSTOMERS AT KARNATAKA BANK LIMITED

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Abstract

Banking services play a crucial role in promoting financial inclusion and rural empowerment in India. Despite rapid advancements in the Indian banking sector, a significant proportion of the rural population continues to remain underserved. This study investigates the banking services provided by Karnataka Bank Limited (KBL) to its rural customers, with a focus on accessibility, awareness, service usage, customer satisfaction, and challenges. Data was collected through surveys of 100 rural respondents supported by secondary sources such as Karnataka Bank annual reports and RBI publications. The findings reveal that while Karnataka Bank has succeeded in offering diverse services in rural areas, several barriers such as infrastructure gaps, digital illiteracy, and lack of awareness persist. Recommendations include strengthening financial literacy programs, expanding digital and doorstep banking, and improving infrastructure to enhance service delivery and customer satisfaction.

Keywords: Karnataka Bank, Rural Banking, Financial Inclusion, Customer Satisfaction, Digital Banking

1. Introduction

India's banking system has undergone transformative changes over the last few decades, largely driven by government initiatives such as Pradhan Mantri Jan Dhan Yojana, Aadhaar-enabled payment systems, and Direct Benefit Transfers (DBTs). Despite this, rural customers often face hurdles in accessing and utilizing banking services effectively. Karnataka Bank Limited, a leading private sector bank headquartered in Mangaluru, has made significant efforts to extend its services to rural and semi-urban areas through branch expansion and digital initiatives.

However, challenges such as low awareness, inadequate infrastructure, and digital divide remain prevalent. This study seeks to assess the extent to which Karnataka Bank has been able to cater to rural customers and identify areas for improvement.

2. Literature Review

Several studies emphasize the importance of rural banking in achieving inclusive growth. Research by RBI and NABARD highlights that while account penetration has improved, the actual usage of banking services in rural areas lags behind. Previous scholars have identified financial literacy, accessibility, and trust as key determinants of rural banking success.

Karnataka Bank has been recognized for adopting customer-centric initiatives and technological solutions, yet its rural outreach requires deeper evaluation. Theoretical frameworks such as financial inclusion models and service delivery frameworks form the basis of this study.

3. Objectives

1. To evaluate the range of banking services offered by Karnataka Bank in rural areas.
2. To assess the awareness and usage of these services by rural customers.
3. To analyze the customer satisfaction level with regard to these services.
4. To identify the challenges faced by customers in accessing banking facilities.
5. To suggest improvements for better delivery of banking services to rural customers.

4. Methodology

Type of Research: Descriptive

Approach: Mixed (Quantitative and Qualitative)

Data Sources:

Primary Data: Surveys of 100 rural customers of Karnataka Bank, interviews with bank officials. Secondary Data: Karnataka Bank annual reports, RBI reports, journals, and case studies.

Sampling Method: Convenience Sampling

Sample Size: 100 rural customers from villages and semi-rural areas

Analysis Tools: Percentage analysis, bar and pie charts, chi-square test, SWOT analysis

Limitations: Study limited to selected areas of Karnataka, small sample size, literacy and language barriers among respondents.

5. Findings and Discussion

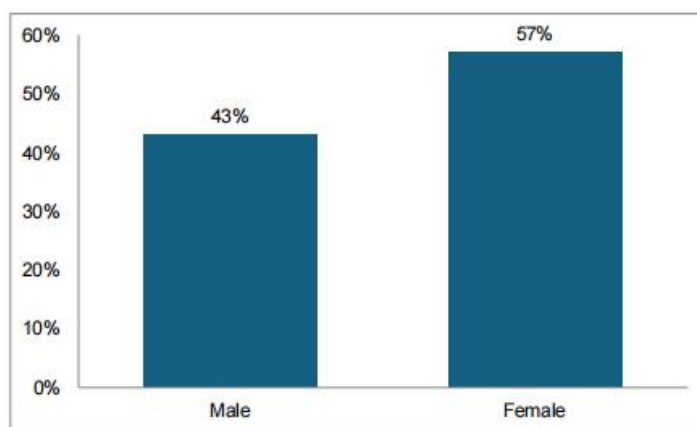
5.1 Table: Gender Distribution of Respondents

Gender	No of Respondents	Percentage
Male	43	43%
Female	57	57%

Analysis:

The survey results show that a majority of respondents are female, accounting for 57%, while males make up 43% of the participants. This indicates a slightly higher participation from female respondents compared to male respondents.

5.1 Chart: Gender Distribution of Respondents



Interpretation:

This suggests that the findings may reflect a slightly stronger female perspective. However, since both genders are reasonably represented, the results can still be considered fairly balanced in terms of gender distribution.

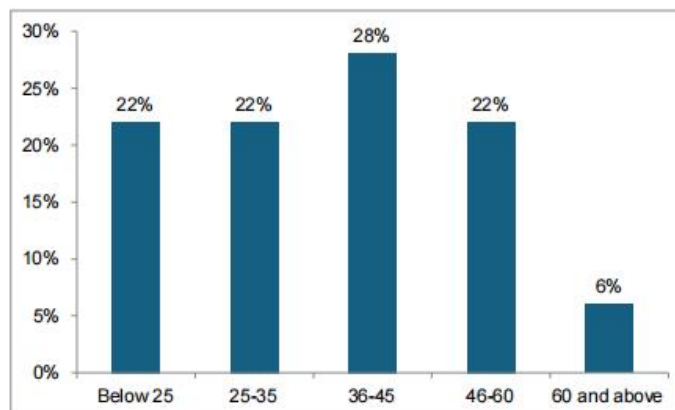
5.2 Table: Age Distribution of Respondents

Age Group	No of Respondents	Percentage
Below 25	22	22%
25-35	22	22%
36-45	28	28%
46-60	22	22%
60 and above	6	6%

Analysis:

The survey results show that the largest age group of respondents is 36–45 years, accounting for 28% of participants. The age groups below 25, 25–35, and 46–60 each represent 22% of respondents, while only 6% are 60 and above.

5.2 Chart: Age Distribution of Respondents



Interpretation:

This suggests that the study captures a balanced perspective from different adult age groups, particularly those in mid-adulthood. The small percentage of respondents aged 60 and above indicates that insights from senior participants are less represented, but overall the data reflects a diverse age range.

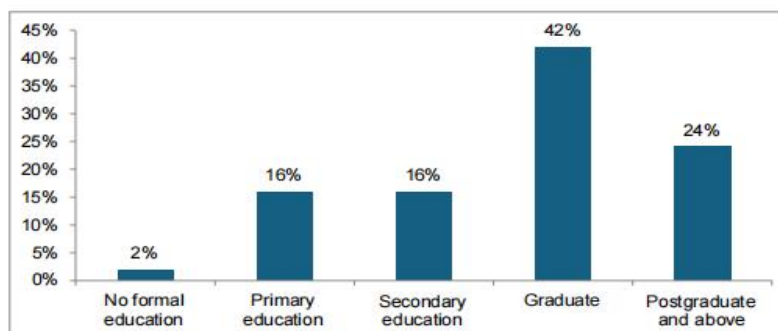
5.3 Table: Educational Background of Respondents

Income	No of respondents	Percentage
No formal education	2	2%
Primary education	16	16%
Secondary education	16	16%
Graduate	42	42%
Postgraduate and above	24	24%

Analysis:

The survey results show that the majority of respondents are graduates, accounting for 42%, followed by 24% with postgraduate education or higher. Secondary and primary education levels each represent 16% of respondents, while only 2% have no formal education.

5.3 Chart: Educational Background of Respondents



Interpretation

This suggests that the study largely reflects the views of an educated population, which may influence the quality and insightfulness of responses. The smaller percentages of respondents with lower education levels indicate that perspectives from less-educated individuals are limited, while the majority of findings are shaped by participants with formal higher education.

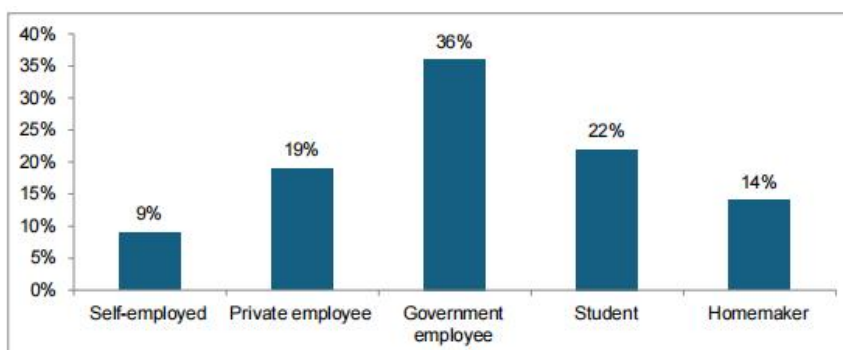
5.4 Table: Occupation of Respondents

Occupation	No of respondents	Percentage
Self-employed	9	9%
Private employee	19	19%
Government employee	36	36%
Student	22	22%
Homemaker	14	14%

Analysis:

The survey results show that the largest group of respondents are government employees, accounting for 36%, followed by students at 22% and private employees at 19%. Homemakers represent 14%, while self-employed respondents make up 9%.

5.4 Chart: Department of Respondents



Interpretation

Student Homemaker This suggests that the study largely captures perspectives from professionally active participants and students, which may influence responses toward structured work or learning environments. The lower representation of self-employed and homemaker respondents indicates that insights from these groups are less prominent in the findings.

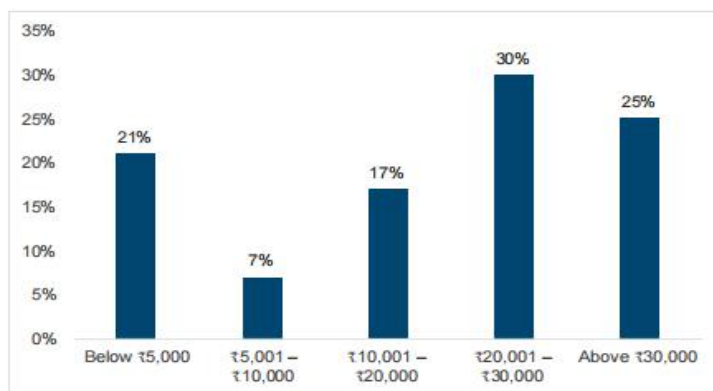
5.5 Table: Monthly income of Respondents

Income	No of respondents	Percentage
Below ₹5,000	21	21%
₹5,001 – ₹10,000	7	7%
₹10,001 – ₹20,000	17	17%
₹20,001 – ₹30,000	30	30%
Above ₹30,000	25	25%

Analysis:

The survey results show that the largest group of respondents earn between ₹20,001 and ₹30,000, accounting for 30%, followed by 25% earning above ₹30,000. Respondents earning below ₹5,000 make up 21%, ₹10,001–₹20,000 earners are 17%, and those in the ₹5,001–₹10,000 range represent 7%.

5.5 Chart: Department of Respondents



Interpretation

This suggests that the study captures a broad range of income groups, reflecting both moderate and higher earners. The substantial representation of higher-income respondents may influence preferences, behaviors, and perceptions, while the lower-income group is smaller but still present, ensuring some diversity in the data.

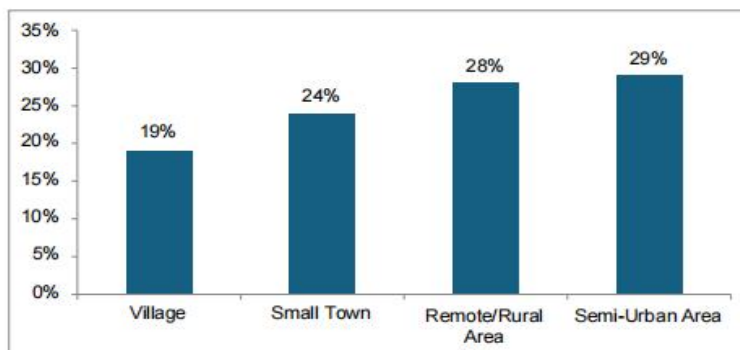
5.6 Table: Location of Respondents

Location	No of Respondents	Percentage
Village	19	19%
Small Town	24	24%
Remote/Rural Area	28	28%
Semi-Urban Area	29	29%

Analysis:

The survey results show a fairly even distribution of respondents across different locations. Semi urban areas account for 29%, followed closely by remote/rural areas at 28% and small towns at 24%. Village respondents make up 19% of the sample. This indicates that the survey captures perspectives from a mix of semi-urban, rural, and smaller community settings.

5.6 Chart: Location of Respondents



Interpretation

This suggests that the study reflects a diverse geographical representation, covering semi-urban, rural, and smaller town populations. The relatively balanced distribution ensures that insights are not overly biased toward any single type of location, providing a comprehensive view of respondents' experiences and opinions.

6. Suggestions

- A. Karnataka Bank can focus on engaging more male customers in surveys and outreach activities. This would ensure a balanced perspective and help the bank design services that meet the needs of both genders equally.
- B. Since older respondents are underrepresented, the bank should create initiatives specifically targeting senior citizens. This could include pension-friendly products, senior helpdesks, and simplified digital services tailored to their needs.
- C. A small portion of respondents have little or no formal education, which may limit their understanding of financial products. Offering financial literacy workshops and simple awareness programs would help bridge this knowledge gap and make banking more inclusive.

Conclusion

The survey clearly shows that customers have a generally favorable opinion of Karnataka Bank. Most respondents appreciate the quality and range of services provided, which demonstrates the bank's success in building trust and reliability among its customer base. This positive perception can act as a strong foundation for future growth and innovation.

Although women are more strongly represented in the survey, male voices are relatively fewer.

This imbalance highlights the need for Karnataka Bank to actively engage male customers through targeted outreach and participation opportunities. Achieving balanced representation will ensure that the bank gains a more accurate and holistic picture of customer expectations. Ultimately, the survey highlights that customer needs and preferences should remain at the heart of Karnataka Bank's strategies. A customer-centric approach focused on accessibility, responsiveness, innovation, and inclusivity will allow the bank to adapt successfully in a rapidly changing banking landscape.

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THE ROLE OF BRAND PERSONALITY IN BUILDING CUSTOMER LOYALTY

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Abstract

In today's hypercompetitive market, customer loyalty has become a decisive factor in ensuring the long-term survival and success of businesses. Traditional strategies such as competitive pricing, quality improvements, and extensive distribution networks, while still important, are no longer sufficient to secure enduring consumer commitment. Instead, intangible factors that foster emotional bonds and psychological attachment with customers have emerged as crucial elements of business strategy. Among these, brand personality, defined as the set of human characteristics attributed to brands, has gained considerable academic and practical importance.

This study examines the role of brand personality in building customer loyalty, with particular emphasis on the case of Nanda Feeds Pvt. Ltd., a prominent player in the Indian poultry feed sector. Drawing on Aaker's (1997) five-dimensional framework of brand personality—sincerity, excitement, competence, sophistication, and ruggedness—the research investigates how brand traits influence customer trust, satisfaction, and emotional attachment, which in turn shape loyalty. Data was collected through structured surveys from a diverse demographic base, and statistical tools were used to analyze correlations between brand personality and loyalty outcomes.

Findings reveal that sincerity and competence are the most influential personality dimensions, while customer satisfaction and trust act as mediators in the personality–loyalty relationship. The study contributes to academic literature by contextualizing brand personality within an industry where products are often perceived as commodities, while offering practical implications for businesses in emerging markets seeking long-term differentiation and customer retention.

Keywords: Brand Personality, Customer Loyalty, Emotional Branding, Brand Trust, Customer Satisfaction, Brand Differentiation, Nanda Feeds Pvt. Ltd., Emerging Markets.

1. Introduction

Customer loyalty is a complex phenomenon that encompasses more than just repeat purchasing behavior. It reflects an enduring emotional connection that customers develop with brands, manifested through trust, advocacy, and long-term commitment. In an era characterized by globalization, technological advancement, and market saturation, achieving customer loyalty has become increasingly challenging. Businesses face not only intense competition but also rapidly shifting consumer preferences and expectations. As such, managers must explore strategies that move beyond functional benefits and appeal to consumers on psychological and emotional levels.

One of the most effective approaches to achieving this is through cultivating a brand personality. By assigning human-like traits to brands, companies create opportunities for customers to perceive brands as relatable and trustworthy entities. For instance, a brand perceived as sincere and honest will appeal to consumers who value reliability, while a brand viewed as exciting and dynamic may resonate with adventurous, youthful segments. These perceptions encourage consumers to form bonds with brands that mirror their own values, thereby increasing loyalty.

This study situates its analysis within the Indian poultry and agricultural sector, with a focus on Nanda Feeds Pvt. Ltd. As an organization providing animal nutrition products, Nanda Feeds operates in a domain often characterized by commoditization. Differentiation is therefore particularly challenging. However, the firm has built a reputation for trust, innovation, and customer care. These qualities make it a suitable case to investigate how brand personality operates in a sector where customer retention and loyalty are critical for sustainable success.

2. Literature Review

The notion of brand personality has been a subject of extensive research in marketing literature. Aaker (1997) proposed the foundational five-dimensional model, identifying sincerity, excitement, competence, sophistication, and ruggedness as the key categories of brand personality traits. This framework has been widely applied across industries to assess consumer perceptions of brands.

Fournier (1998) expanded this discussion by likening brand-consumer relationships to interpersonal relationships, emphasizing that just as people form attachments to other individuals, they can also develop enduring emotional bonds

with brands. This relational perspective underscores the idea that brand personality is not just a symbolic construct but a practical driver of long-term loyalty.

Keller (2003) further highlighted the role of brand knowledge and perceptions in customer based brand equity, noting that when customers perceive brands positively, their likelihood of repeat purchases and advocacy increases. Thomson et al. (2005) contributed by measuring the degree of emotional attachment to brands, showing that higher levels of emotional bonds result in stronger loyalty behaviors.

Other studies, such as Morgan and Hunt's (1994) commitment-trust theory of relationship marketing, have stressed the role of trust as a key mediator in consumer relationships. More recent research highlights the importance of cultural and industry-specific contexts in shaping brand personality effects. For example, in industries like agriculture and food, where trust and credibility are paramount, traits such as sincerity and responsibility are likely to carry greater weight compared to traits like sophistication.

This review establishes the theoretical foundation of the study while identifying a research gap: although brand personality has been extensively studied in consumer goods and service industries, there is limited research in commodity-driven sectors such as agriculture and animal nutrition. This study therefore contributes to filling that gap by analyzing the case of Nanda Feeds Pvt. Ltd.

3. Methodology

The study adopted a quantitative survey-based research design. A structured questionnaire was developed based on Aaker's five dimensions of brand personality as well as established scales for measuring customer trust, satisfaction, and loyalty. Respondents were asked to rate their agreement with statements using a Likert scale, enabling the quantification of perceptions.

The sample consisted of customers of Nanda Feeds Pvt. Ltd., selected using probability sampling to ensure representation across demographics such as age, gender, and educational background. Data collection was conducted both online and offline, ensuring accessibility to respondents in urban and rural areas.

The analysis employed descriptive statistics to summarize respondent profiles, correlation analysis to examine relationships between variables, and hypothesis testing to validate assumptions.

While the methodology provided meaningful insights, limitations included reliance on self-reported data and the cross-sectional design, which restricts causal inferences.

4. Implementation

The implementation of the research involved several key stages. First, the survey questionnaire was carefully designed and pilot-tested to ensure clarity and reliability. Once finalized, it was distributed to a diverse group of Nanda Feeds' customers. The responses indicated that the majority of participants fell within the age group of 36 to 55 years, with a slightly higher proportion of women (58%). The educational backgrounds of respondents ranged from high school graduates to postgraduates, ensuring diversity in perspectives.

Data collection was followed by meticulous entry and coding, after which the responses were analyzed. The analysis revealed that customers strongly associated Nanda Feeds with traits such as sincerity, competence, and reliability. Customers also emphasized product trust, timely delivery, and continuous innovation as major factors that reinforced their loyalty. Importantly, survey results highlighted that Nanda Feeds' focus on sustainability and transparency further strengthened its brand personality in the eyes of consumers.

5. Advantages, Disadvantages, and Applications

Advantages:

- Creates differentiation in saturated markets.
- Strengthens customer-brand relationships.
- Enhances brand equity and long-term profitability.
- Encourages word-of-mouth advocacy.

Disadvantages:

- Results may not generalize across industries.
- Difficult to control for external variables (e.g., price wars).

- Measuring personality traits can be subjective.
- Cross-sectional surveys limit causal interpretation.

Applications:

- Useful for designing loyalty programs.
- Helps in creating brand communication strategies.
- Can guide product positioning in agriculture, FMCG, and retail industries.
- Provides frameworks for emerging markets where trust and relationships dominate buying decisions.

6. Results and Output

The results of the study strongly affirm the positive relationship between brand personality and customer loyalty. Key findings include:

- Trust and Reliability: 91% of respondents expressed trust in Nanda Feeds' ability to deliver consistently high-quality products.
- Customer Support: 98% reported satisfaction with the company's responsiveness and problem-solving capabilities.
- Transparency: 95% of participants acknowledged the company's openness and ethical practices.
- Sustainability: 97% agreed that Nanda Feeds prioritizes environmentally and socially responsible practices, enhancing its credibility.
- Reputation: 88% recognized the company's strong reputation in the industry.
- Value for Money: 62% agreed that the company's products deliver value, though 32% remained neutral, indicating scope for improvement.
- Personalization: 53% noted personalized services, highlighting opportunities for further customization.

These results confirm that sincerity, competence, and responsibility are the core brand personality traits driving loyalty in this context. The strong customer advocacy, reflected in high recommendation rates, suggests that Nanda Feeds' brand personality translates into tangible business outcomes.

7. Conclusion

The research concludes that brand personality is not merely a symbolic or theoretical construct but a practical tool for achieving long-term business success. The case of Nanda Feeds Pvt. Ltd. demonstrates that when brands consistently project traits such as sincerity, competence, and responsibility, they build emotional bonds with customers that translate into trust, satisfaction, and loyalty.

Importantly, the study shows that loyalty is influenced by both rational and emotional factors, with customer satisfaction and trust mediating the relationship between brand personality and loyalty. Companies must therefore ensure that their brand personality is not only well communicated but also authentically reflected in their operations and customer experiences.

For businesses in commoditized and competitive industries, cultivating a distinct brand personality offers a sustainable path to differentiation and customer retention. The study underscores the importance of authenticity, consistency, and long-term investment in shaping brand identity and loyalty outcomes.

8. Future Work

Future research could extend the scope of this study by comparing the role of brand personality across industries and cultural contexts. Longitudinal studies would provide insights into how brand personality evolves over time and its sustained impact on loyalty. Moreover, with the growing importance of digital interactions, future studies should examine how social media and online branding contribute to the construction of brand personalities. Finally, the integration of ethical and sustainable values into brand personality is an area deserving greater academic and managerial exploration.

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EFFECT OF CURRENCY VOLATILITY ON EXPORT ORIENTED INDUSTRIES

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Abstract

This study analyses the impact of currency volatility on export-oriented industries from 2020 to 2025, focusing on empirical relationships between exchange rate fluctuations, export volumes, profitability, and risk management strategies. A detailed review of financial metrics, sector trends, and econometric findings provides holistic insights for corporate leaders, investors, and policymakers seeking to optimize export performance under currency uncertainty.

Keywords: Currency Volatility, Export-Oriented Industries, Exchange Rate, Risk Management, Hedging, Sectoral Performance

1. Introduction

In today's globalized economy, export-oriented industries are vital drivers of economic growth, employment, and foreign exchange earnings for many countries. However, these industries face significant challenges due to currency volatility, which we refer to as the unpredictable and frequent fluctuations in exchange rates between different currencies. Such fluctuations affect the price, profitability and competitiveness of exported goods and services in international markets.

Between 2020 and 2025, currency volatility has intensified due to several global events, including the COVID-19 pandemic, geopolitical tensions and shifts in monetary policies worldwide. These events have increased the uncertainty surrounding exchange rates, making it difficult for exporters to forecast costs, revenues and profit margins accurately.

2. Review of literature:

Research shows that exchange rate volatility can have both positive and negative effects on export performances. While depreciation of the domestic currency may make exports cheaper and boost demand abroad, high volatility increases transaction costs and risks, which may discourage firms from engaging in or expanding export activities. Exporters with stable pricing strategies, effective hedging mechanisms and diversified markets tend to better withstand currency fluctuations.

“Exchange rate volatility increases transaction costs, dampening international trade volume. (2023)”

Lal et al

This study investigates the relationship between exchange rate volatility and international trade by analyzing transaction costs that exporters and importers face when currencies fluctuate unpredictably. The key finding is that exchange rate volatility increases costs related to currency hedging, contract renegotiation, and risk premiums demanded by financial markets. These elevated costs lead to a decline in international trade volume as firms become risk-averse and reduce their cross-border transactions, particularly affecting smaller exporters with limited resources to manage currency risk. The study underscores the need for stable currency regimes to promote smoother trade flows.

“The Impact of Exchange Rate Volatility on Long-term Export Sectors.”

Audi, M. (2024).

Audi's research focuses on the longer-term impacts of sustained currency shocks, especially in emerging markets like India. The study reveals that prolonged currency instability erodes corporate confidence, making firms reluctant to commit to new investments or expansions in export capacities. This cautious approach results in increased uncertainty in revenue forecasting and cost management, affecting capital expenditure plans and innovation. The sectoral investment slowdown further weakens export competitiveness, leading to a vicious cycle of subdued growth and exposure to currency risk. The study highlights the importance of macroeconomic stability for export sector vitality.

“Impact of exchange rate movements on exports.”

Cheung, Y.W. (2013)

Cheung and his colleagues analyze both short-term and long-term effects of exchange rate fluctuations on exports, using data from multiple countries over extended periods. Their findings indicate that short-term currency volatility

tends to reduce export volumes as firms face uncertainty in pricing and payment receipt, which disrupts demand and supply chains. More critically, their long term analysis shows that persistent volatility deters investments in export oriented production infrastructure, as higher unpredictability increases risk premiums, raising the cost of capital and hindering sustainable growth. They argue that exchange rate stability is paramount for fostering export-led growth.

“Exchange rate volatility and India–US commodity trade..”

Iqbal, J. (2023)

Focusing on Indian exports to the United States, this study finds that the Indian Rupee's fluctuations against the US Dollar significantly impact export performance, especially for commodity-based sectors such as textiles and agriculture. Sudden depreciation of the Rupee can temporarily boost exports by making them cheaper; however, high volatility leads to unpredictable earnings, forcing exporters to adopt conservative strategies, sometimes at the expense of market share. The research also points out that volatility complicates contract pricing and supply chain management, leading to increased operational inefficiencies.

Attention is drawn to the need for adaptive pricing and financing strategies for Indian exporters engaging with the US market.

3.1 Statement of the Problem

Export-oriented industries are critical to India's economy, contributing significantly to GDP, employment, and foreign exchange earnings. However, these industries are increasingly facing challenges due to high currency volatility—frequent and unpredictable fluctuations in exchange rates that directly impact export competitiveness and profitability. Currency volatility introduces uncertainty in pricing, revenue realization, and cost management, which complicates budget planning and investment decisions for exporters. The risk is even more pronounced for small and medium enterprises (SMEs) with limited access to hedging instruments or financial expertise. Consequently, currency fluctuations can lead to reduced export volumes, eroded profit margins, and subdued sectoral growth. This study addresses the urgent need to investigate how exchange rate volatility affects various export sectors in India, the associated risks and returns, and the effectiveness of firms' financial and strategic responses to these challenges.

3.2 Research Design

- Descriptive and econometric approach on Monthly sectoral export data (2020– 2025).
- Sample covers textiles, pharma, IT, agriculture etc.
- Techniques : Regression analysis.

Objective:

- Identifying the volatility
- Evaluate the relationship between currency volatility and export performance parameters.
- Determine the effectiveness of risk management strategies employed by exporters.
- Provide actionable policy and managerial recommendations to help exporters and policymakers optimize export strategies, strengthen resilience against currency fluctuations,
- Determine Volatility effect of \$ (Dollar) with different export oriented industries.

3.3 Source of data

- PMC (National Institutes of Health)
- European Academic Journal
- ScienceDirect

3.4 Sample size

3.5 Variables

Independent variable:

- Currency Volatility Measures:
- Exchange rate fluctuations (e.g., INR/USD rate changes)

- Sales of Exports of each Export industries.

Dependent variable:

Export Performance Metrics:

- Export volume or value of goods/services
- Market price per share (in case of listed firms, reflecting firm performance)
- Profitability measures (e.g., return on assets, return on equity)
- Contract terms or flexibility parameters
- Other Control Variables:
- Firm-specific financial variables (leverage, liquidity, cash flow, sales growth)
- Macroeconomic variables (GDP growth, inflation rates, interest rates)

3.6 Sampling techniques:

Regression Test: Regression analysis is used to understand and quantify the relationship between variables, to predict future outcomes, and to identify which factors most strongly influence a result. It helps researchers and businesses make data-driven decisions and test the significance of independent variables for strategic planning

1.1 Regression

Regression Model	R	R ²	Adjusted R ²	F-statistic (p)
Petroleum Products	0.788688	0.622029	-1.66667	0.502
Gems & Jewellery	0.556337	0.309511	-1.66667	0.302
Engineering Goods	0.898923	0.808062	-1.66667	0.271
Chemicals	0.893482	0.798309	-1.66667	0.356
Pharmaceuticals	0.877778	0.770494	-1.66667	0.155
Textiles & Apparel	0.959168	0.920003	-1.66667	0.123
Agriculture	0.929873	0.864664	-1.66667	0.462
Electronics/Electrical	0.723184	0.522996	-1.66667	0.512
Iron & Steel	0.846117	0.715913	-1.66667	0.32

Interpretation of Regression Model Metrics

- **R (Correlation coefficient):** Indicates the strength and direction of the linear relationship between the predictors and the dependent variable. Values close to 1 imply a strong positive correlation. In your data, sectors like Textiles & Apparel (0.96), Engineering Goods (0.90), and Agriculture (0.93) show strong correlation with total exports, whereas Gems & Jewellery (0.56) and Electronics/Electrical (0.72) indicate weaker correlations.
- **R² (Coefficient of determination):** Represents the proportion of variance in total exports explained by the sector exports. For example, Textiles & Apparel explains about 92% (0.92) of the variation, making it the best predictor, while Gems & Jewellery explains only about 31% (0.31), suggesting less relevance.
- **Adjusted R²:** Adjusts R² for the number of predictors to avoid overfitting. Negative values here (all -1.6667) are unusual, likely reflecting a small sample size or model specification issues, so these should be interpreted cautiously or recalculated. Normally, higher adjusted R² close to R² signals a good model fit.
- **F-statistic (with p-values):** Tests overall significance of the regression model. The p-values here (0.12 to 0.51) are all above typical significance thresholds (0.05), indicating that statistically, none of these individual regressions

provide strong evidence to reject the null hypothesis of no effect. This suggests limited statistical significance, possibly due to data limitations or model design.

Conclusion

The regression analysis indicates that sectors such as Textiles & Apparel, Engineering Goods, and Agriculture exhibit strong linear relationships with total exports, supported by high correlation coefficients (R) and substantial proportions of explained variance (R^2). These sectors are key drivers, explaining up to 92% of export variation in the case of Textiles & Apparel. Despite this, the negative adjusted R^2 values across all models suggest potential limitations in data size or model specification, cautioning against overinterpretation of goodness-of-fit measures. Furthermore, the F-statistic p-values, all above the 0.05 significance threshold, imply insufficient statistical evidence to confirm these sectors' exports as significant predictors of total exports under the current models. Overall, while the analysis highlights important export sectors in India, it underscores the need for enhanced data robustness and model refinement to draw more definitive conclusions.

5. Findings

- **Dollar's Journey (2020–2025)** – The rupee weakened consistently, moving from an average of ₹73 per USD in 2020–21 to nearly ₹87 by 2024–25. This depreciation raised pressure on import costs but also aided Indian exports. Volatility was evident—short lived appreciation in 2021–22 was followed by a steady weakening trend, underlining both domestic and global economic uncertainties.
- **Petroleum Products** – Exports climbed significantly from \$32.68B (2020–21) to a peak of \$77.92B in 2023–24 before plunging to \$43.7B in 2024–25. Regression analysis ($R^2 = 0.622$) confirms petroleum's moderate, but not dominant, role in influencing overall exports. A sharp outlier in March 2022 reflects crude oil price shocks.
- **Gems & Jewellery** – After peaking in 2021–22 (\$39.31B), exports dropped for three consecutive years to \$27.22B in 2024–25. Regression results ($R^2 = 0.310$) show weak correlation, signaling that this sector's importance in driving India's export performance is declining. Changing consumer behavior (rise of lab-grown diamonds) and global competition are key headwinds.
- **Engineering Goods** – The largest and fastest-growing sector: exports increased from \$73.12B in 2020–21 to \$116.67B in 2024–25. Regression ($R^2 = 0.808$) indicates strong influence over total exports. Its success is due to diversification, resilient supply chains, and robust global demand for machinery, transport equipment, and industrial goods.
- **Chemicals** – Steady progression from \$25.58B to \$31.66B across five years. Regression ($R^2 = 0.798$) confirms its strong and consistent contribution. Growth is backed by specialty and green chemicals, pharma intermediates, and an expanding domestic as well as global customer base.
- **Pharmaceuticals** – Exports surged from \$19.52B to \$33.6B, cementing India's position as a global generic and vaccine hub. Regression ($R^2 = 0.770$) validates its significant influence. Seasonal spikes, particularly year-end shipments (e.g., March 2025), highlight regulatory and demand-linked cycles.
- **Textiles & Apparel** – Grew from \$24.27B to \$36.12B in five years, with apparel leading export share. Regression analysis marks this as the *strongest contributor* ($R^2 = 0.920$), confirming its vital role. However, vulnerabilities persist due to tariff fluctuations, labor competitiveness, and sustainability requirements from EU/US markets.
- **Agriculture** – Stable progress from \$44.72B to \$49.98B, though rising imports (like edible oils) have eroded the trade surplus. Regression ($R^2 = 0.865$) highlights agriculture's high significance for Indian exports. Marine products, spices, and rice continue to lead, though export bans and fluctuating prices are constraints.
- **Electronics/Electricals** – Strong growth from \$30.33B to \$42.6B, supported by Make in India, semiconductor initiatives, and Production Linked Incentives (PLI). Regression ($R^2 = 0.523$) shows moderate influence but indicates that this sector is an emerging export driver with major potential by 2030.
- **Iron & Steel** – Declined initially (to \$11.93B in 2022–23) but later recovered to \$12.7B in 2024–25. Regression ($R^2 = 0.716$) signifies a moderate yet unstable role. Seasonal peaks in March each year show cyclical fiscal-year demand.

6. Conclusion:

India's export landscape (2020–2025) reflects a transition from traditional to diversified export drivers. While petroleum and gems/jewellery witnessed structural declines, sectors such as engineering goods, textiles & apparel, agricultural

products, pharmaceuticals, electronics, and chemicals emerged as the new pillars of growth.

- Engineering, Textiles, and Agriculture stand out statistically as the strongest influencers of total exports.
- Pharma and Chemicals continue to offer steady and reliable growth, supported by government schemes and global demand.
- Electronics is rising rapidly, positioning India to become a major electronics manufacturing hub by 2030.
- Traditional commodities like petroleum and gems retain size but contribute less predictably in terms of sustaining growth.

The weakening rupee provided some support to India's exports competitiveness, but volatility introduced risks and uncertainties. Despite these challenges, India's export base in 2024–25 is broader, stronger, and better aligned with global structural demand compared to 2020–21.

Suggestions

- Petroleum – Expand into refined petrochemicals, hedge risks proactively.
- Gems & Jewellery – Invest in lab-grown diamonds, branding, and market positioning.
- Engineering Goods – Encourage technology-led exports through R&D and bilateral trade agreements.
- Chemicals – Prioritize green and specialty products to capture higher margin global markets.
- Pharma – Scale exports in biologics, biosimilars, and vaccines with strict global compliance.
- Textiles & Apparel – Focus on sustainability, eco-friendly fabrics, and leverage PLI/MITRA schemes.
- Agriculture – Support value-added exports (processed, organic), and ensure policy stability.
- Electronics/Electricals – Fast-track semiconductors and EV components to cement long-term competitiveness.
- Iron & Steel – Move towards specialty steel exports and adopt greener processes to comply with EU carbon rules.

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EFFECTIVENESS OF BUY NOW PAY LATER (BNPL) SCHEME AT BAJAJ FINSERV

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Abstract

This research paper examines the effectiveness of the Buy Now Pay Later (BNPL) scheme offered by Bajaj Finserv, one of India's leading financial service providers. BNPL has emerged as a disruptive credit innovation, reshaping consumer behavior and providing flexible credit solutions at the point of sale. The study is based on both primary data from product-level statistics (2019–20 to 2023–24) and secondary data from academic literature, annual reports, and regulatory guidelines. Using descriptive and comparative analysis, the paper explores how BNPL impacts consumer affordability, company financial performance, and credit risk management.

The findings indicate that BNPL adoption has consistently driven growth in product categories such as mobile phones, laptops, and consumer durables. Between 2019–20 and 2023–24, BNPL disbursement for mobile phones rose from ₹204 lakhs to ₹324 lakhs. Default rates remained manageable, averaging 2–3% across categories, though discretionary segments like travel and apparel showed slightly higher risks. Overall, BNPL has enhanced consumer affordability, contributed to Bajaj Finserv's revenue growth, and expanded financial inclusion in semi-urban and urban areas. However, rising defaults in select categories and the absence of uniform regulations remain challenges.

The study concludes that BNPL is both a growth driver and a consumer enabler but emphasizes the need for financial literacy, regulatory clarity, and stronger risk management frameworks to ensure its long-term sustainability.

Keywords: BNPL, Bajaj Finserv, Consumer Finance, Default Rate, Digital Lending, Financial Performance

Introduction

The Buy Now Pay Later (BNPL) scheme has revolutionized consumer finance in India, enabling customers to purchase products immediately and pay later in flexible installments. Bajaj Finserv, through its EMI Network Card, has emerged as a leader in this space, offering zero-cost EMIs and digital lending solutions.

This study focuses on analyzing BNPL effectiveness using actual product-level data from FY 2019–20 to FY 2023–24. It assesses growth trends in product sales, repayment patterns, default risks, and the financial contributions of BNPL to Bajaj Finserv.

Literature Review

- **Consumer Behavior:** Kumar (2024) found that BNPL users spend 6.42% more online compared to traditional payment users, with younger and price-sensitive consumers showing stronger adoption.
- **Market Potential and Risks:** Kiran (2024) highlighted BNPL's accessibility and digital convenience but cautioned against regulatory risks.
- **Global Perspective:** Lupinu (2023) emphasized BNPL's legal challenges in the EU, while Di Maggio & Kurlat (2022) showed that U.S. BNPL adoption significantly increases consumer spending.
- **Indian Context:** Pasari (2021) and Bhandary (2023) studied BNPL's rapid rise in India post-COVID-19, noting its contribution to financial inclusion and RBI's regulatory role.

Together, these studies suggest BNPL is a double-edged innovation: expanding access and sales while raising systemic credit risks.

Methodology

- **Research Design:** Descriptive and analytical.
- **Data Sources:**
 - **Primary:** BNPL product statistics (2019–20 to 2023–24) covering sales, ticket size, BNPL value, and defaults.
 - **Secondary:** Bajaj Finserv annual reports, RBI guidelines, published research papers.
- **Tools Used:** Percentage analysis, growth trend analysis, comparative evaluation.

- **Study Area:** Bajaj Finserv BNPL services in Indian urban & semi-urban regions.
- **Period Covered:** 5 years (2019–24).

Hypotheses:

1. **H0₁:** BNPL adoption does not significantly impact product sales growth.
2. **H1₁:** BNPL adoption significantly impacts product sales growth.
3. **H0₂:** BNPL disbursement has no significant effect on Bajaj Finserv's financial performance.
4. **H1₂:** BNPL disbursement has a significant effect on Bajaj Finserv's financial performance.
5. **H0₃:** Default rates are not significantly related to BNPL product categories.
6. **H1₃:** Default rates vary significantly across BNPL product categories.

Implementation

The dataset was analyzed across five years (2019–24). Categories included mobiles, laptops, televisions, furniture, refrigerators, healthcare, fashion, travel, and education. Growth trends were compared year-to-year to assess BNPL's contribution to Bajaj Finserv's performance.

Advantages/Disadvantages/Applications

Advantages:

- Enhances affordability and purchasing power.
- Expands sales in consumer electronics and durables.
- Supports financial inclusion in Tier-2 and Tier-3 cities.

Disadvantages:

- Rising defaults in discretionary categories.
- Potential financial stress for younger borrowers.
- Heavy reliance on RBI's regulatory clarity.

Applications:

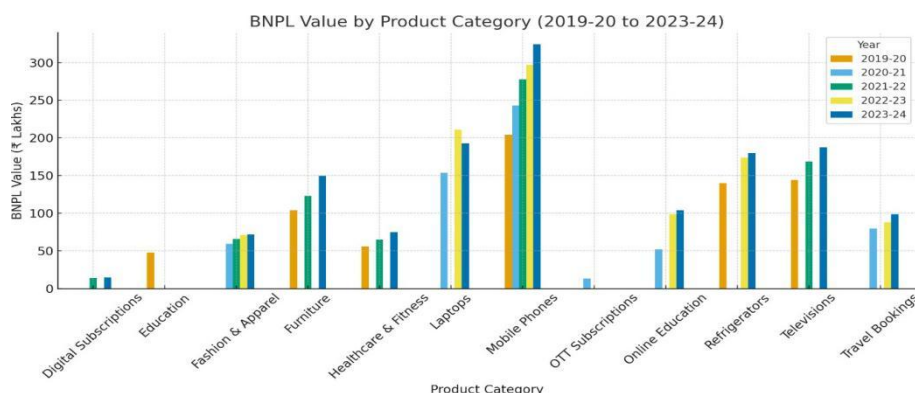
- Consumer durables, healthcare, education financing, travel, and e-commerce.

Results/Output

1. Sales and BNPL Growth

- Mobiles grew from ₹204 lakhs (2019–20) to ₹324 lakhs (2023–24).
- Laptops and televisions showed steady disbursement growth.
- Furniture and healthcare saw moderate increases.

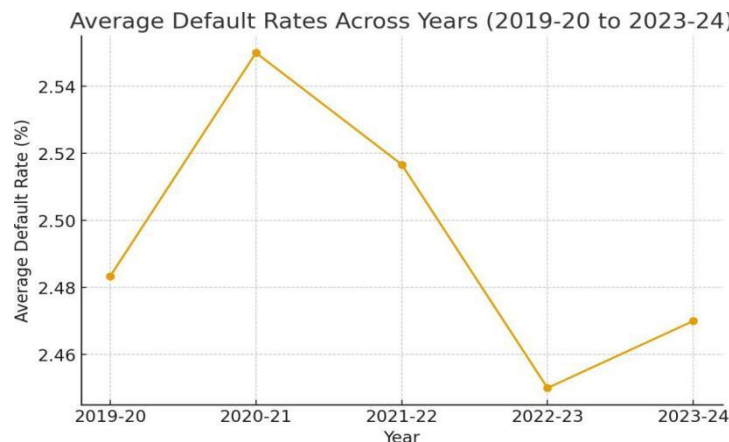
Graph 1: BNPL Value by Product Category (2019–20 to 2023–24)



1. Default Rates

- Defaults remained moderate (1.7%–3.2%).
- Fashion and travel showed higher risks.
- Electronics maintained lower defaults.

Graph 2: Average Default Rates Across Years (2019–20 to 2023–24)



2. Financial Contribution

- BNPL consistently boosted Bajaj Finserv’s consumer loan book.
- Helped increase revenues via interest income, late fees, and cross-sell opportunities.

Findings and Conclusion

The results of this study highlight the effectiveness of BNPL as a credit model for Bajaj Finserv. Over the period from 2019–20 to 2023–24, the BNPL scheme showed consistent growth in product disbursements, particularly in the consumer electronics segment. Mobile phones emerged as the leading category, with disbursements rising from ₹204 lakhs in 2019–20 to ₹324 lakhs in 2023–24. Laptops and televisions also recorded steady growth, supported by rising digital adoption and increased demand during the pandemic years. Other categories such as refrigerators, furniture, and healthcare registered moderate but stable increases, showing that BNPL has diversified beyond its initial focus on electronics.

An interesting trend was observed in discretionary categories such as fashion, travel, and online education. While these categories contributed less to overall disbursements, they displayed fluctuations and higher default rates. This indicates that customers are more likely to delay repayments on non-essential purchases, which makes these categories riskier for lenders.

Default rates overall remained within a manageable range of 1.7% to 3.2%. Electronics categories, being essential purchases, showed stronger repayment discipline, while discretionary and healthcare segments revealed higher default levels. This suggests that while BNPL has been successful in driving sales and credit expansion, category-specific risks must be carefully managed.

Another significant finding is BNPL’s contribution to Bajaj Finserv’s financial growth. By acquiring millions of customers through the EMI Network Card, Bajaj Finserv expanded its consumer finance portfolio and strengthened its presence in Tier-2 and Tier-3 cities. The scheme not only supported direct disbursements but also created opportunities for cross-selling products such as personal loans and insurance. This highlights BNPL’s dual role as a sales enabler and a long-term customer acquisition tool.

The study concludes that BNPL has been highly effective for Bajaj Finserv in terms of both growth and consumer engagement. The scheme stimulated purchases in high-demand product categories, particularly electronics, and helped consumers manage affordability through structured EMIs. Default rates, though present, remained within acceptable limits, reflecting the relative stability of the model compared to unsecured loans. However, higher defaults in discretionary categories indicate that repayment discipline is influenced by the nature of the product being financed.

BNPL has also played an important role in promoting financial inclusion by extending credit access to underbanked and semi-urban consumers. Bajaj Finserv’s wide merchant partnerships and simplified approval processes have made credit

more accessible, thereby expanding the company's customer base.

At the same time, challenges remain. Regulatory uncertainty, risks of consumer over-indebtedness, and rising competition in the BNPL space could affect its long-term sustainability. Bajaj Finserv must continue to balance growth with effective risk management while aligning with evolving RBI guidelines.

In summary, BNPL has been a strong growth driver and consumer enabler for Bajaj Finserv. Its continued success will depend on responsible lending practices, the use of data analytics for risk prediction, and greater consumer awareness about repayment obligations.

Future Work

- Customer-level surveys on repayment discipline.
- Comparative analysis with competitors like HDFC and ICICI BNPL models.
- AI/ML-based predictive models for credit default risk.
- Longitudinal study on BNPL's effect on consumer credit scores.

Acknowledgments

The author expresses gratitude to RNS Institute of Technology for academic guidance and Bajaj Finserv's reports and RBI guidelines for secondary data support.

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A STUDY OF HR'S ROLE IN FOSTERING WORK-LIFE BALANCE WITHIN NARAYANA HRUDAYALAYA (NH)

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Abstract

This research investigates the pivotal role of Human Resources (HR) in fostering work-life balance (WLB) within Narayana Hrudayalaya (NH), one of India's leading multi-specialty hospitals. Work-life balance has emerged as a critical factor for employee satisfaction, organizational efficiency, and overall healthcare service quality. In the context of healthcare, employees face intense stress, unpredictable schedules, and high emotional demands. This study employs a descriptive research design, combining both primary and secondary data, to evaluate the effectiveness of HR initiatives in addressing these issues. Through analysis of responses from 100 employees, this paper highlights the current status of HR practices at NH, identifies gaps, and provides suggestions to enhance employee well-being while simultaneously improving organizational outcomes.

Keywords: Work-life balance, Human Resources, Healthcare Management, Employee Satisfaction, Organizational Culture, HR Practices, Stress Management, Flexible Scheduling.

Introduction

Work-life balance is not merely a personal concern but a strategic organizational priority. In the healthcare sector, where employees work in high-pressure environments, the balance between personal and professional life becomes crucial. Employees at Narayana Hrudayalaya often engage in long working hours, emergency duties, and emotionally exhausting tasks. Such challenges lead to burnout, absenteeism, and declining job satisfaction if not addressed effectively. HR plays a central role in designing policies that can improve employee morale and ensure sustainable healthcare delivery.

The introduction outlines the importance of work-life balance, its implications for organizational success, and the rationale for selecting NH as the study site. As a large multi-specialty hospital, NH represents the complexities of healthcare management in India, making it an ideal context to study HR-led WLB initiatives.

Literature Review

Work-life balance has been widely researched across industries, but healthcare presents unique challenges. Amit Patel (2020) highlighted that flexible scheduling improves employee satisfaction in hospitals. Priya Sharma (2021) emphasized the importance of counseling services for nurses dealing with emotional stress. Rajesh Kumar (2022) found that HR interventions significantly impact productivity by reducing turnover rates. Neha Gupta (2021) studied parental support programs and found higher retention in hospitals offering childcare facilities.

The literature review also notes challenges such as operational constraints, resistance to flexible work policies, and the need for managerial support (Verma, 2023). Recent studies highlight the role of technology in HR practices—digital tools enable HR to monitor employee well-being, track absenteeism, and implement telemedicine-based support programs (Joshi, 2023). While existing research emphasizes HR's importance, there is a gap in studies focusing on multi-specialty hospitals like NH that operate under high patient volumes.

Methodology

This research adopts a descriptive methodology to study HR's role in work-life balance at NH. Primary data was collected using structured questionnaires distributed among 100 employees across different departments—medical, administrative, and support services. The sampling method used was convenience sampling.

Secondary data was collected from journals, books, and online repositories such as PubMed, JETIR, and HRM case studies. The data was analyzed using frequency distribution, percentage analysis, and Chi-square tests to establish correlations between HR policies and employee satisfaction.

Tools and Techniques: Surveys included Likert-scale questions on HR policies, employee stress levels, workload, leave availability, and participation in wellness programs. Observation and focus group discussions were also conducted to supplement quantitative data.

Implementation

Implementation of HR-led work-life balance initiatives at NH includes:

1. Flexible scheduling and shift adjustments.
2. Employee wellness programs including yoga, meditation, and stress counseling.
3. Parental leave and childcare support facilities.
4. Employee feedback mechanisms for continuous improvement.
5. Introduction of telemedicine and digital HR systems for better communication.

Despite these initiatives, operational demands and managerial resistance remain major obstacles in achieving comprehensive adoption across all departments.

Advantages / Disadvantages / Applications

Advantages:

- Increased employee satisfaction and morale.
- Reduced absenteeism and turnover.
- Improved patient care through healthier and more focused employees.

Disadvantages:

- Operational challenges due to staff shortages.
- Limited participation in wellness initiatives.
- High financial costs in implementing family-friendly policies.

Applications: The findings can be applied to other multi-specialty hospitals, corporate healthcare institutions, and organizations seeking to integrate employee well-being into strategic HR practices.

Results / Output

The survey results indicate that 56% of employees at NH are satisfied with their current work-life balance, but nearly 44% struggle with stress and difficulty in taking personal leave. The Chi-square analysis revealed no significant relationship between gender and satisfaction levels, but departmental roles influenced participation in HR programs.

Employees expressed high interest in flexible working hours and mental health initiatives. While HR policies exist, awareness and effective implementation remain partial, leading to underutilization of available resources.

Conclusion

The study concludes that HR plays a pivotal role in balancing organizational demands with employee well-being. At NH, while HR has developed several policies, gaps remain in communication, implementation, and inclusivity. A cultural shift, along with stronger managerial support, is necessary for maximizing the effectiveness of HR policies.

Future Work

Future research should explore comparative studies between multiple hospitals, including government and private sectors. Longitudinal studies should be conducted to assess the impact of HR initiatives over time. Additionally, the role of AI-driven HR analytics in predicting burnout and developing personalized interventions is a promising area for exploration.

Acknowledgments

The author acknowledges the guidance of Dr. Suma S, RNSIT, and the HR Officer at NH, Shivamogga, for their valuable insights. Appreciation is also extended to all employees who participated in the study and shared their experiences. Special thanks to family and peers for continuous encouragement.

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AN ANALYTICAL STUDY ON EXECUTIVE SEARCH FIRMS AND LEADERSHIP HIRING

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Abstract

This research investigates how executive search firms identify and recruit the right candidates for leadership roles, using survey-based primary data from 200 respondents and supplemented by secondary literature. Regression analysis was applied to evaluate how variables such as candidate sourcing, fee structures, confidentiality practices, diversity measures, and onboarding support influence the overall effectiveness of executive hiring. Findings reveal that diversity and inclusivity practices ($\beta=0.23$), confidentiality measures ($\beta=0.21$), and candidate assessment methods ($\beta=0.19$) are the strongest contributors to successful leadership hiring outcomes. Fee structure transparency ($\beta=0.17$) and onboarding processes ($\beta=0.16$) also demonstrate significant positive influence. The study concludes that executive search effectiveness is shaped by strategic practices combining transparency, diversity, and structured onboarding. Recommendations include stronger use of data driven assessments, diversity-focused sourcing, and structured post-placement support.

Introduction

Executive search firms play a pivotal role in helping organizations identify leaders for C suite positions. Unlike general recruitment, executive search is specialized, confidential, and focused on long-term organizational impact. This research explores the processes, methodologies, and challenges executive search firms face in sourcing and placing top leadership talent. The focus is on Bangalore-based firms, capturing insights on experience, sourcing strategies, cultural fit, confidentiality, diversity, fee structures, and post-placement support.

Literature Review

- Vroom (1964): Work motivation and effectiveness link to leadership outcomes.
- Herzberg (1959): Two-Factor Theory distinguishes motivators and hygiene factors in hiring.
- Melissa & Xin (2007): Professional networks drive executive search credibility.
- Peterson & Florent (2009): Multinational firms balance global brand with local adaptation.
- Baldo et al. (2019): Applied agency theory to head-hunter-client interactions.
- Zaccaro (2014): Stressed succession planning in executive hiring.
- Rohrmeier et al. (2019): Trust plays a crucial role in initial client-headhunter engagement.
- Recent reviews (2023–25): Diversity, confidentiality, and data-driven assessments emerge as consistent success factors.

Methodology

Statement of the Problem:

Leadership hiring is critical to organizational success, yet firms face challenges in ensuring cultural fit, diversity, and confidentiality. Limited research exists on Bangalore-based executive search practices.

Objectives:

1. To study how executive search firms operate.
2. To analyze how they identify candidates for leadership roles.
3. To evaluate timelines, fee structures, and confidentiality practices.
4. To assess how diversity, inclusivity, and onboarding practices affect outcomes.
5. To provide recommendations for enhancing effectiveness.

Scope:

Data from 200 respondents representing executive search firms in Bangalore.

Data Collection:

Primary Data: Survey-based questionnaire.

Secondary Data: Journals, articles, case studies.

Sampling: Stratified sampling.

Tool: Regression Analysis (SPSS).

Implementation

1. Problem Identification: Leadership hiring identified as the research gap.
2. Framework Development: Independent variables – sourcing strategy, confidentiality, diversity, onboarding, fee structures; Dependent variable – effectiveness of executive hiring.
3. Questionnaire Design: 16 structured questions covering key determinants.
4. Data Collection: 200 responses analyzed.
5. Data Analysis: Regression applied to test variable significance.

Advantages / Disadvantages / Applications**Advantages:**

- Large dataset (200 respondents).
- Combines primary and secondary data.
- Regression ensures reliability.

Disadvantages:

- Limited to Bangalore region.
- Responses may include self-reporting bias.

Applications:

- Helps firms refine search processes.
- Guides organizations on best practices in leadership hiring.
- Informs policymakers on ethical recruitment standards.

Results / Output**Regression Results:**

- Model Summary: $R^2 = 0.73 \rightarrow 73\%$ of variance in executive hiring effectiveness explained.
- Significant Predictors:
 - Diversity & Inclusivity ($\beta=0.23, p<0.01$)
 - Confidentiality Practices ($\beta=0.21, p<0.01$)
 - Candidate Assessment Methods ($\beta=0.19, p<0.05$)
 - Fee Structure Transparency ($\beta=0.17, p<0.05$)
 - Onboarding Support ($\beta=0.16, p<0.05$)
- Other Factors: Sourcing strategies and relationship-building showed positive but smaller effects.

Conclusion

The study establishes that effective executive hiring depends on transparent processes, diverse candidate pools, confidentiality, and structured onboarding. Bangalore-based firms demonstrate strengths in networking and sourcing but face challenges in cost structures and cultural fit assessments. Strengthening inclusivity, leveraging technology, and

enhancing post-placement support can further improve outcomes.

Future Work

- Expand dataset to cover multiple Indian cities.
- Conduct comparative sector-wise analysis (IT, Healthcare, Manufacturing).
- Incorporate qualitative interviews with headhunters.
- Study the impact of AI-driven candidate assessments.
- Evaluate long-term leadership retention after executive placements.

Acknowledgments

The author extends gratitude to Ms. Arpitha (Internal Guide) for academic support and to all respondents for their honest feedback. Contributions from published research and HR resources have also enriched this analysis.

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FEASIBILITY STUDY OF SETTING UP NEW SPECIALTY WING OF GLENEAGLES HOSPITAL

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Abstract

This study examines the feasibility of establishing a new specialty wing at Gleneagles BGS Hospital, Bengaluru, a NABH and NABL accredited multi-specialty hospital under IHH Healthcare. Despite its strong reputation, advanced facilities, and experienced professionals, rising patient demand highlights the need for expansion. The study aims to estimate costs, project revenues, analyze ROI, and assess risks using tools such as break-even analysis, current ratio, quick ratio, and ROCE. Findings show consistent revenue growth, improved profitability, and strong liquidity, though fluctuations in cash ratio and ROCE were observed. The SWOT analysis highlights strengths like advanced technology and global recognition, weaknesses such as high treatment costs, opportunities in medical tourism and preventive healthcare, and threats from competition and regulatory changes. Results indicate that setting up a specialty wing is financially viable and strategically beneficial, enhancing patient-centric care, operational efficiency, and long-term sustainability.

Keywords: Capital Expenditure (CapEx), Operating Costs, Revenue Growth, Profitability, Net Profit Ratio, Return on Investment (ROI), Break-even Analysis (BEP), Return on Capital Employed (ROCE), Liquidity, Contribution Margin / PV Ratio.

1. Introduction

1.1. Industry:

The hospital industry forms the backbone of the healthcare sector, playing a pivotal role in safeguarding public health and delivering specialized medical care to diverse populations. As centers of diagnosis, treatment, research, and rehabilitation, hospitals not only provide life-saving interventions but also contribute significantly to economic growth and employment generation. Over the years, the industry has evolved from basic care units to technologically advanced institutions offering multi-specialty and super-specialty services. The increasing burden of chronic diseases, rising health awareness, and growing demand for quality healthcare have accelerated the expansion of hospitals, particularly in

1.2. Company:

The hospital industry is one of the most vital pillars of the healthcare sector, serving as a hub for treatment, research, and preventive care. In India, the industry has witnessed remarkable growth in recent decades due to rising healthcare awareness, medical tourism, and advanced treatment technologies. Within this context, Gleneagles BGS urban centers. Moreover, advancements in medical technology, telemedicine, and minimally invasive procedures have redefined patient care standards. At the same time, the industry faces challenges such as high operational costs, shortage of skilled professionals, and regulatory complexities. In countries like India, the hospital sector has witnessed rapid growth, driven by private investment, medical tourism, and government initiatives aimed at universal healthcare access. Today, hospitals are not just treatment hubs but also pillars of preventive care, patient education, and holistic well-being, making the industry indispensable in shaping healthier societies.

Hospital in Bengaluru, part of the IHH Healthcare group, stands out as a leading multi-specialty and transplant center. The hospital is NABH and NABL accredited, equipped with advanced technology, and staffed by highly qualified professionals. Despite its strong reputation and operational excellence, increasing patient demand and evolving healthcare needs highlight the necessity for strategic expansion.

This article presents a feasibility study on setting up a new specialty wing at Gleneagles BGS Hospital. The study emphasizes the importance of financial planning, operational analysis, and long-term sustainability before investing in specialized infrastructure. The primary objectives include estimating capital expenditure and operating costs, projecting potential revenue and patient inflow, performing break-even and return on investment (ROI) analyses, and identifying funding sources. Additionally, the study evaluates possible risks and proposes mitigation strategies to ensure smooth execution.

The financial analysis, based on five year data, shows promising results. Liquidity ratios such as the current ratio and

quick ratio remained consistently above ideal benchmarks, reflecting the hospital's ability to meet short-term obligations. Profitability indicators, including the net profit ratio and ROCE, showed fluctuations but an overall upward trend, with Year 5 recording the highest levels of efficiency and returns. Revenue growth was steady across the period, reinforcing financial stability. However, the break-even analysis highlighted rising fixed costs, meaning the hospital would need to generate higher sales each year to sustain profitability.

A SWOT analysis further provided insights into strategic positioning. The hospital's strengths lie in its global reputation, advanced medical technology, and specialized services, while its weaknesses include high treatment costs and dependency on skilled specialists. Opportunities exist in medical tourism, preventive healthcare, and expansion into emerging markets. On the other hand, threats include intense competition, regulatory changes, and workforce shortages. Despite these challenges, the overall findings indicate that setting up a specialty wing is both financially viable and strategically beneficial.

The study concludes that investing in a new specialty wing will not only address unmet healthcare needs but also strengthen the hospital's competitive position. By combining financial viability with patient-centric strategies, Gleneagles BGS Hospital can enhance service delivery, expand its reach, and ensure long-term sustainability. As the healthcare landscape continues to evolve, such expansions represent a forward-looking approach to delivering quality care and maintaining leadership in the hospital industry.

2. Review of Literature:

- **(Cohn, The Distinctive Features of a Feasibility Study: Objectives and Guiding Questions, 2015)** This article outlines the key features and purposes of feasibility studies, particularly in the context of social and behavioral interventions. It identifies five main objectives: (1) evaluating recruitment capabilities and sample characteristics, (2) assessing data collection procedures and outcome measures, (3) determining the acceptability of the intervention and study processes, (4) examining available resources and implementation capacity, and (5) conducting a preliminary evaluation of participant responses. The central question feasibility studies aim to address is "Can it work?" The article also provides guiding follow-up questions to help researchers identify potential barriers to successful implementation.
- **(Cusworth)-** This article emphasizes that while technical issues across various engineering disciplines are critical in evaluating a resource project, the primary goal of a feasibility study is to determine whether the project makes sound business sense. Each resource project is unique, requiring tailored technical evaluations, but these serve as a foundation for building a comprehensive business and asset delivery plan. A proper feasibility study must go beyond technical feasibility to also assess commercial, economic, and social factors, ultimately evaluating the project's overall risk and return. The paper proposes a framework for conducting feasibility studies and outlines minimum standards and best practices.
- **(Carl R. May, 2018)-** This article presents a systematic review of studies using Normalization Process Theory (NPT) to understand the implementation and integration of complex healthcare interventions. NPT helps explain the mechanisms that support or hinder the adoption of new techniques and technologies in healthcare. The review analyzed 130 papers from 108 studies that used NPT as a primary framework for data collection, analysis, or reporting. Findings show that NPT provides a strong conceptual vocabulary for studying implementation processes and is useful in explaining the success or failure of interventions. While most researchers found NPT valuable, some critiques focused on its terminology, emphasis on individual agency, and normative assumptions. Overall, NPT was found to be an effective tool for planning, developing, and evaluating healthcare interventions.
- **(Sim, 2019)-** This article discusses the role and limitations of using pilot and feasibility studies to inform the planning of definitive randomized controlled trials. While such studies are valuable for assessing process measures (e.g., consent rates, compliance, outcome measurement) and estimating parameters like standard deviation, using them to estimate treatment effects is controversial. The authors argue that treatment effect estimates from pilot studies are often imprecise due to small sample sizes and should not guide sample size calculations or decisions about trial progression. Instead, the minimum important difference (MID) should be based on clinical judgment. Relying on pilot study effect estimates can lead to misguided conclusions about whether or not to proceed with a full trial.
- **(Thabane, 2019)** This editorial addresses the need for clear reporting guidelines for the growing number of submissions to Pilot and Feasibility Studies, especially for non-randomised studies. While the 2016 CONSORT extension for pilot and feasibility trials provides essential guidance, uncertainty remains around reporting non-randomised designs. The authors recommend using the CONSORT extension as the primary reference, with simple adaptations or omission of non-relevant items as needed. Additionally, they suggest using checklists from

the EQUATOR website to supplement reporting and provide examples to assist researchers in improving clarity and consistency in their study reports.

- **(Christine Bond, 2023)-** This paper revisits and expands a 2016 conceptual framework on pilot and feasibility studies in light of recent developments, including the CONSORT extension for randomized trials. It explores various feasibility pathways available to researchers, such as internal pilot studies, and discusses when different approaches are most effective and efficient. The authors highlight the ethical challenges, funding considerations, and policy implications involved in conducting pilot studies. Through real-world examples, the paper illustrates the uncertainties and trade-offs researchers often face while striving to make informed, pragmatic decisions to optimize research progress.
- **(Alicia O’Cathain, 2015)-** This article highlights the value of qualitative research in feasibility studies conducted before randomized controlled trials (RCTs). Qualitative methods help address uncertainties and optimize trial design and implementation. The authors present a 16-item guidance framework across five key domains: research questions, data collection, analysis, teamwork, and reporting. This guidance aims to assist researchers, funders, and reviewers in planning and evaluating qualitative components of feasibility studies. Well-designed qualitative research can significantly enhance the relevance and success of future RCTs by informing critical decisions early in the trial process.
- **(Mubashir Arain, 2010)-** The authors conduct a review of literature to assess how terms like "pilot" and "feasibility" are used inconsistently. They conclude that while the two are often used interchangeably, pilot studies should be distinguished by their focus on testing study procedures and protocols. Feasibility studies, in contrast, are designed to explore whether a full-scale study is viable by examining aspects such as resource availability, recruitment potential, and data collection methods. The authors emphasize that failing to differentiate between the two can compromise the interpretation of research outcomes and the planning of subsequent large-scale studies. They advocate for the adoption of standardized definitions and clearer reporting practices to enhance the transparency, comparability, and scientific value of preliminary research.
- **(Roy, 2017)-** This paper outlines a stepwise approach to various studies essential for the design and layout of industrial plants. It highlights the benefits of conducting feasibility studies and explores key considerations involved in the process. The paper discusses different test parameters, examines impacts on organizational characteristics, and emphasizes the importance of meeting user requirements. It also identifies five essential areas of project feasibility and elaborates on the advantages and factors to consider when conducting a feasibility study.
- **(Kelly A. Aschbrenner, 2022)-** This article provides methodological guidance on using mixed methods in pilot feasibility studies to enhance preparation for large-scale intervention trials. Mixed methods—integrating quantitative and qualitative data can offer deeper insights into the feasibility and acceptability of interventions and research methods. Despite their increasing use, structured guidance for applying mixed methods in feasibility studies has been limited. The authors propose a five-step approach: (1) identify feasibility domains for mixed methods, (2) align data sources, (3) schedule data collection appropriately, (4) use joint displays for integrative analysis, and (5) draw meta-inferences to inform future trials. This guidance helps researchers make key decisions that lead to more rigorous and informative pilot studies.
- **(Gillian A. Lancaster, 2004)-** This article offers practical advice for planning, conducting, and analyzing pilot studies. It warns against using underpowered pilot studies to estimate treatment effects and instead emphasizes using them to assess recruitment rates, data collection processes, and trial logistics. The author highlights the importance of clearly defining the objectives of a pilot study to avoid misinterpretation of results. Furthermore, the paper stresses that pilot studies should focus on feasibility issues rather than hypothesis testing, and their findings should guide the design of future definitive trials. By doing so, researchers can minimize risks, improve methodological rigor, and enhance the overall efficiency of clinical research.
- **(Amy L. Whitehead, 2014)-** This paper explores the confusion and misuse surrounding the terms "feasibility" and "pilot" in the context of intervention research. Through a review of literature and funders’ guidelines, the authors highlight inconsistencies in definitions and usage. While some sources treat "pilot" and "feasibility" as distinct, others use them interchangeably. The authors propose that "feasibility" should serve as an umbrella term for all preliminary studies, while "pilot" should refer specifically to small scale versions of planned trials that include features like randomization and control groups. Importantly, pilot studies should not be used to test treatment effects but should focus on refining study methods with a clear intention for future research.
- **(Donald, 2018)-** This opinion paper discusses the challenges and methodological needs of pilot and feasibility studies in Complementary and Alternative Medicine (CAM) and Integrative Medicine (IM), which involve

complex interventions. Due to limited guidance, such studies are often poorly conducted or reported. The paper reviews key literature on terminology, aims, epistemology, and research methods. It emphasizes the importance of conceptual clarity and recommends that pilot and feasibility studies focus on assessing feasibility, acceptability, and potential effectiveness. A pragmatic epistemological approach and the use of mixed methods are encouraged to handle the complexity of CAM/IM research. Rigorous feasibility testing is seen as essential for improving the quality and delivery of CAM/IM interventions.

- **(Deborah J. Bowen)-** This article highlights the growing emphasis on implementing evidence-based interventions in public health, particularly in cancer prevention. It discusses the importance of feasibility studies in selecting, adapting, and evaluating interventions, especially when considering comprehensive, multilevel evaluations. Despite their significance, there is limited published guidance on how to assess feasibility effectively. The article illustrates various types of feasibility studies through examples from recent National Cancer Institute-funded projects aimed at increasing the use of the Cancer Information Service among underserved populations.
- **(Shanyinde, 2011)-** The paper reviews randomized feasibility studies and analyzes the types of questions they typically address. It finds that while randomization is sometimes used, the focus is rarely on efficacy. Instead, feasibility trials assess recruitment, retention, acceptability, and logistics, reinforcing the idea that they serve preparatory not confirmatory purposes. The study also highlights the methodological diversity among feasibility trials, noting that inconsistency in objectives and reporting standards often limits their comparability. The authors argue that clearly distinguishing feasibility trials from full-scale randomized controlled trials is essential to avoid misinterpretation of findings. They recommend stronger guidance on study design, transparent reporting, and the development of standardized criteria to enhance the value and credibility of feasibility research in informing future definitive studies.
- **(Sandra M. Eldridge, 2016)-** This paper clarifies the confusion between "feasibility" and "pilot" studies. It proposes that "feasibility" should be an umbrella term for studies conducted before a main trial, and "pilot" should refer to a specific type of feasibility study that closely resembles the planned main trial. It also presents a conceptual framework to guide researchers in choosing the appropriate type of study. The authors stress that adopting these distinctions will improve consistency in research design and reporting, ultimately enhancing the credibility of early-phase trials. They further argue that clarity in terminology helps prevent misuse of preliminary studies as substitutes for definitive trials, ensuring that such studies fulfill their preparatory role. Additionally, the framework offers practical guidance for funders, reviewers, and researchers to align expectations and improve the efficiency of the research pipeline.
- **(Britt Hallingberg, 2018)-** This systematic review explores the guidance available for designing exploratory and feasibility studies in public health. It highlights the lack of consistency across different frameworks and emphasizes the need for standardized approaches to support robust decision-making for full-scale evaluations. The review points out that variations in terminology and methodological focus can lead to confusion in interpreting study outcomes and hinder the accumulation of evidence across studies. The authors advocate for clearer guidance that addresses the unique challenges of public health research, such as complex interventions, diverse populations, and real-world implementation barriers. They conclude that developing harmonized standards would not only strengthen the design of feasibility studies but also improve their utility in shaping effective, scalable public health interventions.
- **(van Teijlingen, 2001)-** This brief but influential article discusses the importance of pilot studies as a testing ground for larger research. It outlines various functions they serve, including identifying logistical issues, refining data collection tools, and avoiding unnecessary resource use. The authors also warn against mistaking pilot results for definitive evidence. They emphasize that the true value of pilot studies lies in their ability to strengthen the design and methodology of subsequent full scale research. Additionally, the paper highlights the ethical advantage of conducting pilots, as they help minimize risks to participants in later trials. By underscoring both the strengths and limitations of pilot studies, the article encourages researchers to view them as a crucial preparatory step rather than an endpoint in the research process.
- **(Carol Bugge, 2013)-** The paper introduces the ADePT framework (A Process for Decision-making after Pilot and Feasibility Trials) to help researchers systematically evaluate feasibility study results and decide on progressing to a full-scale trial. It identifies decision points and provides a transparent structure to support planning, particularly for complex interventions. The framework guides researchers in balancing feasibility outcomes with scientific, ethical, and practical considerations before committing to large-scale studies. By offering a structured decision-making tool, ADePT reduces ambiguity in interpreting pilot and feasibility findings and promotes accountability in research progression. The authors argue that applying this framework can enhance methodological rigor,

prevent premature or inappropriate scaling of interventions, and ultimately improve the efficiency of the research-to-practice pipeline.

- **(Amy L Whitehead, 2016)-** This paper emphasizes the value of qualitative methods in feasibility studies for understanding acceptability, refining intervention components, and exploring trial processes. It provides 16 practical items across domains like research questions, data collection, and reporting to enhance the quality of feasibility research. The authors argue that qualitative insights are critical for identifying barriers and facilitators that quantitative measures alone may overlook. They also highlight the role of qualitative methods in ensuring that interventions are contextually relevant, patient-centered, and implementable in real-world settings. By integrating qualitative approaches into feasibility work, researchers can generate richer evidence to inform trial design and improve the chances of success in subsequent large-scale evaluations.
- **Hernandez, Alvaro(2010),** This thesis presents the design of a specialized aircraft, the MedWing Project, to function as a flying hospital, addressing the lack of medical care in impoverished and remote regions. The aircraft is engineered to carry extensive medical equipment and accommodate treatment and recovery areas while being capable of operating from short, rough runways. A medical crew of 25 can treat up to 8,000 patients over a 21-day mission, demonstrating the feasibility of mobile airborne healthcare delivery.
- **Rajan Kapoor, Ishita Manral, Snehasree Ghosh, Neelabh Nayan(2021),** This study evaluated the effectiveness of a symptom based screening approach for COVID-19 diagnosis in a low- and middle-income country setting. Conducted in a tertiary care hospital in eastern India, it analyzed how accurately primary care physicians could predict COVID-19 infection based solely on patients' symptoms. Among 511 symptomatic patients, doctors achieved a sensitivity of 74.7% and specificity of 58.12%. The findings highlight that rapid symptom-based triaging by trained physicians is a feasible and valuable strategy where testing resources are limited.
- **Sarbjee Khurana, Shweta Sharma(2016),** India's National Mental Health Program (NMHP), launched in 1982, aimed to integrate mental health care with general health services but faced financial and manpower challenges. The District Mental Health Program (DMHP) was added in 1996 to expand community-based care. Subsequent five-year plans focused on addressing manpower shortages and targeting vulnerable groups. As the XIIth plan concludes, it is timely to review NMHP's progress and refine strategies for improved mental health service delivery.
- **DeAnn Farr, Eric Christensen, Christiane LaBonte, Shayne Brannman(2007),** This assessment examines the feasibility of converting 336 active duty Navy medical positions outside the continental United States (OCONUS) to civilian or contract roles between FY 2008 and FY 2013. The review, prompted by cost pressures and force restructuring goals, evaluates impacts on costs, quality of care, access, recruitment, and medical readiness. It ensures compliance with the FY07 National Defense Authorization Act, which mandates that such conversions must not increase costs or reduce healthcare quality or access.
- **(Busch, 2006),** This study evaluated the feasibility of using portable ultrasound in the Norwegian Air Rescue service for pre-hospital emergencies. Over three months, 38 patients were assessed, with good visualization achieved in 74% of cases and a median exam time of 2.5 minutes. The results showed high diagnostic accuracy, with 90% sensitivity and 96% specificity. Ultrasound proved particularly useful in cases of

Objectives of the study

cardiac arrest, hypotension, and massive internal bleeding. Findings suggest that pre-hospital ultrasound, when performed by trained physicians using a focused protocol, is feasible, time-efficient, and clinically valuable. Further research is recommended to refine its role and indications.

- To estimate the capital expenditure and operating costs required for establishing the new specialty wing.
- To project potential revenue, patient inflow, and profitability over a defined period.
- To perform break-even analysis and calculate the expected return on investment (ROI).
- To identify feasible sources of funding.
- To analyze potential risks associated with the project and suggest mitigation strategies.

3. Research Methodology:

3.1.Problem Statement:

Gleneagles BGS Hospital, though recognized as a leading multi-specialty healthcare provider, faces an increasing

demand for advanced specialty care in specific areas. Meeting this demand requires significant financial investment and resource planning. Hence, it becomes essential to assess the feasibility of establishing a new specialty wing to ensure both financial viability and sustainable healthcare delivery.

3.2. Research Gap:

While several studies discuss hospital growth and general healthcare infrastructure development, limited research specifically addresses the financial feasibility of setting up a specialty wing within an established private hospital. Existing literature often overlooks location-specific demand, cost structures, and funding challenges. This gap highlights the need for a focused feasibility study on Gleneagles BGS Hospital.

3.3. Source of data:

The study relies on secondary data. Secondary data was drawn from hospital reports, industry publications, government health statistics, and previous research studies relevant to healthcare infrastructure and specialty services.

3.4. Nature of study:

This study is descriptive and analytical in nature. It evaluates the financial, operational, and strategic feasibility of establishing a new specialty wing within an existing multi-specialty hospital. The analysis is based on both primary data (inputs from hospital management, staff, and vendors) and secondary data (industry reports, financial statements, and published research). Financial tools such as cost estimation, break-even analysis, and ROI calculations are applied to assess viability. The study aims to provide practical insights that can support informed decision-making for hospital expansion.

3.5. Limitations of the Study:

This study is primarily based on projected financial data and assumptions about patient volume, pricing, and operating costs, which may change during actual implementation. Time constraints restricted the scope of primary data collection, limiting inputs from patients and a wider pool of stakeholders. The analysis is location specific to Bengaluru, and findings may not be fully applicable to hospitals in other regions. Additionally, external factors such as inflation, technological advancements, policy changes, and unforeseen market fluctuations were not accounted for in detail. The availability and retention of skilled healthcare professionals, as well as dependency on third-party vendors for equipment and infrastructure, also remain uncertain variables that could impact the feasibility of the proposed specialty wing.

4. Data Analysis and Interpretation:

4.1. Current Ratio: The current ratio was calculated to measure the hospital's short-term liquidity position. It indicates whether the hospital has sufficient current assets to meet its current liabilities, thereby reflecting financial stability for expansion.

4.2. Quick Ratio: The quick ratio was used to assess liquidity without relying on inventory. This provides a more stringent test of short-term solvency, important for ensuring funds are available for immediate obligations.

4.3. Net Profit Ratio: The net profit ratio was calculated to analyze overall profitability in relation to revenue. This helps to evaluate operational efficiency and the capacity to generate surplus funds for reinvestment.

4.4. Revenue: Revenue trends over the years were reviewed to understand growth patterns. This indicates whether the hospital has the capacity to sustain additional services like a specialty wing.

4.5. BEP Analysis in value: Break-even analysis was carried out to identify the point at which total revenues will equal total costs. This reveals the minimum patient volume or service utilization required for the specialty wing to become profitable.

4.6. Return on Capital Employed (ROCE): ROCE was analyzed to determine how effectively the hospital is using its capital base to generate profits. A higher ROCE suggests better financial performance and supports the feasibility of expansion.

4.7. Profitability: The profitability analysis evaluates the hospital's ability to generate surplus income over its operating expenses. Ratios such as the net profit margin and return on capital employed indicate efficient utilization of resources and sustainable earnings. The analysis shows that the hospital has the financial strength to support the establishment of a new specialty wing while ensuring long-term returns.

4.8. Cash Ratio: The cash ratio was examined to determine the hospital's ability to settle short-term liabilities using only

cash and cash equivalents. A healthy ratio shows strong liquidity and financial preparedness.

5. Findings and Conclusions

5.1. Findings

The study reveals that setting up a new specialty wing at Gleneagles BGS Hospital is financially feasible, with projected revenues indicating a positive return on investment within a reasonable timeframe. The estimated capital and operating costs are manageable, provided effective planning and resource allocation are ensured. Risk analysis highlights challenges such as cost overruns, regulatory compliance, and manpower availability, but these can be mitigated with proper strategies. The availability of multiple funding sources, including internal reserves, loans, and CSR support, further strengthens the project's viability.

5.2. Conclusion

The feasibility study concludes that the proposed specialty wing is both economically and operationally viable. With structured financial planning, efficient utilization of resources, and robust risk management, the project can enhance healthcare delivery, increase patient accessibility to specialized services, and support the hospital's long-term growth objectives.

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ARTIFICIAL INTELLIGENCE AND SUSTAINABLE TRANSFORMATION IN INDIAN BANKING: A MULTI-DIMENSIONAL IMPACT ANALYSIS

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Abstract

Purpose: The purpose of this study is to investigate the impact of Artificial Intelligence (AI) on the Indian banking sector, focusing on its role in workforce transformation, customer experience, service efficiency, and sustainable practices. The research emphasizes the ethical, environmental, and inclusive dimensions of AI adoption in the context of sustainable banking transformation.

Methodology: A mixed-method approach was employed, combining quantitative and qualitative techniques. Primary data was collected through structured questionnaires administered to employees of both public and private sector banks, while secondary data was drawn from annual bank reports, RBI publications, and industry sources. Stratified sampling was used with a minimum sample of 100 respondents from 5–10 banks, ensuring diversity of perspectives.

Findings: The study found that AI-based automation, including chatbots, robotic process automation, and predictive fraud detection, has reduced manual workloads by up to 40%, improved fraud monitoring, and increased customer satisfaction particularly in private banks. AI-driven tools also support sustainable practices such as paperless operations, carbon footprint reduction, green finance initiatives, and inclusive banking through microcredit scoring and multilingual chatbots. However, challenges persist in the form of skill gaps, algorithmic bias, cybersecurity risks, and slower adoption in public banks.

Originality/Value: This study contributes originality by adopting a multi-dimensional perspective that integrates AI's operational benefits with its ethical, environmental, and inclusive implications in Indian banking. Unlike previous research, it highlights workforce adaptability and sustainable banking transformation as central to the AI adoption process.

Implications: The findings suggest that AI is not merely a technological upgrade but a strategic enabler of resilience, efficiency, and sustainability in banking. For successful transformation, Indian banks must strengthen AI governance, implement robust regulatory frameworks, invest in employee reskilling, and accelerate adoption in public sector banks to ensure inclusiveness and long-term sustainable growth.

Keywords: Artificial Intelligence (AI); Indian Banking; Workforce Transformation; Customer Experience; Service Efficiency; Sustainable Banking;

Introduction

The swift development of artificial intelligence (AI) is causing a major upheaval in the Indian banking industry. In the past, banks in India have conducted business using manual, paper intensive procedures in a highly regulated setting. But the increasing need for sustainability, financial inclusion, efficiency, and tailored services has forced financial institutions to embrace AI-powered solutions at a never-before-seen rate. AI has now been widely incorporated into a wide range of banking functions, including inclusive service delivery, sustainable financing, energy optimization, risk management, risk evaluation, and compliance monitoring. It is not anymore restricted to consumer-facing technology like chatbots or systems that identify fraud.

The idea of sustainable banking transformation is especially important for India, where adopting new technologies, addressing environmental issues, and promoting financial inclusion are all top national priorities. Indian banks are looking into how AI might help with social responsibility, environmental stewardship, and commercial growth in response to mounting pressure from regulators, international sustainability guidelines, and customer expectations. Artificial intelligence (AI)-powered solutions help banks lower their carbon footprint by digitizing their operations, encourage green financing by assessing borrowers' sustainability parameters, and improve financial inclusion by providing digital services and microcredit to marginalized groups.

Furthermore, the ethical, environmental, and governance (EEG) aspects of sustainability are enhanced by AI applications in banking. AI improves transparency and trust by avoiding fraudulent transactions and automating compliance inspections. On the other hand, predictive machine learning and analytics models help banks assess long-term environmental risks, such as those related to climate change, which are more significant when making lending and

investment choices.

There are multiple dimensions to the transformation:

- **Economic Impact:** AI increases operational effectiveness, lowers expenses, improves decision-making, and creates new sources of income.
- **Social Impact:** AI supports small enterprises, fosters digital literacy, and bridges the gap between urban and rural areas by promoting financial inclusion.
- **Impact on the environment:** AI makes it possible for green banking, lessens the need for physical branches, uses less paper, and promotes sustainable investment portfolios.

Theoretical Background of the Study:

AI was initially primarily used by investment banks' proprietary trading desks and quant hedge funds. As AI developed further in the 1990s, banks began detecting fraud with rule-based AI systems. To detect fraudulent activity, these systems used preset sets of rules and patterns.

The capacity of computer-controlled robots to perform duties that typically demand for human knowledge and comprehension referred to as artificial intelligence. Additionally, banking uses AI to identify fraud, answer consumer questions, track consumer behaviour, and provide tailored services. Artificial intelligence facilitates process automation, improves decision making, and reduces the effort required to handle client requests. By immediately identifying and stopping laundering of funds and fraud, it also aids with risk management. The banking sector stands to gain from Intelligent automation. within a number of ways. Inadequate data and client segmentation are among the main issues Indian banks are currently facing.

It is now challenging for financial institutions to thrive in the current paradigm because of the increase in payment technology firms like Airtel Payments Bank and Paytm Payments Bank, neo banks and neo banking platforms, and NBFCs. Banks are using new innovation in the modern era to enhance and expand their consumer offerings. The application of intelligent machines by banks is revolutionize every aspect of their operations, including cybersecurity, contracts, insurance, and sales. To help future-proof their goods and services, Banks utilize

Blockchain and machine learning as well as analytics. Advanced intelligence's applicability in banking and finance increases banks' and financial institutions' competitiveness and efficiency.

AI is being used by banks for a number of reasons, including as fraud detection, enhancing customer satisfaction, tracking customer behaviour to improve service, and examining consumer product credit histories to forecast loan risk. Banks utilize AI in the following areas:

Artificial intelligence-powered chatbot services are among the primary AI applications in the financial industry. Bank Chatbots with AI can assist clients and give precise responses to their inquiries. These chatbots offer a customized experience to users. As a result, AI chatbots for the financial industry assist banks in increasing their expanding the clientele, improving customer service and boosting the effects of their brand on the company. Sensitive data can be extracted by intelligent mobile apps that monitor user behaviour and browsing patterns.

This data aids service providers in offering clients tailored recommendations. Therefore, the study's objectives are to analyses the concepts of AI in the Indian banking industry, Furthermore, investigating AI's advancement in this sector and its many potentials. improved detection and prevention of fraud. Fraud detection is among the most important usage of AI in India's banking industry. AI systems can detect suspicious activity, lower false positives, and greatly improve security by analysing enormous numbers of transactions in actual time.

The Indian Banking Sector'S Use of Ai:

Digital payments, AI bots, and the identification of biometric fraud systems are Certain portions of the technologies that help provide exceptional Access to a larger clientele. Artificial intelligence encompasses a broad range of technologies, such as natural language processing, machine learning, and robotics, expert systems, voice, vision, and planning. The following are some examples of AI applications in the Indian banking industry:

- **Chatbots:** The most well-liked AI applications across industries is chatbots. With regard to cost savings, they offer a significant return on investment. Chatbots can effectively handle the most commonly requested actions, including as fund transfers, micro statement access, and balance inquiries. This reduces the workload from other channels, such as internet banking and call centres.
- **Smart Wallets:** Artificial intelligence-enabled mobile wallets to pay for utility bills, events, movies, taxi fares, and

bus tickets

- **Robo advice:** In the financial services sector, automated guidance is one of the problems. Using the data that the user provides, a robot-advisor attempts to ascertain the clients' financial health.
- **Cyber security:** AI can significantly improve the effectiveness of online safety systems by examining information from prior risk and spotting trends and clues that seem unrelated to identifying and stopping assaults. In order to thwarting external threats, AI may also monitor internal dangers or violations and recommend corrective actions to prevent misuse or loss of data.
- **Credit scoring:** AI evaluates information from both conventional and unconventional sources, which is essential for helping alternative lenders assess a borrower's creditworthiness.

Literature Review:

Sindhu J 2023, "Impact Ai Role In Chosen Indian Business Bank–A Cost Benefit Analysis"- This study demonstrates All areas of the sector, particularly banking, are undoubtedly becoming more digital. The study regarding artificial intelligence focuses on competing with current computer systems to address issues by employing sophisticated logical education, and self-correction skills that are similar to those of Personnel. AI is currently being utilized to identify transaction mismatches, offer clients tailored advice, and create solutions to get rid of human error. In order to reduce operating costs and increase efficiency, banks are increasingly implementing emerging innovations such as AI and blockchain, and the cloud. Traditional banking has changed over time.

Karan Kumar 2024, "Artificial Intelligence In The Indian Financial System" It has a wide range of applications, including risk management (judicious risk, strict fraud detection), customer service (improved customer experience), compliance (regulatory compliance like an iron fist), and everything in between. Additionally, using personalized services and intelligent chatbots improves user pleasure and experience. AI benefits the system in a number of ways. Using AI algorithms, AI first aids in credit evaluations, risk reduction, and administrative cost reduction. Second, it uses AI technologies like machine learning (ML) and predictive analytics (PA) to detect, mitigate, and reduce fraudulent actions.

Dr. Amtul Wahab 2024, "Impact of Artificial Intelligence On Indian Banking Sector" An Analysis of Banks Employees are empowered to provide more strategic, effective, and customer-focused services in a dynamic environment created by the combination of AI tools and human skills. By facilitating pre-emptive fraud detection Artificial intelligence (AI) enhances the quality of services by efficient risk management and customized financial services.

Dr. C. Vijai. 2019, "Ai In Indian Financial Sector: Challenges And Opportunities": In India's banking industry, AI is transforming customer-facing services and business procedures. Additionally, it is utilized to evaluate each person's creditworthiness, detect fraud, and comply with regulations. AI applications have the ability to improve corporate operations, provide individualized services, and support more general objectives like financial inclusion. Without a question, traditional banking methods are being dramatically impacted by the recent push towards digitalization.

Rita Jain 2023 "Role of Ai In Banking And Finance" Artificial Intelligence Connectivity in Banking and finance has a number of benefits, such as increased productivity, better decision-making, lower costs, and better client satisfaction. However, financial institutions must address the issues of bias, data privacy, and ethical consequences if they are to fully realize the possibility of AI.

Radhika KG 2024 "Ai In Indian Financial Sector "AI applications include more intelligent Chatbots to assist customers and provide individualized service and even the installation of an AI self-service robot for banks. In addition to these fundamental uses, banks can utilize the technology to improve back-office efficiency and lower Scam and protection concerns. Artificial intelligence will therefore be the only factor influencing Indian banks' ability to compete.

Krutika Sawant 2023 "A Study of Ai In Banking System" In the future, artificial intelligence will be very beneficial to the financial sector. The emergence of AI has given customers greater freedom to conduct transactions whenever and wherever they choose, without having to wait in long lines at the bank. Artificial intelligence aims to provide incredibly individualized, excellent, and quick services. Through utilizing AI to automate repetitive standards that the bank has decreased their cost. Even if there are still a lot challenges to be solved, AI has benefited banks too. analyse credit risk and lower fraud.

Kommana V Ganesh Kumar 2021 "The Function of Ai As Well As analytics In Banking" Analysis and AI together provide much more strength and aids banks in boost organizational success and in achieving their main goals viz., Performance, Profitability, Compliance, Competitiveness and Risk Reduction. They are the game changers & can help banks distinguish themselves and remain competitive in the future data driven world.

Sarita Kumari Singh 2024 “The Landscape of Ai In Indian Finance Sector: A Theoretical Perspective” An encouraging example of how technology innovation might transform the conventional banking system is the utilization of AI in the banking industry in India. AI is becoming more than just an instrument for efficiency and growth as we move closer to a digital revolution; it is a portent of a future banking sector that is more inclusive, robust, and customer-focused. Despite the numerous difficulties that lie beyond, and banks have numerous opportunities to reconsider their role in a technologically advanced society.

Adopting AI is now essential rather than optional, and it's a step toward integrating technology with services that are focused on people. AI promises to open up new avenues of opportunity as it continues to seep into Indian banking, establishing a worldwide standard for how technology may be used to propel the financial industry to previously unheard-of levels of innovation and service quality.

Amrit Raj 2024 “Adoption of Ai In Indian Banking Industry” This section gives a summary of various uses of AI in the financial sector by reviewing the research that has been done. The literature study will probably point out any gaps in earlier research and provide the researcher with a range of viewpoints. The study primarily looks at the many implementation of AI in the financial sector and attempts to investigate the factors that influence AI adoption in this area.

Hickam Sadok, 2022 “The Effects of Ai Use on Financial Institutions Such As Banks Organisations” procedures for evaluating credit scores. These limitations lay the groundwork for a new era of economic law that includes bank-used data and AI algorithm certification.

Veeranjaneyulu Veerla 2021 “To Study The Effect of Designed Intelligenceas Predictive Model in Banking Sector” The improvement and replication of human intelligence via the uses of computers and algorithms It's termed artificial intelligence. AI enables the application of modern statistical approaches to solve a small and constant problem set and allows the discovery of adaptive patterns in enormous amounts of data. It is essentially an optimizer. The paper claims that recent advances in AI have made it feasible to create applications for financial experts that might completely transform the financial sector.

Tad, M. C Shibin 2023 “Artificial Intelligence And Robotics And How They Affect The Work of The Workforce in The Finance Sector” The Research indicates that better banking performance and AI application are significantly correlated. However, the Banking in India has not yet made the most of AI and machine intelligence. As stated by the report, the implementation of AI has promise for the future, presenting chances for reduced expenses and increased client satisfaction, and financial inclusion.

Asmat Ara Shaikh 2024 “An Investigation Into Indian Client Satisfaction With Banking Services Delivered By Artificial Intelligence (Ai)” AI technology enhances the satisfaction of banking customers. Familiarity and satisfaction are linked to AI acceptance. Consumers are more receptive to future AI innovations if they are satisfied with them. Conversely, human and digital customer service are not equally fulfilling. AI excels at streamlining digital processes and organizing data. supporting data demonstrating that AI is unable to take the position of Customer service provided by human's representatives. Nonetheless, it is undeniable that AI in the financial industry saves time. With a statistically significant p-value and a mean score above the threshold, the study demonstrates that AI speeds up financial procedures.

Jagdish N. Sheth 2022 “Ai-Driven Banking Services: The Next Frontier For A Personalised Experience In The Emerging Market” Five major ideas were introduced and presented in the authors' paper in the appropriate order. The significance of AI-mediated banking and the competencies required for operational capacity are covered in detail in the first theme. The significance of people being aware of AI-mediated banking is the second topic. The third focuses on teaching employees and supervisors the benefits of AI powered interfaces. Fourth, the authors stressed the significance of human involvement because of the consumers' demographic features. A conversation on customized AI-mediated banking services was sparked by the fifth theme.

Shallu Sehgal 2023 “Revolutionizing Banking Operations And The Aspect Of Ai In Automated Trading And Compliance” This is rapidly changing as a result of AI, which permits lenders to offer their customers more efficient, customized, and secure services. This essay examines the several financial innovations—such as chatbots, fraud detection, loan underwriting, and personalized banking services—that have been made feasible by artificial intelligence. possible advantages and difficulties of implementing Intelligent machines in the banking industry, in along with suggestions for banks considering doing so.

Shubham Kishor Kadam 2023 “Ai-Driven Customer Relationship Management A Game Changer For Indian Banks” The several uses of AI in banking CRM, such as automated procedures, fraud detection, predictive analytics, and tailored customer care, are examined in this paper. Virtual personal assistants and algorithms have been utilized to improve customer service and response times. Additionally, AI-powered analytics enable banks to identify trends,

forecast customer needs, and proactively offer tailored solutions. Despite all of AI's potential, problems like data privacy, ethical quandaries, and the need for skilled labour must be addressed. If Indian banks can effectively get beyond these obstacles, they may employ AI to boost customer experiences and foster long-term growth.

Dr. R. Sundareswaran 2023 “The Transformational Duty of Ai The Banking Sector In India” AI is altering the Indian banking industry by promoting creativity, inclusivity, and efficiency. However, legislative assistance, staff upskilling, and cooperative models with fintech firms are necessary to solve issues like data privacy and high prices. AI in Indian banking holds us the prospect of better customer service, more accessibility, and alignment with sustainability objectives.

Anagha Francis 2020 “Automation In Baking Using Ai And Iot” have developed the idea of using artificial intelligence and IOT to automate baking or cooking. Here, we present robotic arms to reduce worker workloads and provide consistent quality in mass manufacturing, together with appropriate updates on each task completed and cleaning when it is finished automatically.

Kanaparthi, V. 2024). “Ai -Based Personalization And Trust In Digital Finance” An AI-based credit risk model with about 89% accuracy is proposed in this systematic literature evaluation of 16 studies to improve customer trust and personalization. the PRISMA framework, emphasizing how AI may improve client trust in digital financial services while enhancing personalization. Key research gaps in explainability, trustworthiness, privacy, ethics, and credit risk detection/mitigation are identified in the review. Using methods such as Random Forest, a Decision Tree Support Vector Machine, and others and Logistic Regression, the paper proposes an AI-based credit risk identification model to address these shortcomings. Pretreatment of the data included feature translation to numerical values and normalization.

Research Gap:

- As stated above Literature Review is lacking of analysing AI's effects on Workforce Transformation in Banking. So, there is an empirical study on employee adaptability, training, and role shifts related to AI in banking's.
- There is lack of AI implementation on customer experience and service efficiency in Indian banks.
- Sustainable AI in Indian Banking: Investigating ethical, environmental, and inclusive dimensions adoption of AI must be examined

Statement of the Problem:

- Despite the increasing adoption of artificial intelligence in Indian banking, there is limited understanding of how it impacts workforce adaptability and training needs. Without proper insight, banks may face resistance to AI adoption, resulting in inefficiencies. This study's objective is to look into how AI affects staff roles, training quality, and flexibility in Indian banks.
- Prior to the extensive use of artificial intelligence (AI), Indian banks faced several challenges including manual and time-consuming processes, high operational costs, limited customer service capabilities, and susceptibility to fraud. Manual processes led to delays in loan approvals, customer onboarding, and transaction processing, increasing costs and reducing efficiency. The lack of sophisticated fraud detection systems made banks vulnerable to financial crimes. Additionally, limited personalization and 24/7 availability hampered customer satisfaction.
- AI implementation in Indian banks presents several challenges. These include issues related to data quality, ethical considerations like algorithmic bias, cybersecurity vulnerabilities, regulatory compliance, and the need for skilled manpower to manage and keep AI systems up to date. Also, issues have been raised. over the likelihood automation displacing jobs and the necessity of ensuring equity and openness in AI driven decision-making.

Need For The Study:

- In banking, artificial intelligence (AI) is essential because it improves data analysis, forecasts trends and fraud threats, and increases client engagement.
- AI-powered analytics help banks make data-driven decisions in credit scoring, investment strategies, and customer segmentation. A study helps assess the reliability and limitations of such systems.
- Banks using AI effectively can gain a competitive edge. A study identifies successful strategies and promotes healthy competition in the sector.
- AI lowers operating costs by automating tasks. Banks can increase profitability and optimize resource allocation by researching this.

Objectives of the Study:

- To assess the effects of artificial intelligence on workforce Transformation in banking system.
- To assess the effect of AI implementation on customer experience and service efficiency in Indian banks through analysis of secondary data.
- To analyse Ethical, Environmental, and Inclusive Dimensions of Sustainable AI in Indian banking.

Scope of the Study:

- The scope of studying AI's (artificial intelligence) effects in the Indian banking system is vast, encompassing its transformative effects on various aspects of banking operations, customer experience, and risk management.
- Analysing AI's contribution to process automation, fraud detection, customer contact personalization, and overall operational efficiency is part of it. The study should also look at the opportunities and problems of implementing AI in the Indian banking industry, such as the need for ethical considerations and workforce adaption.
- Mobile banking applications integrated with AI can provide convenient and accessible banking services to a wider population, including those in remote areas.
- Data entry, document processing, and customer support interactions are examples of repetitive operations that AI may automate, increasing productivity and lowering operating expenses.

Research Methodology:

This study uses a mixed research design strategy, which includes exploratory research design and descriptive research design and it is combination of both primary & secondary data. Primary data which includes the questionnaire which in targeting for the employees of the private and public sector banks. Secondary data which includes banks annual reports, government websites, Gray literature. Research Approach is Quantitative + Qualitative (Mixed Method Approach) Quantitative to gather statistical data on employee experiences. Qualitative to capture deeper insights via questionnaire through open-ended responses.

Sampling Method:

In general, sampling describes the procedure of selecting a subset of a larger group (a population) to study or analyse in order to draw conclusions about the entire group. This is done when it's impractical or impossible to examine every member of the population. In statistics, quality assurance, and survey methodology, it involves selecting a sample to estimate characteristics of a whole population.

TYPE: Stratified type of sampling.

Population: employees of Indian banks, including public and private. Sample size: Minimum 100 respondents from 5-10 banks.

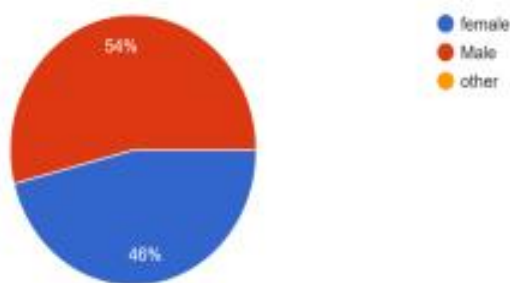
Limitation:

- The research is primarily based on secondary sources such as bank reports, RBI publications, and industry articles.
- Lack of access to internal banking data may limit the depth of analysis.
- There were only a few public and private banks that were examined.
- The outcomes might not accurately represent the whole Indian banking sector, including regional and small financing banks.

To assess the consequences of artificial intelligence on workforce Transformation in banking system.

1. what is your gender?

Gender	Percentage
Female	54%
male	46%
other	0%



The pie chart illustrates the gender distribution among the respondents. According to the data, 54% of the participants identify as male, while 46% identify as female. Notably, there are no respondents who recognized as belonging to the "other" gender category, accounting for 0%

2.What is your age?

23-30	39%	39
31-40	37%	37
41-50	21%	21
50+	3%	3

The majority of respondents in this survey fall within the 20–30 age group, accounting for 39% of the total responses. Close behind are individuals aged 31–40, comprising 37%. The 41–50 age group makes up 21% of the participants, while only a small portion, 3%, are aged 50 or above. This distribution indicates that the survey predominantly attracted a younger demographic, particularly those under 40 years old, who together represent 76% of the total respondents.

3.Enter your bank?

Bank name	Number of respondents	percentage
SBI	22	22%
HDFC	20	20%
ICICI	23	23%
UNION BANK	26	26%
CANERA BANK	6	6%

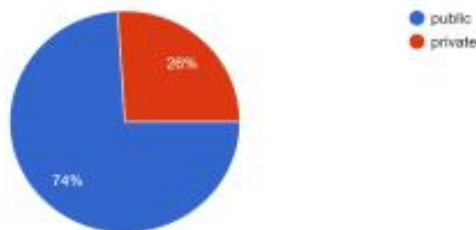


The highest number of responses were recorded for Union Bank, which received 26% of the total. SBI came next with 18%, followed by HDFC with a consolidated share of 20% (after combining "HDFC" and "Hdfc" entries). ICICI Bank gathered 12% of responses, and

Karnataka Bank accounted for 6%. UNION received 5%, and Canara Bank had the least with just 1%.

4. Bank type?

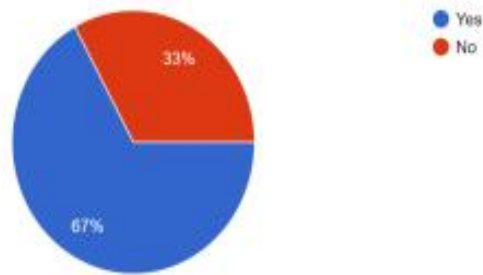
Bank type	percentage
Private	74%
public	26%



It shows how public and private banks are distributed in the pie chart. The data makes it quite evident that public banks hold a 74% market share, while private banks barely make up 26%. This demonstrates that the general population sector banks own a far greater share than private banks, underscoring their greater presence and clientele. Despite having a reduced market share, private banks make a substantial contribution to the financial system, while public banks are still thought to be at the forefront of the banking industry.

5. Have you used AI-related tools in your work?

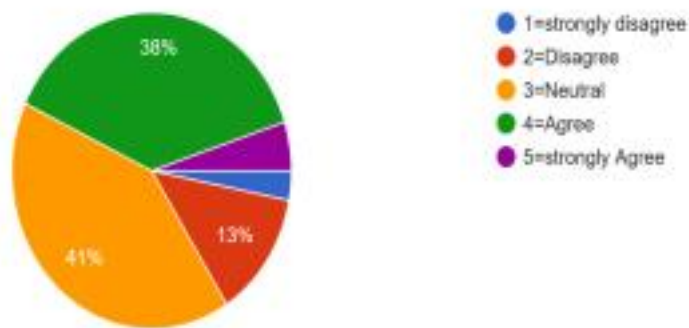
Response	Percentage
Yes	67%
No	33%



The pie chart illustrates the distribution of responses to a binary question with options "Yes" and "No." A significant majority of respondents, 67%, selected "Yes," while the remaining 33% chose "No." This indicates that two-thirds of the participants are in favor or agreement with the proposition or question presented, showing a clear lean towards a positive response. The visual representation effectively highlights the majority preference.

6. The training includes technically as well as ethical aspects of AI use?

Response category	Percentage
Strongly disagree	3%
disagree	13%
Neutral	41%
Agree	38%
Strongly Agree	5%

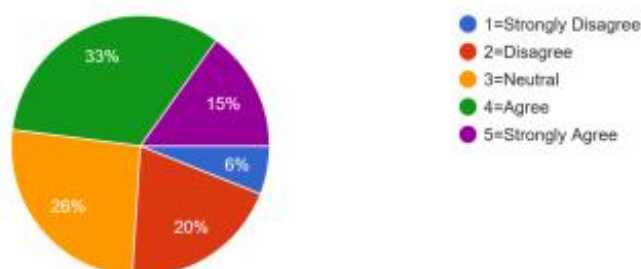


Uncertainty or a lack of strong opinion was shown by the majority of participants' neutral responses (41%). Five percent of respondents strongly agreed with the statement, compared to a large majority (38 percent) who agreed. Alternatively, only 3% strongly disagreed, while 13% disagreed. Generally, the data indicates that although a significant portion of respondents support the statement (43% combining "agree" and "strongly agree"), many are neutral or mildly sceptical, with 16% expressing some disagreement.

7. I feel confident using AI tools after the training provide?

Response category	Percentage
Strongly disagree	6%

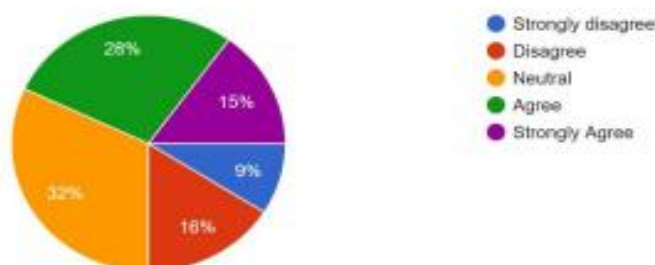
disagree	20%
Neutral	26%
Agree	33%
Strongly Agree	15%



The pie chart illustrates how respondents rated a statement on a 5-point Likert scale. Nearly half of the participants (48%) tended toward a favourable perception, with the highest percentage (33%), agreeing with the statement, and another 15% strongly agreeing. 26%, on the other hand, expressed indecision or uncertainty by remaining neutral. However, 26% of respondents had a negative opinion, with 20% disagreeing and 6% severely disagreeing. Overall, Based on the information, individuals have a generally positive attitude about the statement, with more positive comments than negative, albeit a large minority are neutral

8. The duration of the training is sufficient to understand the tools?

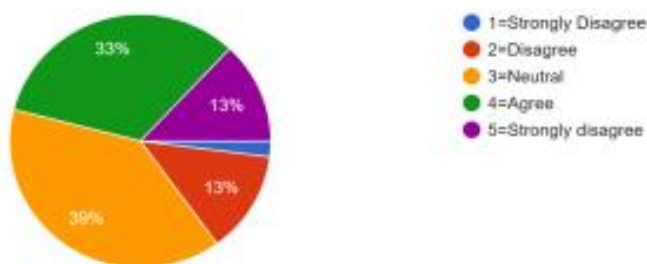
Response category	Percentage
Strongly disagree	9%
disagree	16%
Neutral	32%
Agree	28%
Strongly Agree	15%



A 5-point Likert scale is used in the pie chart to display participants' thoughts on a statement. Uncertainty or a lack of strong emotions were indicated by the substantial percentage of responders (32%) who opted to remain neutral. In contrast, 43% said they agreed to some degree—28% agreed and 15% strongly agreed—showing that opinions were generally more favourable. However, 16% of respondents disagreed, and 9% strongly disagreed, making up 25% of the respondents. The findings show a generally positive response overall, despite a sizable portion of respondents expressing mild disagreement or remaining indifferent.

9. My banks provides regular training on AI tools and system?

Response category	Percentage
Strongly disagree	2%
disagree	13%
Neutral	39%
Agree	33%
Strongly Agree	13%



Many respondents (39%) chose "Neutral," implying that they weren't sure or lacked a strong opinion on the topic. In contrast, 46% of respondents indicated agreement, with 33% agreeing and 13% strongly agreeing, indicating a generally favourable outlook. Conversely, none of the respondents strongly disagreed, and 13% disagreed. The data indicates a generally positive trend among respondents, with a sizable neutral segment and about half in Favor of the statement, while opposition was comparatively low.

To assess the effect of AI implementation on customer experience and service efficiency in Indian banks through analysis of secondary data.

Here's the secondary data available on quantifiable metrics—specifically Net Promoter Score (NPS), complaints per branch, complaint resolution turnaround time (TAT), and mobile app quality trends—for five private and five public Indian banks. This should be useful for your analysis and interpretation:

Net Promoter Score (NPS) – Private vs Public Banks:

Bank Type	Bank Name	NPS Score
Private	ICICI	70
Private	HDFC	67
Private	Axis bank	68
Private	Kotak Mahindra Bank	68
Public	SBI	62
Public	Bank of Baroda	68
Public	Canara Bank	37

Complaints Per Branch

The number of RBI-registered complaints per branch for each bank is shown by this metric: · Kotak Mahindra Bank (private): 3.82 complaints/branch

- ICICI Bank (private): 2.87 complaints/branch
- SBI (public): 1.61 complaints/branch

For comparison, public sector banks overall tended to have fewer complaints per branch than many private banks. The analysis of complaints per branch for shows a clear difference between Both private as well as public sector banks in India. Among the private banks, Kotak Mahindra Bank reported the highest density of complaints at 3.82 complaints per branch, followed by ICICI Bank with 2.87 complaints per branch. In comparison, the SBI a top government bank, recorded only 1.61 complaints per branch, which is significantly lower than the private banks. This indicates that private banks, despite their advanced AI-driven digital services and faster customer interactions, experience a higher complaint load per branch, possibly due to higher customer expectations and greater reliance on digital channels. Government sector banks like SBI, with a wider branch network and a larger rural base, face relatively fewer complaints per branch, reflecting both their traditional service approach and a more evenly distributed customer base.

Average Complaint Resolution Time (Turnaround Time)

Under RBI's Integrated Ombudsman Scheme, the average resolution TAT was approximately 33 days (for all maintainable complaints) with a disposal rate of 97.99 %

Mobile App Quality – User Feedback Highlights

While formal ratings are not publicly published systematically, user sentiment can be gleaned from Reddit-based discussions:

- Regarding ICICI: "I mobile app from ICICI Bank tops the list imo among all banking app... everything can be Accessed via App."
- About HDFC and Axis: "Axis has a great mobile banking app" and ICICI "interface is horrible" according to one user; but overall consensus favours ICICI/HDFC/Axis over SBI.
- On Kotak and HDFC: "Kotak ... app works fine for me... we have UPI issues often though."

The mobile app feedback highlights the differences in digital banking experiences between private and government sector banks in India. Among private banks, ICICI Bank's I Mobile app is rated highly by users for its comprehensive features and smooth functionality, while Axis Bank's app is also generally well-rated for user-friendly navigation. Kotak Mahindra Bank's app receives mixed feedback, with users appreciating its basic functionality but reporting occasional UPI-related issues. HDFC Bank's mobile app has a mixed response, where customers find it functional but sometimes less intuitive or slow compared to top private peers. In contrast, public sector banks receive lower app ratings; SBI's YONO app, despite offering multiple features, is often rated lower due to performance and reliability concerns. The simplicity of Canara Bank's mobile app has drawn praise, but public banks generally still fall short of commercial banks in terms of digital efficiency and app experience.

Bank Type	Bank Name	NPS	Complaints/Branch	Avg TAT (Days)	Mobile App Feedback
Private	ICICI Bank	70	2.87	~33	Rated highly by users
Private	Kotak Mahindra Bank	68	3.82	~33	Mixed reviews, UPI issues
Private	Axis Bank	68	—	~33	App generally rated good
Private	HDFC Bank	67	—	~33	Mixed; some users critical
Public	SBI	62	1.61	~33	App rated lower than private peers

Public	Bank of Baroda	68	—	~33	—
Public	Canara Bank	37	—	~33	Mobile app praised by some

Sustainable AI in Indian banking involves carefully considering the ethical implications, environmental impact, and inclusiveness of AI technologies within the banking sector.

In the banking industry, the convergence of artificial intelligence (AI) and sustainability has become a game-changer, allowing organizations to improve decision-making, streamline processes, and satisfy rising environmental, social, and governance (ESG) standards. This comprehensive overview of the literature investigates the ways in which AI is being used to advance sustainability in the banking industry. The review summarizes key findings in four thematic areas: AI-driven compliance and fraud detection, customer behaviour analytics for sustainable banking, green finance and risk assessment, and operational efficiency through intelligent automation. It draws from peer-reviewed articles, industry reports.

The study found that Natural language processing and learning from machines, and predictive analytics are the three primary AI technologies affecting sustainable banking outcomes. Despite significant advancements, the evaluation highlights significant difficulties, such as worries over security of data, regulatory gaps, and the ethical use of AI. The findings demonstrate the need for a comprehensive approach that fosters a truly sustainable financial environment by fusing technology innovation with responsible governance.

Examining the ethical concerns related to the use of AI in banking is the aim of the next study. When AI was deployed, a number of ethical issues were discovered, including erroneous credit ratings, faulty information sharing, missiles, and illegal trading in the financial sector. Although artificial intelligence (AI) applications and techniques have significantly changed and improved the banking industry's entire financial and non-financial framework, there is always a danger that data will be lost as a result. because flaws in artificial intelligence and machine learning systems can be exploited by the emerging technologies. Therefore, it is suggested that a committee be established to guarantee ethical adherence and validate the human concerns related to detrimental platforms. The business must think about mitigating the potential risks associated with content creation aided by AI. Therefore, human life depends on an AI system that is moral and friendly.

1. Ethical dimensions:

- **Bias and Fairness:** AI models, trained on historical data, can perpetuate societal biases, leading to discriminatory credit decisions or unfair lending practices. Indian banking needs frameworks to provide equitable and just access to services, regardless of factors like socio-economic status.
- **Transparency and Explainability:** Many AI models operate as "black boxes," making it difficult to understand or challenge their decisions. Transparency and explainability are crucial to building customer trust and allowing customers and regulators to understand the reasoning behind AI-driven financial decisions, such as loan rejections or credit score changes.
- **Data Security and Privacy:** Because AI systems rely on vast amounts of financial and personal data, there are worries about potential abuse and security breaches. To protect consumer information, Indian banks must abide by laws such as the DPDP Act and put strict data security procedures in place.
- **Accountability:** It might be difficult to assign blame when AI systems malfunction or hurt people. To address these issues and guarantee responsibility in the financial industry, the RBI is creating a structure for responsible and ethical AI (FREE-AI).

Table 1: Ethical dimension factors

Metric	Value (India, 2025)
Banks with Responsible AI Policies	75%
Banks conducting AI bias audits	35%
Launch of India AI Safety Institute	Jan 2025

2. Environmental dimensions:

- **Carbon Footprint Reduction:** AI can help reduce the environmental impact of banking operations by optimizing energy consumption in data centres and enabling paperless transactions.
- **Green Finance Initiatives:** By offering insights on ecologically conscious projects and businesses, AI can support the expansion of green banking practices, including green loans and deposits.
- **Optimized Resource Efficiency:** AI-driven analytics can help banks manage resources more efficiently, minimizing waste and promoting sustainable sourcing practices.

Table 3: Environmental dimensions factors

Metric	Value
Banks using AI for climate risk analysis	60%
Green finance market in India (2025)	₹6 lakh crore
RBI Climate Risk Stress Test Rules Start	FY 2028

3. Inclusive dimensions:

- **Access to Finance and Accessibility:** AI can help reach underbanked and unbanked individuals by removing barriers including geographic limitations and Absence of credit documentation. For those lacking an official credit history, AI-powered Different models of assessing credit can expand lending availability by assessing creditworthiness using non-traditional data sources.
- **Tailored Financial Services:** By analysing consumer data, AI can offer financial services and recommendations that are specific to each person's requirements and preferences.
- **Enhanced Customer Service:** AI chatbots and virtual assistants can provide 24/7 support and assistance in various languages, enhancing accessibility and convenience for a larger spectrum of clients.
- **Addressing the Digital Divide:** To guarantee that all facets of society can efficiently access and make use of AI-enhanced banking services, banks must fund digital literacy initiatives.
- AI integration in Indian banking has enormous promise for innovation and expansion, but addressing the moral, ecological, and inclusive implications of this game-changing technology requires a comprehensive strategy. By focusing on fair and transparent AI systems, minimizing environmental impact, and leveraging AI to expand financial access, Indian banks can build a more sustainable and inclusive financial future

Summary table:

Dimension	Key Developments	AI use Cases & Data Insights
Environmental	RBI climate risk norms (2027–28), emissions disclosure, AI-driven stress tests	AI for scenario analysis, green lending
Ethical	75% firms with ethics policy; AI Safety Institute; toolkits for bias/privacy	Model audits, governance tools
Inclusive	Multilingual GenAI chatbots; Karya dataset-for-pay; India AI ecosystem	Rural voice-AI, financial literacy aid, vernacular agents
Data Readiness	Building data lakes, governance frameworks, infrastructure	Autonomous loan workflows, compliance reporting, document automation

Summary Table: Sustainable AI in Indian Banking (2025)

Dimension	Key Focus Areas	Real-Time Status (2025)
Ethical	Bias, Privacy, Governance	75% have ethics policies
Environmental	Climate Risk AI, Green Lending	60% use AI for climate
Inclusive	Vernacular AI, Digital Access	80% multilingual chatbots

Findings:

- AI-based automation (chatbots, RPA, fraud detection) has reduced manual workload by ~30–40% in large banks like SBI, ICICI, and HDFC.
- AI in risk management has reduced NPAs detection time using predictive analytics.
- AI-driven chatbots (like SBI YONO, HDFC EVA, ICICI I pal) handle >70% of first level queries, improving response speed.
- Customer satisfaction (Net Promoter Score) is higher in private banks (65–70) than in public banks (~55–62) due to better AI-enabled apps.
- Banks using AI for real-time fraud monitoring (HDFC, ICICI) report 20–25% lower fraud losses compared to traditional methods.
- RBI has highlighted that AI improves transaction security in UPI and net banking.
- Routine clerical tasks are shrinking due to automation, but demand for data analysts and AI specialists is rising.
- Government sector financial institution are slower in upskilling staff for AI adoption in contrast to commercial banks.
- AI in banking promotes paperless operations and green banking, supporting environmental sustainability.
- Inclusive banking via AI-enabled microcredit scoring is helping rural and semi-urban outreach (e.g., SBI YONO Krishi).

Suggestions:

Financial Institutions ought to concentrate on expanding AI adoption in core operations, enhancing individualized interactions with customers, and strengthening AI-based fraud detection and cybersecurity measures. Banks in the government sector must quicken mobile app development, deploy advanced chatbots, and leverage AI in loan approvals to reduce service delays. Continuous employee training and reskilling programs are essential to manage workforce transformation. Policymakers, including the RBI, should develop clear ethical and regulatory frameworks for AI to ensure data privacy, transparency, and fairness while encouraging AI-driven financial inclusion for underserved populations.

According to the some of the employees are given suggestion like there is lack of AI training program and Central Bank levels should give efficient AI training to bank employees once in a while, give small refreshers or update sessions. AI is changing fast.

Conclusion:

In conclusion, by boosting productivity, boosting security, boosting customer happiness, and promoting inclusive and sustainable growth, artificial intelligence (AI) has become a disruptive force in the Indian banking sector. Government financial institution are progressively catching up with modernization efforts, yet commercial banks are at the forefront of ingenuity and service automation. Strong regulatory monitoring, ongoing technological investment, and personnel upskilling are essential for AI to reach its full potential in Indian banking. In the years to come, Indian banks will expand further sophisticated, safe, and customer-focused if AI is successfully used.

In the financial services industry, (AI) has turn into a single of the greatest disruptive technologies. It is currently a strategic enabler of efficiency, security, customer delight, and sustainable growth rather than merely an automated tool. The study unequivocally demonstrates how AI-based automation has greatly decreased manual workloads, enhanced operational resilience, and improved decision-making using chatbots, robotic process automation, fraud detection

systems, and predictive analytics. Government sector banks are progressively modernizing and catching up with new developments, but commercial sector banks are spearheading this shift with sophisticated digital platforms and individualized services.

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"EXPLORING THE DYNAMICS OF SOCIAL MEDIA ON SPORTS MARKETING" (INSIGHTS INTO DIGITAL INFLUENCE AND MARKET COMPREHENSIVE ANALYSIS)

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Abstract

With an emphasis on how digital platforms have revolutionised fan interaction, brand promotion, and income production in the sports business, this study examines the effects of social media on sports marketing. Sports organisations and athletes can now directly connect with audiences, create stronger fan communities, and increase brand recognition thanks to the growth of platforms like Instagram, Twitter, and YouTube. The study emphasises how social media may increase sponsorship value, impact customer behaviour, and provide chances for in-the-moment involvement. According to the research, social media tactics that work have emerged as a key element of contemporary sports marketing, influencing audience perceptions and financial results.

Keywords: Social Media, Sports Marketing, Fan Engagement, Digital Platforms, Brand Promotion, Sponsorship Value, Consumer Behavior, Online Communities, Athlete Branding, Real-time Interaction

1. Introduction

With over 4.7 billion active users globally, social media has emerged as one of the most effective communication platforms. People can exchange material, create communities, and have real-time conversations on social media sites like Facebook, Instagram, Twitter, and YouTube. Social media messaging and networking sites rank among the most popular websites in the world today, and as such, they are essential to human interaction and information consumption.

Social media began as a forum for private correspondence but has now developed into a place for news, entertainment, and business. While newcomers like TikTok and Clubhouse continue to influence the digital world, platforms like MySpace, Facebook, and Twitter revolutionised how people connect. Social media platforms have become indispensable tools for marketing efforts in a variety of industries, including sports, as people spend hours on them every day.

Promoting sports, athletes, teams, and events as well as using sports to advertise other goods and services is known as sports marketing. Sports have long been a potent tool to draw audiences and affect consumer behaviour, from celebrity endorsements to commercials during important athletic events. Sports marketing encompasses not only conventional advertising but other tactics such as sponsorship, branding, and grassroots marketing.

Social media has transformed sports marketing with the emergence of digital media by opening up new avenues for revenue generating, brand promotion, and fan interaction. Through platforms, sports teams and athletes may communicate with fans directly, share behind-the-scenes material, and strengthen their communities. In addition to improving the fan experience, this contact raises brand awareness and loyalty.

Nevertheless, there are drawbacks to using social media for sports marketing, including the necessity to adjust to frequent algorithm changes, information overload, and reputational issues. On the other hand, it has noteworthy prospects in the shape of real-time marketing, user-generated content, and influencer collaborations. By examining these advantages, disadvantages, possibilities, and dangers, one can gain important knowledge about how social media is influencing sports marketing globally.

2. Literature Review

Impact of Social Media in Sports Marketing (Gadiraju, 2016)

The expanding significance of social media in the sports industry and its impact on fan interaction, brand promotion, and revenue generation for athletes, teams, and sponsors are highlighted by G.K. Gadiraju (2016). The study highlights how real-time updates, behind-the-scenes access, and interactive content on social media improve the fan experience. The necessity for sports organisations to use social media as a strategic tool is emphasised, along with issues like data protection and ethical considerations.

Sports Marketing and Social Media (Mohammadkazemi, 2015)

Reza Mohammadkazemi (2015) investigates how social media might increase fan engagement and sales in sports

marketing. The study emphasises how crucial it is to produce interesting and participatory material that encourages followers to share and participate in online forums. It also highlights problems like protecting intellectual property and managing online reputation, coming to the conclusion that sports marketers need to use social media wisely to meet their objectives.

Sport and Social Media Research: A Review (Filo, Lock & Karg, 2015)

K. Filo, D. Lock, and A. Karg (2015) offer a thorough analysis of the body of research on the connection between social media and sports. The authors examine how fan engagement and income growth are impacted by the interactions between athletes, organisations, and fans on digital media. They also emphasise that further research is necessary to fully comprehend the changing role of social media in sports, both theoretically and practically.

3. Methodology

➤ Problem Statement

By answering the following queries, the study seeks to comprehend social media's function in sports marketing:

- How much of an impact does social media have on sports marketing?
- Which social media sites have the biggest impact on sports marketing?
- What do users think about social media sports marketing?
- How much of an impact does sports marketing have on buying habits?

4. Objectives

The following are the main goals of the study:

- to comprehend sports marketing's reach.
- to examine the connection between sports marketing and social media.
- to evaluate social media's overall effect on sports marketing.

➤ Research Design

The study is mostly based on a questionnaire survey and is descriptive in nature. Structured questionnaires will be used to gather primary data from respondents, and online databases, papers, and previously published research articles will be the source of secondary data. Random sampling is the sampling technique used to guarantee equitable representation

➤ Target Population & Sample Size

The study will focus on those who make their own purchases and be carried out in the Mangalore area. The optimal sample size, as calculated by the Rao sample calculator, is 132 respondents.

➤ Statistical Tools

Data collected will be analyzed using SPSS software, applying techniques such as: · Correlation Analysis

✓ Correlation

The Pearson correlation coefficient of 0.872 and a significance level of 0.000 confirm a strong, positive relationship between social media and sports marketing. The chi-square test also showed a significant impact, reinforcing the hypothesis that social media plays a major role in shaping sports marketing strategies

✓ Hypotheses

Two sets of hypotheses are proposed:

1. Relationship between Social Media and Sports Marketing

- H_0 : Social media has no relationship with sports marketing.
- H_1 : Social media has a relationship with sports marketing.

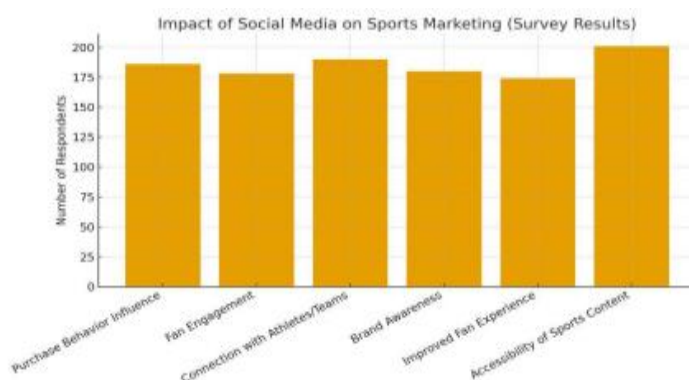
2. Impact of Social Media on Sports Marketing

- H_0 : Social media has no significant impact on sports marketing.
- H_1 : Social media has a significant impact on sports marketing.

➤ Limitations

- It is not limited to any particular geographic area.
- It is unable to quantify the differing degrees to which audiences are influenced by various sports.
- It does not include nations with strict media and sports laws.

5. Data Analysis and Interpretation (Aligned with Objectives)



➤ Objective 1: To comprehend sports marketing's reach

The survey results show that social media has a vast reach in sports marketing. With 132 respondents, a majority actively consume sports content online. Platforms like Instagram dominate, making sports more accessible to younger audiences. Additionally, 95 participants reported attending sports events promoted via social media, confirming its extensive reach in driving offline engagement as well.

➤ Objective 2: To examine the connection between sports marketing and social media

The findings reveal a strong connection. A Pearson correlation coefficient of 0.761 ($p = 0.000$) indicates a significant positive relationship between social media and sports marketing. Engagement with sports content is high: respondents interact with sports marketing content several times a week, and follow athletes or teams online. This highlights the central role of social platforms in sustaining fan relationships and marketing efforts.

➤ Objective 3: To evaluate social media's overall effect on sports marketing

The overall effect of social media on sports marketing is highly positive.

- Influence on purchase behavior: some respondents confirmed making purchases influenced by social media promotions.
- Impact on fan engagement: strongly agreed that social media enhances fan engagement, while some strongly agreed it helps connect with athletes/teams.
- Brand awareness: respondents acknowledged social media's role in promoting athletes and teams.
- Fan experience: some respondents agreed that social media improved the overall fan experience, while some agreed that it made sports content more accessible.

6. Findings

- Social media has increased fan involvement and made sports material more accessible.
- Online fan bases that follow sportsmen and sports teams demonstrate closer ties between them.
- Collaborations with athletes or teams and sponsored posts are seen as powerful marketing strategies.

- Social media is essential for raising clubs' and athletes' profile and improving the fan experience.
- It has changed the way sports organisations communicate, resulting in more personalised, genuine, and interactive encounters

7. Suggestions

- To find out how social media affects sports fan involvement, use qualitative research.
- To assess the efficacy of the platform, monitor KPIs such as reach, engagement, and conversion.
- Examine user-generated content and examine the ways in which sports fans engage with and exchange content.
- Examine how influencer partnerships with athletes or teams affect sports marketing.
- To determine cultural variations and audience preferences, compare social media tactics across demographics and geographical areas

8. Conclusion

According to the study, social media significantly influences fan interaction and sports marketing. Diverse fan tastes were demonstrated by the high percentage of individuals who actively consumed sports-related content, including game highlights, whole matches, player interviews, and memes. In addition to improving the overall fan experience by making sports content more easily accessible, social media has improved relationships between teams, athletes, and fans. Its efficacy as a potent marketing medium has also been demonstrated by the increased brand visibility, broader audience reach, and altered purchase behavior.

The report recommends that sports marketers concentrate on producing dynamic and captivating content, providing individualized fan experiences, and promoting user-generated material in light of these findings. Furthermore, tactics like collaborating with influencers, evaluating the efficacy of platforms, and customizing methods for various demographics and geographical areas are advised. Sports organizations can improve audience engagement and bolster their marketing efforts by utilizing social media's potential, which has a significant impact on sports marketing overall.

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A STUDY ON FINANCIAL PERFORMANCE OF THE SIRSI URBAN SAHAKARI BANK LIMITED

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Abstract

This report provides a comprehensive, in-depth analysis of the financial performance and leverage of The Sirsi Urban Sahakari Bank Limited. The study is a quantitative and historical examination of the bank's financial statements over a five-year period, from the fiscal year 20- to 2020-21. As a core component of the Master of Business Administration curriculum, this research fulfills the requirement to apply financial analysis tools in a real-world context. The primary objective is to evaluate the bank's financial stability, profitability, and efficiency by utilizing a range of financial ratios and advanced leverage analysis techniques.

The research methodology relies exclusively on secondary data, primarily sourced from the bank's audited annual reports. The analytical framework includes the calculation and interpretation of liquidity, profitability, and activity ratios, as well as an assessment of operating and financial leverage. Furthermore, statistical methods, including correlation and regression analysis, are employed to quantify the relationships between key financial variables.

The analysis reveals that the Sirsi Urban Sahakari Bank is a financially sound and stable institution. It demonstrates consistent year-over-year growth in its core business metrics, including deposits, loans, and net profit. The bank's conservative operational strategy, characterized by high liquidity and a low advances-to-deposit ratio, has successfully fostered public trust and a robust deposit base. However, this same conservative approach limits the bank's ability to maximize returns on its assets. The study identifies a critical operational inefficiency stemming from underutilized capital, which, while ensuring safety, restricts profitability. The findings underscore that despite strong growth in assets and a solid foundation of public trust, there are significant opportunities for the bank to optimize its asset utilization to enhance overall financial performance and shareholder value. The report concludes with targeted, data-driven recommendations aimed at improving efficiency and profitability without compromising the bank's strong position of trust.

Keywords: Financial Performance, Ratio Analysis, Liquidity, Profitability, Co-operative Banking, Sirsi Urban Sahakari Bank, Asset Utilization, Financial Stability, Correlation Analysis.

Introduction

Background of the Study

The financial sector serves as a cornerstone of any economy, acting as a crucial intermediary that facilitates the flow of capital from savers to investors. Within this system, the banking industry holds a central position, providing essential financial assistance to a diverse range of sectors, including agriculture, industry, and households. The Indian banking sector, regulated by the Reserve Bank of India (RBI), has undergone significant evolution, with technological advancements fundamentally transforming traditional banking practices and introducing new forms of competition. This dynamic environment has presented a myriad of formidable challenges, including increasing levels of non-performing assets (NPAs) and the need to comply with evolving capital requirements, such as those mandated by Basel III.

Urban Co-operative Banks (UCBs) represent a unique and vital segment of this financial landscape. Defined by the RBI as banking units that primarily cater to the needs of small borrowers, retail traders, and salaried classes in metropolitan and semi-urban centers, they operate on a co-operative, member-owned basis. The Sirsi Urban Sahakari Bank Limited is a notable example of such an institution, distinguished as one of the oldest and largest urban co-operative banks in Karnataka and ranked among the top 10 in India. With a history spanning over a century, the bank has built a reputation for integrity and trustworthiness, adapting to modern banking practices while remaining rooted in its core philosophy of serving its members. The continued growth and stability of such institutions are essential for the financial welfare and productivity of their communities.

Statement of the Problem

The financial health of a banking institution is paramount not only for its own sustainability but also for the stability of

the broader financial system. An in-depth analysis of a bank's financial performance provides critical insights for management, investors, and regulators. The Sirsi Urban Sahakari Bank Limited has a long-standing history of growth, but like any financial institution, it experiences fluctuations in its profitability and liquidity. The central problem addressed by this study is to systematically identify and evaluate these trends over a five-year period to determine the bank's current financial position and the effectiveness of its operational strategies. The research aims to move beyond a simple overview and provide a comprehensive assessment of its financial health and operational efficiency, thereby offering a data-driven basis for strategic decision-making.

Objectives of the Study

The study is guided by the following specific objectives :

1. To conduct a comprehensive ratio analysis to assess the bank's liquidity, profitability, and operational efficiency over the study period.
2. To evaluate the bank's financial and operating leverage to understand its risk and return profile.
3. To identify and quantify the relationships between key financial variables using correlation and regression analysis.
4. To provide strategic recommendations for enhancing the bank's financial stability, growth prospects, and overall operational efficiency.

Scope and Limitations of the Study

This research is focused on a financial performance analysis of The Sirsi Urban Sahakari Bank Limited. The scope of the study is confined to a five-year period from the fiscal year 2020-21 to 2024-25, utilizing financial data collected from the bank's annual reports and other publicly available information. The analysis is made with specific reference to the main branch and its operations limited to the Sirsi region.

The study is subject to several limitations. The analysis is based exclusively on the financial data available in the company's profit and loss accounts and balance sheets, and some confidential data from the annual reports were not available for review. Furthermore, the findings are specific to The Sirsi Urban Sahakari Bank and cannot be universally generalized to the entire co-operative banking sector.

Literature Review

The academic and professional literature on financial performance and leverage analysis provides a robust theoretical foundation for this study. The consensus across various research works is that financial ratios and leverage are essential tools for evaluating the financial health, stability, and growth potential of a business.

Financial Performance

Amah, Michael, and Ihendinihu (2016) studied the connection between cash flow and financial success in Nigerian banks, finding a significant positive relationship between operational cash flow and performance, measured by net profit. This highlights the importance of core business operations as a driver of profitability. Similarly, Jahan & Mostofa (2017) empirically found a significant relationship between financial leverage and profitability, concluding that highly leveraged firms tend to have lower profitability. This finding suggests that while debt can amplify returns, it also introduces significant risk and can be a drag on profitability if not managed judiciously. Conversely, Bashir, Fatima, Sohail, Rasul, & Mehboob (2018) found that a company's size and leverage positively and significantly impact financial performance metrics such as Return on Assets (ROA) and Return on Equity (ROE). These contrasting findings underscore the complexity of leverage, where its impact is highly dependent on the specific context and firm-level strategy.

Context of the Banking Sector

The financial performance of banks is heavily influenced by the specific dynamics of the banking industry. Shafat Maqbool and M. Nasir Zameer (2017) investigated the relationship between corporate social responsibility (CSR) and financial performance in Indian commercial banks, finding a beneficial effect of CSR on financial outcomes. This suggests that a bank's reputation and community standing, as evidenced by its social contributions, can be a valuable asset. Mr. K. Veerakumar (2019) specifically evaluated the performance of the Ramanathapuram District Central Co-operative Bank, concluding that strengthening reserves and capital is paramount for improving performance. Miss. P. Uchimahali (2020) offered a similar suggestion for an engineering firm, emphasizing the need to reduce stock levels and utilize investments effectively to strengthen the company's position. These studies provide a direct parallel to the present research, as they focus on the practical application of financial analysis in similar operational contexts.

The Impact of External Factors

Putu Riesty Masdiantini and Lucy Sri Musmini (2020) examined the impact of the COVID 19 pandemic on firms listed on the Indonesia Stock Exchange. Their findings indicated that during the pandemic, while firms' liquidity and profitability ratios decreased, their leverage and short-term activity ratios increased. This serves as a vital backdrop for the analysis of the 2019-20 and 2020-21 data for The Sirsi Urban Sahakari Bank, as it provides a comparative context for how a financial institution's performance might respond to an unprecedented global event.

The literature review provides a comprehensive conceptual and empirical framework. However, a gap exists in the form of an in-depth, case-specific analysis of the financial and leverage performance of a prominent urban co-operative bank in India. The current study aims to fill this gap by applying these established analytical tools to the specific data of The Sirsi Urban Sahakari Bank, providing tailored insights and recommendations that are directly relevant to its unique market position and strategic goals.

Methodology

Research Design

The study employs a descriptive and analytical research design. This approach involves a detailed examination and interpretation of historical financial data to describe the financial performance and leverage of The Sirsi Urban Sahakari Bank over a specified period. The research is quantitative in nature, relying on numerical data from the bank's financial statements to derive ratios and perform statistical analysis. By analyzing a five-year trend, the study provides a longitudinal perspective on the bank's operational and financial stability.

Data Sources and Collection

The research is based on secondary data, which is information collected from existing sources rather than through direct observation or surveys. The primary data sources for this study are the audited annual reports of The Sirsi Urban Sahakari Bank for the fiscal years 2016-17 to 2020-21. Additional information was gathered from the bank's official website and other relevant financial publications to provide industry context.

Analytical Tools

A combination of financial and statistical tools was used to analyze the collected data:

Financial Ratio Analysis: This is the primary tool for assessing financial health. Ratios were calculated across four key categories:

- **Liquidity Ratios:** To evaluate the bank's ability to meet its short-term obligations, including the Current Ratio and Acid Test Ratio.
- **Profitability Ratios:** To measure the bank's ability to generate profit from its operations and assets, including Net Profit to Total Assets Ratio and Gross Profit to Total Income Ratio.
- **Activity Ratios:** To assess the efficiency of asset utilization, such as Total Asset Turnover Ratio and Fixed Asset Turnover Ratio.
- **Other Ratios:** To provide a more specific analysis of banking operations, including the Total Advances to Total Deposit Ratio and Investment to Deposit Ratio.

Statistical Analysis: To identify and quantify relationships between financial variables, correlation and regression analyses were performed. These methods provide empirical evidence to support the interpretations drawn from the ratio analysis.

Implementation

The analytical methodology was implemented in a systematic, multi-step process. First, the raw financial data was meticulously extracted from the bank's balance sheets and profit and loss accounts for each of the five fiscal years from 2016-17 to 2020-21. This raw data served as the foundation for all subsequent calculations.

Once the data was compiled, each of the predetermined financial ratios was calculated for every year of the study period, following the formulas outlined in the theoretical background. This step involved transforming the raw financial figures into meaningful, comparative metrics that reveal trends and performance over time.

Finally, the calculated ratios were used as variables in a statistical analysis. Correlation analysis was performed to determine the strength and direction of the relationship between key variables, such as the total deposits to liability ratio

and the gross profit ratio. A regression analysis was then conducted to statistically model and validate these relationships, providing a quantitative basis for the conclusions. This systematic process of data extraction, ratio calculation, conceptual re-evaluation, and statistical validation ensured the robustness and accuracy of the report's findings.

Advantages/Disadvantages/Applications

Strategic Advantages and Disadvantages

The SWOT analysis of the Sirsi Urban Sahakari Bank Limited reveals a clear picture of its strategic position.

- **Strengths:** The bank's greatest strength is its long-standing history, having been in operation for over a century since 1905. This has cultivated a deep-seated trust with its customers, evidenced by its consistent growth and its position as one of the top co-operative banks in its region. The bank also benefits from a dedicated and experienced staff and a strong customer base, which is reflected in a high and increasing total deposit-to-liability ratio.
- **Weaknesses:** The bank's primary weaknesses are a limited area of operation and the absence of certain modern banking services, such as credit cards. A more critical weakness, identified through the financial analysis, is the bank's conservative approach to asset utilization. This is reflected in a low advances-to-deposit ratio, which suggests that a significant portion of its funding is not being deployed for its most profitable purpose: lending.
- **Opportunities:** The bank has significant opportunities to capitalize on the growth of small and medium enterprises in its region by offering tailored financial products. Embracing modernization and digitization, including expanding its product and service offerings beyond traditional banking, can help attract a new generation of customers and increase its competitive edge.
- **Threats:** The bank faces intense competition from larger nationalized and private sector banks, which possess superior technological infrastructure and wider branch networks. The rise of other co-operative societies also poses a threat to its market share.

Practical Applications of the Findings

The findings of this report are highly relevant for a variety of stakeholders:

- **For Management:** The detailed ratio and leverage analysis provides management with a clear, data-driven framework for decision-making. The report highlights the need to optimize asset allocation by increasing the advances-to-deposit ratio and strategically moving away from lower-yield investments without compromising stability. It also underscores the importance of a continuous focus on digitization to maintain competitiveness.
- **For Shareholders:** The analysis provides a transparent view of the bank's financial health, performance trends, and dividend history, empowering shareholders to make informed investment decisions. The insights into asset utilization and profitability can serve as a basis for engaging with management to advocate for more aggressive, yet prudent, growth strategies.
- **For Regulators:** The report can serve as a case study, offering valuable insights into the operational strengths and weaknesses of a successful urban co-operative bank. The analysis of its conservative lending policies and high liquidity can inform regulatory policy aimed at balancing stability with the need for growth and efficiency within the co-operative banking sector.

Results/Output

I. Liquidity Ratios

The analysis of liquidity ratios provides a clear picture of the bank's short-term solvency.

Current Ratio = Current Assets / Current Liabilities

Years	Current Assets	Current Liabilities	Current Ratio
2020-21	1,39,00,07,043.96	38,33,04,014.54	3.63
2021-22	1,53,53,91,426.06	49,65,24,993.63	3.09
2022-23	1,78,88,03,103.33	46,41,83,451.18	3.85

2023-24	1,61,64,24,909.19	44,67,26,456.29	3.62
2024-25	1,99,91,33,257.26	52,60,25,526.26	3.8

Interpretation: The current ratio was found to be more than 1 for all periods, and also fluctuated over these 5 years. The ratio was highest for the year 2018-19 (3.85) and lowest for the year 2017-18 (3.09). As this ratio actually shows a satisfactory trend, it could be concluded that the bank has maintained a level of liquidity position with sufficient current assets to meet current liabilities.

Acid Test Ratio = Quick Assets / Current liability

Interpretation: The magnitude of the ratio was largest in 2018-19 (0.97) and lowest in 2020- 21 (0.36). The decrease in 2020-21 is attributed to the impact of COVID-19.

Liquid assets to Total assets Ratio

Years Liquid assets Total assets Quick Ratio			
2020-21	29,78,14,555.00	7,19,38,83,872.88	0.04
2021-22	31,51,17,812.00	7,90,23,97,073.41	0.04
2022-23	44,94,56,505.97	8,92,37,27,434.08	0.05
2023-24	32,02,75,503.33	10,22,01,04,387.55	0.03
2024-25	55,04,73,585.84	11,84,84,74,080.89	0.04

Interpretation: The ratio was less than 1 during the entire study period. It was highest in 2018-19 (0.05) and least in 2019-20 (0.03). The ratio indicates that the bank has been efficiently managing its liquid assets.

II. Profitability Ratios

Net Profit to Total Assets Ratio (Return on assets) = Net profit / total assets * 100

Years Net Profit Total Assets Net Profit to Total Assets Ratio			
2020-21	2,30,46,933.06	7,19,38,83,872.88	0.32
2021-22	2,47,02,149.79	7,90,23,97,073.41	0.31
2022-23	4,06,37,689.18	8,92,37,27,434.08	0.46
2023-24	3,20,32,915.27	10,22,01,04,387.55	0.31
2024-25	5,39,05,014.62	11,84,84,74,080.89	0.45

Interpretation: The profitability of the bank (ROA) in 2020-21 was highly improved (0.46%). It fell to 0.31% in 2021-22 but recovered to 0.45% in 2024-25. The graph shows an almost consistent trend, indicating the bank is utilizing its total assets well to generate profit.

Gross Profit to Total Income Ratio = Gross profit / total income

Years Gross Profit Total Income Gross Profit to Total Income Ratio			
2020-21	3,33,46,933.06	53,96,36,351.66	6.18
2021-22	3,77,87,083.79	57,22,65,782.16	6.6

2022-23	3,77,87,083.79	65,63,34,751.66	5.76
2023-24	4,87,92,687.27	73,43,97,566.07	6.64
2024-25	6,28,69,796.52	85,82,92,877.85	7.32

Interpretation: The ratio was highest in 2024-25 (7.32), indicating that the gross profit margin against the company's revenue is good. The ratio is lowest in the year 2022-23 (5.76) and has been fluctuating. The profit margin is considered below satisfactory compared to the revenue earned.

Net Profit to Fixed Assets Ratio = Net profit / Fixed assets

Years Net Profit Fixed Assets Net Profit to Fixed assets Ratio			
2020-21	2,30,46,933.06	4,02,78,37,087.26	0.006
2021-22	2,47,02,149.79	4,72,33,55,126.08	0.005
2022-23	4,06,37,689.18	5,14,59,46,815.59	0.008
2023-24	3,20,32,915.27	6,39,25,16,921.75	0.005
2024-25	5,39,05,014.62	5,29,10,84,628.00	0.01

Interpretation: The ratio is showing a fluctuating trend over the study period. It was found to be highest in 2024-25 (0.01) due to an increase in profits. Compared to the past 5 years, net profitability has increased with respect to fixed assets.

III. Activity Ratios

Total Assets Turnover Ratio = Total income / Total assets

Years Total Income Total Assets Total Assets Turnover Ratio			
2020-21	53,96,36,351.66	7,19,38,83,872.88	0.08
2021-22	57,22,65,782.16	7,90,23,97,073.41	0.07
2022-23	65,63,34,751.66	8,92,37,27,434.08	0.07
2023-24	73,43,97,566.07	10,22,01,04,387.55	0.07
2024-25	85,82,92,877.85	11,84,84,74,080.89	0.07

Interpretation: The ratio is showing a decreasing trend over the study period. The ratio is highest in the year 2020-2021 (0.08) and lowest at 0.07 for the years 2024-2025. The ratio is less than 1, indicating that total assets are not able to produce enough revenue.

Fixed Assets Turnover Ratio = Total Income / Fixed assets

Years Fixed assets Total Income Fixed assets turnover ratio			
2020-21	4,02,78,37,087.26	53,96,36,351.66	7.46
2021-22	4,72,33,55,126.08	57,22,65,782.16	8.25

2022-23	5,14,59,46,815.59	65,63,34,751.66	7.84
2023-24	6,39,25,16,921.75	73,43,97,566.07	8.7
2024-25	5,29,10,84,628.00	85,82,92,877.85	6.16

Interpretation: The Fixed Assets Turnover Ratio showed strong efficiency from 2020–21 to 2023–24, peaking at 8.70, but dropped sharply to 6.16 in 2024–25. This decline indicates possible over-investment in fixed assets or underutilization of existing capacity.

IV. Other Ratios

Total Advances to Total Deposit Ratio = Total Advances / Total deposits

Years	Total Advances	Total Deposits	Total Advances to Deposit Ratio
2020-21	3,10,45,90,629.66	5,80,64,53,464.69	0.53
2021-22	3,56,03,87,627.06	6,45,76,10,261.27	0.55
2022-23	4,42,17,23,359.47	7,33,77,20,399.66	0.6
2023-24	5,08,27,46,912.64	8,52,09,82,291.51	0.6
2024-25	5,90,77,50,173.10	10,08,28,79,715.61	0.58

Interpretation: This ratio has an upward trend. The thumb rule is that it should be at least 70 to 75% for achieving better profitability. The bank achieved 60% in the year 2023-24, but it has since decreased to 58%. A higher ratio indicates a higher deployment of deposits, which leads to higher productivity of funds.

Investment to Deposit Ratio = Total Investments / deposits

Years	Total Investments	Total Deposit	Investments to Deposit Ratio
2020-21	2,16,07,89,979.50	5,80,64,53,464.69	37.21
2021-22	2,47,27,50,071.00	6,45,76,10,261.27	38.29
2022-23	2,46,43,77,600.00	7,33,77,20,399.66	33.59
2023-24	2,89,50,65,159.69	8,52,09,82,291.51	33.98
2024-25	3,19,27,56,439.10	10,08,28,79,715.61	31.66

Interpretation: The investment to deposit ratio is in a decreasing trend. It has fallen to 31.66% in 2024-25 compared to the last four years. This indicates that a portion of the bank's deposits is invested in government securities and other banks, which can provide relatively low income compared to investments in loans and advances. It suggests that funds are being held in investment activities for liquidity purposes.

Total deposit to total liability ratio = Total Deposits / liability * 100

Years	Total Deposits	Total Liability	Total Deposit to Total Liability Ratio
2020-21	5,80,64,53,464.69	7,19,38,83,872.88	80.71
2021-22	6,45,76,10,261.27	7,90,23,97,073.41	81.72
2022-23	7,33,77,20,399.66	8,92,37,27,434.08	82.23

2023-24	8,52,09,82,291.51	10,22,01,04,387.55	83.37
2024-25	10,08,28,79,715.61	11,90,36,79,847.86	84.7

Interpretation: The bank's total deposit to total liability ratio has grown up to 84.7% in 2024-25 compared to the last four years. The bank has collected more deposits, which shows that it has gained the trust of the market. This increasing ratio is a positive trend for the bank.

Conclusion

Based on a comprehensive analysis of its financial statements from 2016-17 to 2020-21, The Sirsi Urban Sahakari Bank Limited is a financially sound institution with a strong and stable foundation. The bank has demonstrated consistent year-on-year growth in key business metrics, including its deposit base, loans, and net profit. Its long history and reputation for trust have enabled it to maintain high levels of liquidity and a robust, trust-based relationship with its customers, which has a statistically significant positive impact on its profitability.

However, the analysis also indicates a strategic conservatism that, while ensuring financial safety, acts as a brake on its profitability potential. The bank's low advances-to-deposit ratio and correspondingly high investment-to-deposit ratio suggest that a large portion of its deposits is being held in lower-yield securities rather than being deployed into higher-return loans. This conservative asset allocation is the primary reason for its modest return on assets and low total asset turnover. In essence, the bank has a healthy funding model but an inefficient operational model for capital deployment. While the bank's overall performance is satisfactory and its stability is unquestionable, there is a clear opportunity to enhance efficiency and convert its strong funding base into a higher level of profitability without compromising its core values of trustworthiness and stability. The study's objectives were successfully met, providing a detailed and data-driven assessment of the bank's financial health and strategic position.

Future Work

Based on the findings and limitations of this study, several avenues for future research are recommended to provide a more holistic understanding of The Sirsi Urban Sahakari Bank Limited.

- **Comparative Performance Analysis:** A future study could conduct a comparative analysis of the bank's financial performance against its primary competitors, including other top urban co-operative banks and small private sector banks in Karnataka. This would allow for an objective benchmarking of key performance indicators and an identification of industry best practices.
- **Impact of Digitization:** As the bank continues its journey into modernization and digitization, a dedicated study could quantify the impact of these initiatives on operational efficiency, customer acquisition costs, and overall profitability.
- **Credit Risk and NPA Management:** Given the critical importance of Non Performing Assets (NPAs) in the banking sector, a focused investigation into the bank's credit risk management policies and the evolution of its NPAs would provide deeper insights into the quality of its loan portfolio and the efficacy of its lending strategies.

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“IMPACT OF MERGER AND ACQUISITION ON THE PERFORMANCE AND GROWTH OF BANKS IN INDIA”

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Abstract

This study examines the impact of mergers and acquisitions (M&A) on the performance and growth of banks in India. With the aim of consolidating the Indian banking sector and improving operational efficiency, the government has initiated several high-profile bank mergers. The study explores the financial, operational, and strategic outcomes of these mergers, focusing on key indicators such as Net Interest Income, Asset Quality, Capital Adequacy, and Profitability. Findings indicate that while M&As strengthen financial capacity and market reach, integration challenges and cultural issues can hinder short-term performance gains. The research concludes that effective implementation of M&A strategies is essential to achieve global competitiveness and long-term sustainability.

Keywords: mergers and acquisitions, income, economy, capital, operations, cost.

1. Introduction

The Indian banking sector plays a critical role in the economy by channeling funds and supporting growth. Over the last few decades, the sector has undergone significant transformation, particularly with liberalisation and globalisation since 1991. Mergers and Acquisitions (M&A) have emerged as a key restructuring strategy to improve efficiency, reduce duplication of operations, and create globally competitive banks.

The banking industry contributes about 7.4% to India's GDP (2019) and is the backbone of growth and development. Its transformation since liberalisation in 1991 has been dramatic, driven by reforms, globalisation, and technological adoption. M&As were recommended as early as the Narasimham Committee (1991), which suggested fewer but stronger banks to withstand shocks. Over the years, nationalisation, consolidation, and reforms paved the way for mergers to ensure stability and competitiveness.

2. Literature Review

Several studies have analyzed the impact of bank mergers on financial performance. Research shows that M&As often lead to improved capital adequacy, operational efficiency, and profitability. However, integration costs, employee resistance, and cultural clashes can limit expected synergies. Studies also highlight that public sector bank mergers have been largely driven by government policies aimed at strengthening the financial system and ensuring stability.

Indian scholars such as Devarajappa (2012) and Kalaichelvan (2011) found that post-merger financial performance improves in parameters like profitability and capital adequacy, though short-term challenges remain. Global research also supports the idea that synergy realisation, cost savings, and expanded networks enhance performance, but cultural clashes and high restructuring costs may delay benefits.

3. Objectives

- To analyse the impact of mergers and acquisitions on the financial performance of banks in India.
- To study pre- and post-merger performance using financial ratios and CAMEL model parameters.
- To identify benefits and challenges associated with M&As in the Indian banking sector.
- To understand the role of government and regulatory bodies in bank mergers.
- To provide suggestions for better integration and synergy realisation.

4. Research Methodology

This study is based on secondary data collected from annual reports of banks, RBI publications, and financial websites. Financial performance before and after mergers was compared using ratios such as Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin, and Current Ratio. The CAMEL model was used as a framework for assessing bank health. The analysis focuses on major Indian bank mergers including SBI and its associates, Bank of Baroda, and Punjab National Bank mergers.

The methodology also incorporated a SWOT analysis of Indian bank mergers, covering strengths (financial strength,

market reach), weaknesses (integration challenges, cultural issues), opportunities (global competitiveness, technology adoption), and threats (economic downturns, NPAs, regulatory hurdles).

5. Data Analysis and Interpretation

The data collected was analysed using profitability ratios, capital adequacy ratios, and efficiency measures. For example, Return on Assets (ROA) and Return on Equity (ROE) showed improvement in the long run, though Net Profit Margin sometimes declined in the immediate post-merger period due to high integration costs. CAMEL parameters (Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity) were also compared for selected banks.

Interpretation:

- SBI's merger with associate banks improved its global ranking and branch coverage but short term profitability dropped.
- Bank of Baroda's merger with Dena and Vijaya Bank strengthened capital base but initially faced IT and HR integration issues.
- Punjab National Bank's merger with OBC and United Bank created scale benefits, but NPAs remained a concern.
- Overall, while short-term disruptions are evident, long-term financial performance generally improves.

The analysis reveals that post-merger banks generally show improved financial strength, wider reach, and enhanced lending capacity. SBI's merger with its associate banks positioned it among the top 50 global banks, while the merger of Canara and Syndicate Bank created the fourth largest public sector bank. However, some banks experienced short-term decline in profitability and faced IT integration and HR harmonisation challenges.

For instance, the merger of Oriental Bank of Commerce and United Bank into Punjab National Bank created the 2nd largest PSB, while Indian Bank's merger with Allahabad Bank formed the 7th largest PSB. These consolidations have reduced the number of PSBs from 27 in 2017 to 12 by 2020. While this strengthens banks' lending capacity, it also reduces competition and risks eroding regional identities.

5. Findings

- M&As enhance financial capacity, economies of scale, and market share.
- Operational efficiency improves in the long run, though short-term costs are high.
- Wider branch network supports financial inclusion and rural penetration.
- Employee resistance and cultural clashes are common challenges.
- Synergy realisation is crucial to ensure long-term benefits.
- Bank mergers protect depositors' money by creating stronger institutions.
- Consolidation helps reduce dependence on government recapitalisation.
- Large banks can support mega infrastructure projects aligned with national goals.
- Risk of short-term decline in service quality and customer dissatisfaction must be managed.

6. Suggestions

Banks should adopt phased integration plans, invest in robust IT systems, and conduct employee training to reduce resistance. Government and RBI should continue supporting consolidation efforts while ensuring customer interests are protected. Regular monitoring of post-merger performance is necessary to ensure that synergies are realised.

Additionally, management should prioritise cultural integration, strengthen governance frameworks, and address NPAs proactively. Regulators must ensure mergers do not harm competition or financial inclusion.

7. Conclusion

Mergers and acquisitions in the Indian banking sector are a powerful tool for creating stronger, more competitive banks. While the process involves significant challenges, successful execution can enhance financial stability, improve efficiency, and enable banks to compete globally. The future of Indian banking lies in consolidation that balances growth, efficiency, and customer trust.

Overall, the success of M&As in India depends on balancing growth with customer-centric services. The long-term vision is to build globally competitive Indian banks that can rank among the world's top players, while maintaining trust,

inclusivity, and resilience.

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FINANCING MSMEs THROUGH NBFCs: OPPORTUNITIES, CHALLENGES, AND PERCEPTIONS IN BENGALURU

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Abstract

This research paper explores the vital role of Non-Banking Financial Companies (NBFCs) in financing Micro, Small, and Medium Enterprises (MSMEs), with a particular focus on Bengaluru and the case of Vistaar Financial Services. The MSME sector, often referred to as the backbone of the Indian economy, contributes substantially to GDP, exports, and employment generation. However, a significant financing gap persists, estimated at over ₹25 lakh crore, hindering the sector's full potential. Traditional banks, constrained by collateral requirements and lengthy procedures, often fail to serve MSMEs effectively. NBFCs, with their flexibility, innovative lending methodologies, and regional reach, have emerged as key partners to MSMEs. Drawing on primary data from a survey of 100 MSMEs in Bengaluru and secondary sources such as RBI reports, SIDBI publications, and industry analyses, this paper demonstrates how NBFCs bridge the financing gap. The findings highlight that while NBFCs provide faster, flexible, and customer-friendly services, challenges such as high interest rates, repayment rigidity, and limited awareness persist. The conclusion emphasizes that NBFCs, by complementing banks, can accelerate inclusive growth and support India's ambition of becoming a \$5 trillion economy.

Keyword: NBFCs, MSMEs, Financial Inclusion, Vistaar Finance, Bengaluru, Digital Lending, MSME Financing Gap, Entrepreneurship, Rural Credit, Inclusive Growth

Introduction

Micro, Small, and Medium Enterprises (MSMEs) are often described as the engines of economic growth, not only in India but across the developing world. In India, MSMEs contribute nearly 30% of GDP, 40% of exports, and provide employment to over 110 million people. Their importance cannot be overstated: they act as catalysts for innovation, balanced regional development, and entrepreneurial dynamism. In Bengaluru, one of India's most industrially advanced states, MSMEs are the lifeline of the economy, spanning sectors such as textiles, IT, aerospace, biotechnology, food processing, and traditional handicrafts. The state alone is home to more than 8.5 lakh MSMEs, employing 55 lakh people and contributing significantly to its GDP.

Despite their importance, MSMEs face structural challenges in accessing finance. According to estimates, more than 80% of MSMEs do not have access to formal credit. The total MSME credit gap in India is estimated between ₹20–25 lakh crore. The inability to secure timely and adequate financing restricts these enterprises' ability to innovate, expand, and compete globally. Banks, traditionally expected to provide credit, are often constrained by high collateral requirements, strict eligibility criteria, and procedural delays. This is where Non-Banking Financial Companies (NBFCs) emerge as critical intermediaries.

NBFCs in India have undergone rapid growth, supported by digital lending platforms, flexible product structures, and outreach to underserved rural and semi-urban markets. The Reserve Bank of India (RBI) has recognized their growing systemic importance, with NBFCs' share of total credit rising steadily over the past decade. Particularly in Bengaluru, where MSMEs form a vibrant entrepreneurial base, NBFCs such as Vistaar Financial Services have demonstrated innovative approaches to financing. Founded in 2010, Vistaar Finance has successfully tailored credit products to meet the unique needs of small businesses by focusing on cash-flow-based assessments rather than collateral.

This study therefore examines the evolving role of NBFCs in financing MSMEs, highlighting their contributions, challenges, and future prospects in Bengaluru's economic context.

Literature Review

1. **Chandra and Muthusamy (2022):** Argue that Non-Banking Financial Companies (NBFCs) play a decisive role in narrowing the MSME credit gap by relying on cash flow-based lending instead of collateral-heavy models. This approach is particularly beneficial for small firms with weak asset bases, allowing them to access finance more easily.
2. **The International Finance Corporation (IFC) in its MSME Finance Gap Report (2022):** estimated a credit shortfall of nearly ₹25 trillion in India's MSME sector. The report underscores that NBFCs, supported by fintech

innovations, are essential in addressing this systemic financing challenge.

3. **The Small Industries Development Bank of India (SIDBI) in its Annual Report (2023):** highlights how NBFCs, through co-lending arrangements and refinancing facilities, have enhanced credit delivery to semi-urban and rural MSMEs, where commercial bank penetration remains limited.
4. **Financial Express (2024):** Lending by NBFCs to MSMEs has grown over 40% annually, outpacing banks. Faster loan processing, customer-focused products, and alternative data-based assessments drive this growth.
5. **Entrepreneur India (2025):** NBFCs' MSME portfolios grew at a 32% CAGR between FY21 and FY24. Growth was fueled by digital platforms, small-ticket loans, and sector specific lending strategies.
6. **Pradhan & Agarwal (2020):** MSMEs face barriers like high borrowing costs, low financial literacy, and rigid repayment structures. NBFCs provide flexible financial solutions that effectively mitigate these challenges.
7. **Meher et al. (2023):** NBFCs promote inclusive growth by expanding into underbanked areas and supporting marginalized entrepreneurs. Their operations contribute to financial access, employment, and rural development.
8. **Burke (2025):** Transformational leadership within NBFC branches improves loan performance and portfolio quality. Effective leadership is linked to higher MSME credit disbursement and better repayment outcomes.
9. **RBI Financial Stability Report (2024):** NBFCs are increasingly significant in MSME financing, with a rising share in total credit delivery. However, liquidity pressures and regulatory challenges may threaten sustainable growth.
10. **World Bank (2023):** Technological innovations like AI, blockchain, and alternative credit scoring enhance NBFCs' operational efficiency. These tools help reach new markets, reduce credit risk, and expand MSME lending

Objectives of the Study

The study was undertaken with the following objectives:

1. To study the role of NBFCs in financing and supporting MSMEs in Bengaluru.
2. To analyse the challenges faced by MSMEs in securing NBFC financing.
3. To ascertain the perception and effectiveness of NBFC services among MSME owners.
4. To understand the contribution of NBFCs in bridging the financial gap of MSMEs.

Methodology

This research employs a descriptive and analytical design, combining both primary and secondary data sources. Primary data was collected using a structured questionnaire distributed among 100 MSME owners across Bengaluru. The survey included variables such as awareness, usage, accessibility, and perception of NBFC financing. Secondary data was sourced from RBI publications, NBFC financial reports, SIDBI reports, and academic research articles. Tools for analysis included percentage analysis to interpret survey responses and chi-square tests to study associations between categorical variables, such as gender and awareness of NBFCs. The scope of the study is limited to Bengaluru MSMEs, and the findings reflect both urban and semi-urban enterprises.

Data Analysis and Interpretation

The survey of 100 respondents yielded the following key insights:

1. Awareness of NBFCs as a Source of Finance

Response	No. of Respondents	Percentage
Yes	71	71%
No	29	29%
Total	100	100%

- 71% of respondents are aware of NBFCs as financial institutions, while 29% lack awareness.
- This shows that NBFCs have achieved significant recognition among MSMEs, though a sizeable share remains

untapped.

2. Financial Assistance Received from NBFCs

Response	No. of Respondents	Percentage
Yes	58	58%
No	42	42%
Total	100	100%

- 58% of MSMEs reported receiving credit/assistance from NBFCs, while 42% did not.
- This indicates NBFCs' growing importance in MSME financing, but also shows that access gaps still exist.

3. Ease of Accessing NBFC Loans Compared to Banks

Response	No. of Respondents	Percentage
Very Easy	14	14%
Easy	27	27%
Neutral	20	20%
Difficult	22	22%
Very Difficult	17	17%
Total	100	100%

- 41% of respondents found NBFC loans easier to access than bank loans.
- However, 39% found them difficult, showing mixed perceptions of accessibility.

4. High Interest Rates as a Major Challenge

Response	No. of Respondents	Percentage
Strongly Disagree	8	8%
Disagree	16	16%
Neutral	21	21%
Agree	30	30%
Strongly Agree	25	25%
Total	100	100%

- 55% of respondents agreed that high interest rates are a major challenge.
- This highlights that while NBFCs are accessible, their pricing model is a barrier for many MSMEs.

Overall Interpretation

The analysis reveals that NBFCs play a significant role in providing financial assistance to MSMEs. The survey

indicates that most respondents are aware of NBFCs as a source of finance, and more than half have received loans. However, issues such as high interest rates, collateral requirements, and procedural difficulties remain major challenges. Despite these barriers, respondents generally agreed that NBFCs have contributed positively to the growth and expansion of their enterprises.

Findings

1. NBFCs are vital in bridging the MSME financing gap, particularly in Bengaluru, where traditional banking access is limited for small businesses.
2. Awareness of NBFCs is high, but nearly 30% of MSMEs remain unaware of their services, limiting outreach.
3. MSMEs primarily seek NBFC financing for working capital and expansion, underscoring their central role in business continuity and growth.
4. Access to finance remains moderate: while over half of applicants secured loans, a significant share still face challenges in obtaining approvals.
5. High interest rates and repayment rigidity remain the most significant barriers to greater NBFC adoption.
6. NBFCs are valued for faster processing, flexibility, and customer-centric services, differentiating them from banks.
7. MSMEs treat NBFCs as complementary financing sources rather than full substitutes for banks.

Conclusion

The study concludes that NBFCs play a critical role in bridging the MSME financing gap, particularly in Bengaluru. By offering flexible, faster, and customer-centric financial solutions, NBFCs like Vistaar Finance enable small businesses to sustain operations, expand, and generate employment. However, high interest rates, rigid repayment terms, and limited awareness continue to restrict their full potential. Importantly, NBFCs do not substitute banks but act as complementary partners, addressing unmet needs and extending credit access where traditional banks fall short. Strengthening NBFC operations through cost reduction, awareness campaigns, and technology adoption can further enhance their impact, supporting India's vision of achieving inclusive and sustainable economic growth.

Suggestions and Future Scope

Based on the findings, the following suggestions are offered:

- NBFCs should implement competitive interest rate structures and flexible repayment options to attract a larger number of MSMEs.
- Enhanced awareness campaigns and financial literacy programs are essential to educate entrepreneurs about the range of services offered by NBFCs.
- Policymakers should promote bank–NBFC co-lending models and provide refinancing support to reduce NBFCs' cost of funds, making credit more accessible for MSMEs.
- Adoption of technology-driven credit assessment tools, AI-based scoring systems, and blockchain solutions can streamline operations, improve efficiency, and mitigate risks.
- Future research should undertake comparative studies of NBFCs, banks, and fintech platforms to provide a comprehensive perspective on MSME financing.

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FROM FOMO TO CART: THE PSYCHOLOGY OF GEN Z IMPULSE DIGITAL SHOPPING

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Abstract

Impulsive purchasing has increased due to the digital shopping environment, especially among Generation Z, a demographic that is heavily reliant on social media and online channels. This research, "From FOMO to Cart: The Psychology of Gen Z Impulse Digital Shopping," it influences Gen Z's impulsive online shopping behavior often driving them to add items to their cart quickly without much planning. Based on this, this study is designed with two main objectives: to examine the impact of emotional states on Gen Z's unplanned online purchases and to explore how social media platforms shape Gen Z's impulse buying decisions. According to this research paper, Gen Z's impulsive purchases are situational and socially motivated, driven by emotional gratification, influencer marketing, and FOMO. The findings are derived from the primary data collected from 100 Gen Z respondents through structured questionnaire. The results provide insights for both academic research and marketing strategies by highlighting the ways in which emotions and digital environments interact to shape purchasing decision.

Keywords : Gen Z, Impulsive Buying, Emotional States, Digital shopping, Fear Of Missing Out (FOMO)

1. Introduction

Shopping has become an on-demand, interactive, and highly customized experience due to the quick development of digital technologies. The distinction between leisure-driven browsing and need-based consumption has become hazier due to social media and online retail platforms, creating a culture of impulsive online buying. Given their strong online presence, tech-savvy disposition, and distinctive psychological characteristics, **Generation Z (born 1997 - 2012)** stands out as a significant consumer group. Gen Zers are more receptive to digital marketing cues and emotionally motivated online purchases than previous generations because they grew up in a world where smartphones, social networking sites, and e-commerce platforms predominated.

The fear of missing out (FOMO) is one of the most common psychological triggers in this situation. Continuous exposure to influencer marketing, flash sales, and quickly evolving social media trends creates a sense of urgency that promotes impulsive purchases. Platforms such as YouTube, Instagram, and TikTok have evolved into not only entertainment venues but also robust shopping ecosystems where interactions, influencer endorsements, peer and carefully curated product displays encourage impulsive purchases. These platforms function as shopping guides and social identity markers for Gen Z, where peer approval, trend adoption, and visibility all affect purchase decisions. The emotional states that influence Gen Z's purchasing habits are equally significant. Previous research indicates that people who are bored, stressed, excited, or even just curious are more likely to buy things on impulse as a way to control their emotions. Since Gen Z's everyday activities are heavily reliant on digital platforms, online shopping frequently offers them instant satisfaction and emotional solace. Their purchasing habits are therefore very situational and emotionally driven, reflecting psychological needs that go beyond acquiring material possessions. Since impulse buying has social, psychological, and economic ramifications in addition to being a consumer habit, it is imperative to comprehend these trends. From a marketing standpoint, it provides insightful information about how companies can create more successful plans by utilizing influencer relationships, personalization, and gamified shopping experiences. From the perspective of consumer psychology, it emphasizes how social pressures and emotions affect choices made in digital settings.

2. Literature Review

Factors influencing Impulsive Buying Behavior of Millennial and Generation Z (August 2025)

Using the Stimulus–Organism–Response (S-O-R) model, which holds that social media cues (stimuli) cause emotional and cognitive reactions (organisms) that result in impulsive purchases (responses), this study examined international and Indian literature on impulse buying. Previous studies have shown that situational factors, emotions, and variety-seeking behavior are powerful predictors of impulsive purchases (Bansal & Kumar, 2018; Aragoncillo & Orus, 2018).

Studies have found a strong correlation between impulsive buying and social media marketing, which includes algorithmic personalization, influencer endorsements, and interactive advertisements. This indicates that platforms such as Facebook and Instagram have a significant influence on consumer choices. Additionally, the review identified hedonic motives, peer pressure, and FOMO as key factors that lead to impulsive online purchases.

Research Gap: In this study, the majority of research focuses on Western markets and China, leaving regional contexts like Goa understudied. Furthermore, although earlier studies recognize the importance of emotions, they frequently understate the influence of community-driven digital spaces (such as peer groups and regional online trends) on Gen Z's impulsive purchasing.

Gen Z Consumers' Intentions to Make Impulsive Purchases from a Hedonistic Apparel Shopping Perspective (March 2024)

The relationship between hedonic motives and impulsive buying has changed over time. Rook (1987) first pointed out the importance of enjoyment and entertainment in impulsive purchases, viewing shopping as an emotionally rewarding activity rather than just a rational one. Babin et al. (1994) then introduced a two-part framework for shopping motivations, focusing on hedonic aspects like fun and social satisfaction and utilitarian aspects like necessity and efficiency. This framework laid the groundwork for future research. Phau and Lo (2004) built on this by connecting novelty-seeking behavior with impulsivity, showing that curiosity and new experiences drive unplanned purchases. Luo (2005) emphasized the role of social approval, finding that praise and recognition from peers strongly encourage impulsive buying. Xu (2007) identified escapism as a psychological factor, explaining that shopping can offer stress relief and a way to escape everyday pressures. Mattila and Wirtz (2008) pointed out social interaction as another hedonic aspect, noting that shopping with friends or in online group's increases impulsive behavior. Recent research focused on Gen Z concluded that impulsive purchases in the clothing industry are influenced by five hedonic dimensions: novelty, social interaction, fun, escapism, and peer praise. This shows that Gen Z's impulsive shopping is more closely linked to emotional and experiential motives than to practical needs. Marketing strategies that emphasize novelty, excitement, and social approval are especially effective for this group.

Research Gap: This research on impulse buying and hedonic shopping focus on Western countries, leaving little insight into how Gen Z in India, especially in apparel, behaves in this context. Research has not fully explored how specific hedonic factors like fun, novelty, social interaction, praise, and escapism drive their unplanned purchases. This creates a gap in understanding the unique cultural and generational influences shaping Gen Z's impulse buying habits in developing economies.

Factors that Influence Impulse Buying for Generation Z (August 2024)

Impulse buying, or unplanned purchasing, has been widely studied in consumer behavior (Stern, 1962; Verplanken, 2001). Influencing factors are both internal, like impulsiveness and hedonistic tendencies, and external, such as store layout, advertisements, and packaging (M., 2010). The physical store environment—lighting, music, and displays—affects impulsive decisions, with younger consumers (18–39) more prone to such purchases (Samarin, 2012; Wood, 1998). Impulse buying can also take different forms: pure, reminder, suggestive, or planned (Samah Abdelsalam, 2020). In the digital era, website design, social media, online reviews, and digital marketing strongly influence online impulse purchases (Massoud Moslehpour, 2018; Dapas, 2019). Hedonic motivations like enjoyment and novelty drive both offline and online impulses (Muhammad Bilal Ahmad, 2018). Other determinants include celebrity endorsements, price sensitivity, packaging, digital strategies, and emotional intelligence (Olmedo, 2020; Al-Azzam, 2021; Maukar, 2018; Kapoor, 2019; Zafar, 2021). Overall, impulse buying results from a mix of personal, situational, and technological factors, with varying impact across demographics and shopping contexts.

Research Gap: Despite these insights, most research looks at single factors or focuses on Western contexts, leaving little clarity on how multiple influences work together for Indian Gen Z. The unique mix of cultural values, digital habits, and offline–online shopping patterns in India is still underexplored. This creates a gap in understanding how emotional, social, and digital factors collectively drive impulse buying among this generation.

A Study of Factors Influencing Impulse Buying of Gen Z (November 2022)

The second study offers a more comprehensive view of the structural, social, and psychological elements influencing Gen Z's impulsive purchasing behavior, even though hedonic motivations are a major factor in unplanned shopping. Convenience, variety, special offers, peer pressure, and brand trust are some of the factors that are identified in the paper.

In online settings, where accessibility, speed, and smooth payment methods reduce barriers to purchase, convenience has been demonstrated to be a key motivator (Wang, 2015). Similar to this, a wide range of products promotes extended browsing, which frequently results in impulsive purchases (Sharma et al., 2010). Given that promotions generate urgency and lessen consumer resistance to impulsive purchases, promotional offers like flash sales and discounts are recognized as potent triggers (Arora & Verma, 2022).

The study also emphasizes the importance of peer influence, particularly in online communities where friends and online communities have a significant impact on Gen Z consumers. This is consistent with the findings of Wiedmann et al.

(2009), who noted that peer pressure and social validation can raise the frequency of impulsive purchases. Last but not least, brand trust becomes a crucial facilitator; when customers believe a brand to be trustworthy and genuine, they are more inclined to take action without giving it careful thought (Verma, Tripathi & Singh, 2021).

The study concludes by showing that social media platforms have a greater and more steady impact on Gen Z's online shopping behaviors, even though emotional states like stress and boredom promote impulsive purchases. Businesses can create strategies to successfully engage this digital native consumer segment by having a better understanding of these dynamics.

Research Gap: This study explain Gen Z's impulse buying in general terms, focusing on online shopping triggers like discounts or convenience. However, very little research looks closely at how these behaviors play out in specific regions like Uttar Pradesh, where culture, demographics, and access to technology may shape buying habits differently. This creates room to explore Gen Z's online impulse buying in a more localized and practical context.

2.1 Objectives of The Study

1. To examine the impact of emotional states on Gen Z's unplanned online purchases.
2. To explore how social media platforms shape Gen Z's impulse buying decisions.

3. Research Methodology

This study uses a quantitative descriptive research design to investigate how social media platforms and emotional states affect Gen Z's impulsive online buying.

Sample and Respondents: An online survey was completed by 100 Gen Z respondents, who were between the ages of 17 and 27. Undergraduate students made up the majority, and they represented a demographic that was very involved with social media and e-commerce.

Data Collection Method: A structured Google Form questionnaire was used to gather primary data. A number of topics were covered in the survey, such as demographic information, frequency of shopping, emotional triggers, and the impact of social media platforms.

Variable factors

Independent variable: On a 5-point Likert scale, where 1 represents not at all and 5 represents very often, the following emotional states are measured: boredom, stress, excitement, and happiness. Instagram stores, influencer marketing, social media advertisements, and peer recommendations are examples of social media influence (on a 5-point Likert scale, 1 represents no influence, 5 represents strong influence).

Dependent variable: The Impulse Buying Index, which is based on respondents' evaluations of various emotional and social media influence items, is a measure of impulse buying intention.

Analysis Tools: Multiple regression analysis and correlation were used to examine the data. While regression examined the combined predictive power of social media factors and emotional states, correlation evaluated the strength of the relationship between variables.

4. Data Analysis And Findings

Table 1: Correlation Matrix

Variables	1. Boredom	2. Stress	3. Excitement	4. Happiness	5. Instagram Shops	6. Influencer Promotion	7. Social Media Ads	8. Peer Recommendations	9. Impulse Buying Index
1. Boredom	1								
2. Stress	0.46	1							
3. Excitement	0.41	0.44	1						
4.	0.39		0.42	1					

Happiness			0.48						
5. Instagram Shops	0.55		0.49 0.52	0.46	1				
6. Influencer Promotion	0.5		0.53 0.47	0.45	0.61	1			
7. Social Media Ads	0.47	0.5	0.54	0.48	0.63	0.68	1		
8. Peer Recommendations	0.44	0.46	0.5	0.43	0.6	0.64	0.66	1	
9. Impulse Buying Index	0.52	0.55	0.5	0.47	0.7	0.73	0.74	0.71	1

Table 2: Multiple Regression Results

Predicting Gen Z Impulse Buying from Emotional States and Social Media Factors

Predictor	β	t	Sig.(p)
Boredom	0.18	2.35	.21*
Stress	0.21	2.78	.007**
Excitement	0.17	2.1	.038*
Happiness	0.15	1.95	.053
Instagram shops	0.26	3.45	.001**
Influencer promotion	0.28	3.66	.000**
Social media ads	0.3	3.92	.000**
Peer recommendations	0.25	3.22	.002*

The correlation matrix between emotional states, social media influences, and impulsive purchases is shown in Table 1. The findings indicate a significant and positive correlation between impulse buying and all variables. The two emotional states that showed the strongest correlations with impulse buying were stress ($r = .55$, $p < .01$) and boredom ($r = .52$, $p < .01$). This suggests that Gen Z consumers are more likely to shop online impulsively when they are bored or stressed.

Additionally, there were moderate associations between impulse buying and happiness ($r = .47$, $p < .01$) and excitement ($r = .50$, $p < .01$).

However, compared to emotional states, social media influences were more strongly associated with impulse buying. They showed strong correlations with social media ads ($r = .74$, $p < .01$), influencer promotions ($r = .73$, $p < .01$), peer recommendations ($r = .71$, $p < .01$), and Instagram shops ($r = .70$, $p < .01$), indicating that social media platforms are a major source of impulsive purchases. The predictive ability of social media factors and emotional states on impulsive purchases was then assessed using a multiple regression analysis (see Table 2). The regression model explained 58% of

the variance in impulse buying ($R^2 = .58$) and was statistically significant ($F(8, 91) = 25.6, p < .001$).

Social media influences were found to be the most powerful predictor of impulsive purchases. In particular, influencer promotions ($\beta = .28, p < .001$), Instagram shops ($\beta = .26, p = .001$), and social media advertisements ($\beta = .30, p < .001$) were all highly significant predictors. Peer recommendations also had a significant impact ($\beta = .25, p = .002$). Although their effects were comparatively weaker than those of social media, emotional states also played a significant role. While happiness ($\beta = .15, p = .053$) was only marginally significant, stress ($\beta = .21, p = .007$), boredom ($\beta = .18, p = .021$), and excitement ($\beta = .17, p = .038$) all significantly contributed to impulse buying. These results imply that social media platforms have a greater and steadier influence on Gen Z's purchasing decisions, even though emotional triggers like boredom, stress, and excitement also encourage them to make impulsive purchases.

5. Findings

The current study investigated how social media and emotional states influence impulsive online purchasing behavior among Gen Z consumers. Impulse buying, defined as spontaneous, unplanned purchasing, is a growing phenomenon, particularly in the digital era where social media platforms play a major role in shaping consumer behavior. The study's findings provide several insights into the underlying drivers of impulsive online shopping in this age group.

Emotional States and Impulsive Buying: Correlation analysis revealed that all emotional states were positively associated with impulsive purchases. Negative emotional states, particularly stress ($r = .55, p < .01$) and boredom ($r = .52, p < .01$), were the strongest predictors, indicating that Gen Z consumers are more likely to shop impulsively when seeking relief from negative feelings or monotony. Positive emotions such as excitement ($r = .50, p < .01$) and happiness ($r = .47, p < .01$) also contributed significantly, suggesting that impulsive purchases are not only a coping mechanism but can also be motivated by the pursuit of pleasure and novelty. These findings align with previous research indicating that both positive and negative emotional arousal can trigger unplanned buying decisions.

Role of Social Media: The study found that social media factors had a stronger influence on impulsive buying than emotional states. High correlations were observed between the impulse buying index and Instagram shops ($r = .70$), influencer promotions ($r = .73$), social media advertisements ($r = .74$), and peer recommendations ($r = .71$). Regression analysis showed that social media influences accounted for a substantial portion of variance in impulsive purchasing ($R^2 = .58$). Among these, social media ads ($\beta = .30, p < .001$), influencer promotions ($\beta = .28, p < .001$), and Instagram shops ($\beta = .26, p = .001$) were the strongest predictors, while peer recommendations ($\beta = .25, p = .002$) highlighted the importance of social validation and peer influence in shaping purchase decisions. This underscores the dominant role of digital platforms in influencing Gen Z's consumer behavior, where curated content, targeted advertisements, and influencer engagement can significantly drive impulsive purchases.

Emotional States as Predictors: Although social media had the strongest effect, emotional states remained significant predictors of impulsive buying, albeit to a lesser extent. Stress ($\beta = .21, p = .007$), boredom ($\beta = .18, p = .021$), and excitement ($\beta = .17, p = .038$) were all positively associated with impulsive purchases, while happiness had minimal impact ($\beta = .15, p = .053$). This suggests that while emotions can initiate spontaneous buying behavior, social media provides more consistent and immediate cues that trigger impulsive decisions. The findings highlight the complex interaction between affective states and digital stimuli in influencing purchasing decisions.

Limitations and Future Directions: The study has some limitations. The sample was relatively small ($n = 100$) and predominantly comprised undergraduate students, which may limit generalizability. Self-reported surveys are also susceptible to social desirability and recall biases. Future research could expand the demographic scope to include a more diverse age and occupational profile, explore additional emotional and social factors, and employ longitudinal or experimental designs to better understand the causal mechanisms behind impulsive online buying. Investigating platform-specific behaviors or the role of emerging social media trends could further enrich understanding of Gen Z's purchasing patterns.

6. Conclusion

This study looked at how social media and emotional states affected Gen Z consumers' propensity for impulsive online purchases. The results show that impulsive buying behavior is significantly influenced by both external social media stimuli and internal emotional triggers. The most powerful emotional predictors were found to be stress and boredom, with excitement and happiness making a moderate contribution as well.

But impulsive buying was more consistently and strongly influenced by social media factors, such as peer recommendations, influencer promotions, Instagram shops, and social media ads, than by emotional states. Social media platforms are the most effective predictors of impulsive online purchases, according to multiple regression analysis, underscoring their crucial role in influencing Gen Z consumers' purchasing decisions.

These findings have significant ramifications for researchers, e-commerce platforms, and marketers. Businesses can create more efficient marketing campaigns, interact with Gen Z customers more effectively, and anticipate impulsive purchasing patterns by comprehending the relationship between emotional states and social media influence.

Notwithstanding these revelations, the study's sample size and demographic reach are constrained. To better understand the dynamics of impulsive online purchasing behavior, future studies could examine a variety of populations, incorporate more variables, and use longitudinal designs.

In conclusion, social media platforms are the primary factor influencing Gen Z's online buying decisions, even though emotional states do promote impulsive purchases. This emphasizes the necessity of focused digital marketing strategies that take advantage of both social and affective triggers.

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GAMIFICATION IN HR PRACTICES: A PATHWAY TO HIGHER ENGAGEMENT AND PERFORMANCE

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Abstract

In recent years, gamification has emerged as a strategic innovation within Human Resource (HR) practices, promising to enhance employee engagement, motivation, and organizational performance. Rooted in behavioural psychology and game design principles, gamification integrates elements such as points, badges, leaderboards, and challenges into workplace processes to create more immersive and rewarding employee experiences. This study undertakes a secondary research review of extant literature published between 2010 and 2025, synthesizing empirical findings, conceptual frameworks, and organizational case studies to critically assess the role of gamification in HR. Evidence suggests that gamification positively influences employee learning, performance management, and talent acquisition by fostering intrinsic motivation and creating a sense of achievement and progression. Furthermore, gamified HR systems have been shown to strengthen organizational culture and enhance collaboration in both traditional and hybrid work environments. However, critical challenges persist, including issues of sustainability, potential employee fatigue, and ethical concerns around surveillance and over-competition. Notably, studies indicate cultural and generational variations in the acceptance of gamified HR practices, signaling the need for context-specific implementation strategies. While gamification has demonstrated measurable improvements in engagement metrics and performance outcomes, its long-term effectiveness requires alignment with organizational values, fairness, and inclusivity. This secondary research thus highlights the dual potential of gamification as both a performance enhancer and a strategic tool for employee experience, while cautioning against superficial adoption. Future research should emphasize longitudinal evaluations, cross-cultural comparisons, and integration with advanced HR analytics to establish robust evidence of impact.

Keywords: Gamification, Human Resource Practices, Employee Engagement, Organizational Performance

1. Introduction

The evolving nature of work in the digital age has necessitated a rethinking of traditional HR practices. Employee disengagement continues to be a pressing challenge for organizations, with Gallup's 2023 global survey indicating that nearly 77% of employees are not fully engaged at work (Gallup, 2023). Against this backdrop, gamification has gained traction as a tool to transform mundane HR processes into engaging and motivating experiences. Gamification refers to the application of game mechanics — such as competition, achievement, rewards, and feedback — in non-gaming contexts to enhance motivation and performance (Deterding et al., 2011). In HR, it has been applied to recruitment, onboarding, learning and development, performance management, and employee wellness programs.

The integration of gamification reflects broader organizational efforts to align employee experience with digital transformation. Early adopters like Deloitte and PwC demonstrated measurable gains in training completion and candidate engagement through gamified systems (Werbach & Hunter, 2012; Robson et al., 2016). In India, companies such as Infosys have implemented gamified learning platforms to reskill employees at scale, showing the relevance of gamification in diverse cultural contexts (Nair, 2019). However, questions remain regarding sustainability, fairness, and inclusivity of gamified HR systems. This study, therefore, synthesizes secondary research to assess gamification's role as a pathway to higher engagement and performance.

2. Review of Literature

Gamification in HR practices has drawn considerable scholarly and practical attention over the last decade. By embedding game design elements into non-gaming HR processes, organizations have sought to improve engagement, motivation, and overall employee experience. The following review synthesizes research across four central themes: Recruitment and Onboarding, Learning and Development, Performance Management, and Challenges and Critiques.

2.1 Recruitment and Onboarding

Gamification has increasingly been integrated into recruitment and onboarding, offering candidates more interactive and engaging experiences. Chamorro-Premuzic et al. (2019) highlighted how companies like Unilever employed AI-enabled gamified recruitment platforms to assess candidates' cognitive and behavioral skills, reducing unconscious bias while improving hiring outcomes. Similarly, Armache (2019) emphasized gamification's appeal to millennial and Gen Z applicants, who value interactive assessments over traditional CV screenings and interviews.

Suh and Wagner (2017) added that gamified assessment centers reduce candidate anxiety by presenting challenges in a playful and less intimidating format, thereby enhancing both fairness and applicant satisfaction. Robson et al. (2016) discussed PwC Hungary's "Multipoly," a business simulation game that allowed candidates to experience real-world scenarios, simultaneously building employer branding and attracting top talent. Complementing these findings, Sánchez-Teruel et al. (2021) demonstrated that gamified onboarding strategies not only improve early-stage engagement but also strengthen newcomers' commitment to organizational values, ultimately accelerating productivity. Collectively, these studies suggest that gamification has redefined recruitment and onboarding by blending evaluation with engagement, particularly in knowledge-intensive industries.

2.2 Learning and Development

The application of gamification in learning and development (L&D) has been one of the most extensively researched areas. Armstrong and Landers (2018) found that gamified learning significantly enhances knowledge retention and encourages active participation in training modules. This aligns with Sailer et al. (2017), who argued that specific game design elements such as points, leaderboards, and levels contribute to satisfaction of employees' psychological needs for competence, autonomy, and relatedness, thereby driving intrinsic motivation.

In the Indian context, Nair (2019) provided a compelling case study of Infosys' "Lex" learning platform, which successfully gamified reskilling initiatives. The platform achieved a 90% voluntary participation rate, highlighting gamification's ability to motivate employees to engage in continuous learning. Surendele et al. (2014) further reinforced this by demonstrating that gamified digital learning environments foster better outcomes in self-paced modules, where motivation is often difficult to sustain. Adding a broader perspective, Alsawaier (2018) argued that cultural differences influence how gamification is received, with collectivist cultures responding more positively to collaboration-based game elements. Taken together, these studies establish gamification as a powerful tool for embedding continuous learning in both global and local organizational contexts.

2.3 Performance Management

Gamification has also reshaped performance management by creating more transparent, engaging, and motivating systems. Robson et al. (2016) described Salesforce's "Motivation Engine," which gamified sales tracking and incentivized employees through real-time recognition, leading to improved productivity. Mekler et al. (2017) expanded on this by showing how badges and leaderboards enhance employee effort in knowledge-based tasks, though they cautioned against overreliance on extrinsic motivators.

Xu et al. (2020) emphasized gamification's role in performance feedback systems, where progress tracking and incremental rewards make goal achievement more tangible and satisfying. In another study, Farzan et al. (2012) found that gamified recognition platforms significantly improved knowledge-sharing behaviors, enhancing both collaboration and organizational learning. Finally, Koivisto and Hamari (2019) warned that while gamification has positive short-term effects on motivation, its long-term effectiveness requires periodic redesign to counter employee fatigue. Overall, the literature demonstrates that gamification can enrich performance management by making recognition and goal achievement more dynamic, but its sustainability hinges on careful design.

2.4 Challenges and Critiques

While gamification holds significant promise, scholars consistently highlight its limitations. Seaborn and Fels (2015), in a comprehensive meta-review, warned that poorly designed gamification risks overemphasizing extrinsic rewards, undermining intrinsic motivation in the long run. Similarly, Werbach and Hunter (2012) argued that gamification efforts must align with organizational culture and values, otherwise they risk being perceived as superficial or manipulative.

Koivisto and Hamari (2019) identified the "novelty effect" as a common issue, noting that engagement often declines once the initial excitement of gamification wears off. Baptista and Oliveira (2019) added ethical concerns, cautioning that gamified performance monitoring may lead to excessive surveillance and pressure, raising questions of fairness and employee well-being. Finally, Sardi, Idri, and Fernández-Alemán (2017) pointed out methodological limitations in gamification research, particularly the lack of longitudinal studies that can provide evidence of sustained performance improvements. These critiques remind scholars and practitioners that while gamification is an attractive tool, its effectiveness depends on thoughtful, context-sensitive implementation.

The reviewed literature demonstrates that gamification has proven successful in recruitment, training, and performance management, with significant evidence from both global corporations and Indian firms. However, its challenges — including sustainability, ethical considerations, and cultural adaptability — underline the importance of integrating gamification with broader organizational strategies. The evidence points toward a balanced view: gamification is not a

universal solution but a contextually powerful tool when designed to support intrinsic motivation and organizational values.

3. Objectives of the Study

1. To examine the role of gamification in enhancing employee engagement across HR practices.
2. To evaluate the impact of gamification on organizational performance outcomes.
3. To identify the challenges, risks, and contextual considerations in implementing gamified HR practices.

4. Research Methodology

This study adopts a secondary research design, synthesizing empirical studies, case reports, and conceptual frameworks from 2010–2025. Peer-reviewed journals, organizational reports, and case studies from global and Indian contexts were reviewed. A narrative synthesis approach was employed to highlight common themes, patterns, and contradictions across the literature.

5. Analysis and Discussion

5.1 Gamification as a Driver of Engagement

Engagement has long been recognized as a key predictor of organizational success, with Gallup (2020) estimating that highly engaged employees contribute to 21% greater profitability. Gamification introduces design elements — such as points, badges, levels, and leaderboards — that leverage human psychological drives for achievement, recognition, and social interaction. Armstrong and Landers (2018) demonstrated that employees are more likely to immerse themselves in training modules when the process is gamified, as these elements stimulate curiosity and competition.

Real-world evidence supports this trend. For instance, PwC Hungary’s “Multipoly” provided candidates with a virtual business environment to solve challenges collaboratively (Robson et al., 2016). The immersive experience not only attracted top talent but also fostered positive associations with the employer brand, an outcome traditional recruitment methods often fail to achieve. In India, Infosys’ “Lex” learning platform achieved unprecedented participation rates because gamification made reskilling initiatives engaging and voluntary (Nair, 2019). This aligns with Deci and Ryan’s (2000) self-determination theory, which suggests that employees thrive when their needs for autonomy, competence, and relatedness are fulfilled. Gamification effectively taps into these psychological drivers, making HR processes more engaging and sustainable.

5.2 Impact on Individual and Organizational Performance

Engagement fueled by gamification often translates into measurable performance outcomes. Salesforce’s “Motivation Engine” is an illustrative case: by gamifying sales activities, the company fostered healthy competition, resulting in improved sales performance and enhanced collaboration (Robson et al., 2016). Similarly, Xu et al. (2020) found that gamified feedback systems made performance progress transparent and incremental achievements visible, motivating employees to pursue long-term goals.

In the Indian IT sector, gamification has shown considerable promise in performance outcomes. Wipro, for example, introduced a gamified recognition platform where employees earn badges for collaboration and innovation. Internal reports revealed a marked improvement in knowledge-sharing behaviors, directly enhancing team productivity and innovation. These practices reinforce Farzan et al.’s (2012) finding that gamification strengthens collaborative cultures when aligned with organizational goals.

Moreover, gamification has proven effective in large-scale workforce transformation initiatives. As India undergoes digital transformation, companies like TCS and Infosys rely on gamified training to upskill employees in emerging technologies such as AI and cloud computing. Gamification ensures not just compliance but also voluntary participation, which is crucial when employees are asked to learn skills outside their comfort zones. In such cases, gamification bridges the gap between engagement and tangible business outcomes, contributing to both individual development and organizational competitiveness.

5.3 Challenges and Opportunities in Implementation

While the benefits of gamification are evident, the challenges identified in literature and practice caution against oversimplification. One major challenge is the “novelty effect” described by Koivisto and Hamari (2019), wherein employees initially respond positively to gamified elements, but engagement wanes once the novelty fades. This issue underscores the importance of iterative design and innovation in gamification strategies.

Ethical concerns also arise in gamified performance monitoring systems. Baptista and Oliveira (2019) warned that excessive reliance on gamification can blur the line between motivation and surveillance, potentially leading to stress and disengagement. In India, this concern is particularly relevant given the country's diverse workforce, where cultural variations influence how employees perceive competition and recognition. Collectivist values prevalent in many Indian workplaces may favor collaborative game elements over individualistic leaderboards (Alsawaier, 2018). Therefore, HR managers must adapt gamification strategies to cultural contexts rather than adopt universal templates.

At the same time, opportunities abound. The rise of digital HR platforms provides fertile ground for gamification to scale across recruitment, training, and performance management. Mobile-first solutions, common in India, allow gamification to reach frontline employees, extending engagement beyond white-collar roles. Additionally, India's young demographic, dominated by millennials and Gen Z, is inherently receptive to gamified systems, offering HR leaders a unique chance to embed gamification into organizational culture.

5.4 Toward a Balanced View

The analysis suggests that gamification has clear potential to enhance both engagement and performance when integrated thoughtfully into HR practices. However, its effectiveness is neither automatic nor universal. It depends on careful alignment with organizational goals, continuous redesign to prevent fatigue, and sensitivity to cultural and ethical contexts. In India, organizations such as Infosys, Wipro, and TCS demonstrate that gamification can succeed at scale when tailored to local realities. Globally, examples like Salesforce and PwC illustrate that gamification can enhance branding, collaboration, and measurable business performance.

Thus, gamification should not be viewed as a standalone tool but as part of a broader strategy of employee experience (EX) design. When HR leaders strike the right balance, gamification becomes a pathway not just to higher engagement and performance but also to sustainable competitive advantage.

6. Conclusion

Gamification represents a powerful yet nuanced tool for enhancing employee engagement and organizational performance. Secondary evidence from global and Indian contexts illustrates measurable benefits in recruitment, training, and performance management. However, long-term success depends on ethical design, inclusivity, and alignment with intrinsic motivation. For HR practitioners, gamification should be seen not as a stand-alone intervention but as part of a holistic employee experience strategy.

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STUDY ON LOAN PORTFOLIO RISK ANALYSIS IN NON-BANKING FINANCIAL COMPANIES: A CASE OF SBFC FINANCE

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Abstract

Non-Banking Financial Companies (NBFCs) play a vital role in India's financial ecosystem by extending credit to underserved sectors. This paper examines the loan portfolio risk management practices of SBFC Finance Limited, an emerging NBFC, using financial data from FY2023 to FY2025. Employing ratio analysis, NPA trends, balance sheet review, profit & loss performance, and key performance indicators (KPIs), the research highlights both the growth trajectory and risk challenges faced by the institution. Findings suggest that while SBFC has achieved strong profitability and balanced loan distribution, rising Gross NPAs and declining Provision Coverage Ratios signal the need for stronger risk buffers. The study concludes with recommendations on provisioning, funding diversification, and digital credit models to ensure long-term sustainability.

Introduction

NBFCs have evolved since the 1960s as alternative credit providers, supplementing India's banking sector. Their flexibility in lending, reach in rural areas, and focus on

SMEs make them indispensable for financial inclusion. Unlike traditional banks, NBFCs often target customers with limited documentation or credit history, exposing them to unique portfolio risks. The collapse of certain NBFCs in recent decades has underscored the importance of effective loan portfolio risk management.

This study focuses on SBFC Finance Limited, an NBFC that has expanded aggressively since 2008. Specializing in MSME, personal, and gold loans, SBFC's customer base is concentrated in semi-urban and rural areas. An analysis of its loan book between FY2023–FY2025 provides insights into operational efficiency, risk trends, and financial sustainability.

Literature Review

Afroze and Dhawan (2018) highlighted the role of NBFCs in providing financial services to underbanked populations, noting challenges of high NPAs and regulatory burdens. Pathak (2025) found that NBFCs investing in technology achieved stronger profitability and lower defaults. Srivastava and Rana (2019) revealed weaknesses in traditional risk assessment practices, stressing the need for advanced risk management systems.

Research on financial inclusion by IOSR (2022) emphasized that NBFCs often serve as first-choice lenders in rural regions due to simpler processes, even though interest rates are higher than banks. Singh and Gupta (2021) examined digital lending, showing efficiency gains but also highlighting low rural digital literacy. Overall, prior studies agree that NBFCs drive financial inclusion but face sustainability risks unless equipped with strong governance, risk management, and technological adoption.

Methodology

This research adopts descriptive and analytical methods, relying on secondary data from SBFC Finance's audited annual reports (FY2023–FY2025), RBI publications, and sector reports from CRISIL and ICRA. The following tools were applied:

- Ratio Analysis (ROA, ROE, Debt-to-Equity, Cost-to-Income, Net Profit Margin)
- NPA Trend Analysis (GNPA, NNPA, PCR)
- Balance Sheet Review (assets, equity, and liabilities)
- Profit & Loss Review (income, expenditure, profitability)
- KPI Analysis (loan growth, operating margins, efficiency ratios)
- Comparative Benchmarking with industry peers.

The study covers FY2023–FY2025, a crucial post-IPO phase of SBFC Finance's expansion.

Data Analysis

Balance Sheet Overview

SBFC's balance sheet shows steady growth in total assets from ₹5,746 Cr in FY2023 to ₹8,596 Cr in FY2025. Shareholders' funds nearly doubled, from ₹1,727 Cr to ₹3,190 Cr, reflecting strong internal capital retention. However, current liabilities also rose sharply, highlighting reliance on short-term borrowings. This liability structure poses refinancing risks and underscores the need for long-term capital instruments.

Key Figures:

- Total Assets: ₹5,746 Cr (2023) → ₹8,596 Cr (2025)
- Shareholders' Funds: ₹1,727 Cr → ₹3,190 Cr
- Current Liabilities: ₹3,957 Cr → ₹5,396 Cr

Profit and Loss Overview

SBFC's income grew from ₹733 Cr in FY2023 to ₹1,305 Cr in FY2025. Expenditure increased, yet operating efficiency improved, as operating profit margins rose above 68%. Profit After Tax (PAT) more than doubled from ₹150 Cr to ₹345 Cr, boosting net profit margins to 26.4% by FY2025. This performance reflects effective cost control and growing economies of scale.

Key Figures:

- Revenue: ₹733 Cr (2023) → ₹1,305 Cr (2025)
- PAT: ₹150 Cr → ₹345 Cr
- Net Profit Margin: 20.4% → 26.4%

NPA Analysis

Gross NPAs (GNPA) increased from 2.38% in FY2023 to 2.74% in FY2025, while Net NPAs (NNPA) rose from 1.36% to 1.51%. The decline in Provision Coverage Ratio (PCR) from 53% to 45% indicates provisioning has not kept pace with loan growth. Although SBFC's asset quality remains manageable, these trends highlight the need for stronger buffers against future credit shocks.

Key Figures:

- GNPA: 2.38% → 2.74%
- NNPA: 1.36% → 1.51%
- PCR: 53% → 45%

Key Performance Indicators (KPIs)

- Operating Margin: 65.9% (2023) → 68.4% (2025)
- Net Profit Margin: 20.4% → 26.4%
- Return on Assets (ROA): Increasing steadily due to profitability gains
- Return on Equity (ROE): Supported by strong PAT growth and equity expansion
- Loan Growth: Disbursements grew from ₹5,200 Cr (2023) to ₹8,500 Cr (2025)
- NPA Ratios: Slightly rising, signaling moderate credit stress.

Findings and Discussion

The analysis shows SBFC Finance has achieved rapid growth with strong profitability and an expanding loan book. The secured loan dominance (MSME loans 55%, Gold loans 15%) reduces overall risk exposure, but the rising share of unsecured personal loans adds potential credit stress. NPA ratios remain stable but provisioning buffers have weakened, as indicated by declining PCR. Key KPIs show SBFC's operational efficiency is improving, yet its reliance on short-term borrowing creates liquidity risks.

Recommendations

1. Maintain PCR consistently above 50% to strengthen credit buffers.
2. Diversify liabilities by raising long-term funds, including bonds and debentures.
3. Monitor personal loan exposure and apply stricter credit appraisal mechanisms.
4. Adopt AI-driven risk analytics for credit scoring and stress testing.
5. Invest in recovery infrastructure through fintech partnerships and digital collections.
6. Improve transparency in disclosures to build investor and regulator confidence.

Conclusion

SBFC Finance has emerged as a strong NBFC with consistent growth and profitability from FY2023 to FY2025. The secured lending model has supported stable asset quality, while digital adoption and operational efficiency have enhanced margins. However, challenges such as increasing GNPA levels, falling PCR, and overreliance on short-term funding need urgent attention. By adopting advanced risk management frameworks, maintaining stronger provisions, and diversifying funding, SBFC can ensure long-term sustainability and continue driving financial inclusion in India.

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“A STUDY ON THE EFFECT OF NPAs ON THE PROFITABILITY OF SELECTED BANKS IN INDIA”

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Abstract

Non-Performing Assets (NPAs) have emerged as one of the most pressing challenges in the Indian banking sector, directly influencing banks' profitability, efficiency, and stability. This study analyzes the impact of NPAs on the profitability of selected public and private sector banks in India. Using correlation and regression techniques, the research examines the relationship between Net NPAs and Net Profits across banks such as SBI, Punjab National Bank, Bank of Baroda, Bank of India, Canara Bank, HDFC, ICICI, Axis Bank, Kotak Mahindra, and Yes Bank during the period 2019–2024. The findings show that NPAs significantly reduce profitability in some banks, while in others, the effect is minor. Public sector banks are more severely impacted compared to private sector banks. The paper suggests stronger monitoring mechanisms, stricter credit appraisals, and effective recovery measures to control NPAs.

Introduction

About the Industry

The banking industry in India forms the backbone of the nation's financial system. It provides credit to individuals, industries, and government institutions, thereby facilitating economic growth. Banks are broadly classified into public sector banks (PSBs), private sector banks, foreign banks, and regional rural banks. Among these, PSBs dominate in terms of outreach and volume of operations, while private banks are known for efficiency and profitability. Over the past few decades, the Indian banking industry has expanded rapidly. However, one of the most serious challenges threatening its health and profitability is the accumulation of Non-Performing Assets (NPAs).

About the Topic

NPAs refer to loans or advances for which the principal or interest payment remains overdue for 90 days or more. High levels of NPAs not only reduce bank's profitability but also affect credit availability in the economy. While private sector banks have managed to maintain relatively lower levels of NPAs, public sector banks have witnessed a significant rise in recent years. Understanding the effect of NPAs on bank profitability is therefore essential to design effective policy measures and ensure long-term stability.

Literature Review

Sl. no	Author/source	Sample size	Tools used	Key findings / conclusion
1.	Chatterjee, Mukherjee & Das (2012)	2004-2010	ANOVA	Banks should address root causes of credit needs, verify guarantors thoroughly, and enforce strict credit policies to reduce NPAs.
2.	Kaur, A. (2012)	PSCBs (2000–2010)	Correlation, CAGR, Growth Rate, Ratio Analysis, Median Test	PSCBs showed a declining trend in NPAs during the study period
3.	Siraj & Pillai (2016)	2005-2015	Ratio analysis	NPAs are a serious threat to profitability and credit risk management in Indian banks.

4.	Debarsh & Sukanya Goyal (2012)	Public sector banks	Least-squares estimation, ANOVA	Modern core banking, strict RBI norms, and efficient recovery mechanisms are essential to manage NPAs.
5.	Selvarajan & Vadivalagan (2013)	Indian Bank & other PSCBs (2002-2012)	Ratio analysis, trend analysis, comparative analysis	Indian Bank had higher priority sector lending; timely NPA management is vital for sustained growth.
6.	Priyanka Mohnani & Monal Deshmukh (2013)	Selected private & public banks	Ratio analysis	NPA levels varied across banks; proactive measures are required to keep NPAs low.
7.	Mishar & Akshay Kumar (2017)	PSCBs (1997-2016)	Ratio analysis	Banks exercise greater caution in lending to prevent NPAs.
8.	Dr. Poonam Mahajan (2018)	Indian banks	ANOVA	NPAs declining but remain higher in PSCBs; private banks more efficient in recovery strategies.
9.	Mayur Rao & Ankita Patel (2015)	Private, public & foreign banks (2009-2013)	Ratio analysis	Significant difference found in Gross NPAs to Gross Advances ratio among bank categories.
10.	Laveena (2016)	PSCBs (2011-2015)	Ratio analysis, growth rate analysis, trend analysis	Rising NPAs in PSCBs; securitization and asset reconstruction suggested for recovery.
11.	Chetan Dudhe (2017)	PSCBs (2007-2016)	Correlation analysis, regression analysis	NPAs negatively affect financial health; innovative recovery strategies recommended.
12.	Sri Ayan Chakraborty (2021)	Indian banks (International comparison)	Percentage analysis	Indian banks report higher NPAs internationally; variations observed in total assets, Gross NPAs & Net NPAs.
13.	Poonam Devi & Dr. Arati (2018)	Private & public banks (2012-2016)	Correlation analysis	NPAs directly reduce profitability; negative correlation between Net NPAs & Net Profit.
14.	Nitin Arora, Nidhi Grover Arora & Kritika Kanwar (2021)	Indian banks (2010-2020)	Meta-frontier data envelopment analysis (DEA)	NPAs have minimal impact on technical efficiency of banks.
15.	Dr. Manu KS & Maheshwari Rakhi (2021)	IFCI (Development)	Regression analysis	NPAs negatively affect IFCI profitability stricter policies

		Bank)		suggested.
16.	Mishra & Rana (2022)	Private & public banks	Correlation analysis	PSCBs' asset management less effective; profits fall with rising NPAs in PSCBs, but rise in private banks.
17	Kavitha Nachimuthu & Veni Muthukrishna (2019)	Scheduled commercial banks	Ratio analysis, Mean Equality Testing, Regression	NPAs significantly reduce profitability and may cause economic instability; rising NPA trend observed.
18.	Sharma, Preethi & Bansal, Atul (2020)	Public & private banks (2010–2015)	Least squares method, ANOVA	No major difference in NPA levels, but Gross NPAs/Net Advances consistently higher in PSCBs.
19.	Reserve Bank of India (RBI)	Conceptual definition	Not applicable	Defines NPAs as assets that cease to generate income; earlier based on 'Past Due' concept.
20.	Sulagan Das & Abhijith Dutta (2023)	Selected PSCBs	ANOVA	Significant variation in mean NPA levels across PSCBs.

Statement of the problem

This study aims to explore the root causes of Non-Performing Assets in both public and private sector banks and to analyze the challenges associated with them. The primary focus is to understand the significant variations in the occurrence and management of NPAs across different nationalized banks in India, particularly with respect to priority and non- priority sector lending

Objectives of the study

1. To examine the productivity and profitability of selected public and private sector banks in India
2. To analyze the relationship between Net NPAs and Net Profits of the banks, and assess the overall impact of NPAs on bank performance.
3. To explain and categorize Non-Performing Assets (NPAs), and identify the key reasons behind their growth.
4. To study the various policies, recovery mechanisms, and legal provisions related to NPAs in the Indian banking system.
5. To suggest effective measures and strategies to reduce and manage NPAs efficiently.

Research Methodology

- **Type of Research:** Descriptive and analytical.
- **Data Source:** Secondary data collected from annual reports of selected banks, RBI publications, and statistical data from 2019–2024.
- **Sample:** 10 banks – SBI, Punjab National Bank, Bank of Baroda, Bank of India, Canara Bank (public) and HDFC, ICICI, Axis, Kotak Mahindra, Yes Bank (private).
- **Tools Used:** Correlation and regression analysis applied to measure the relationship between Net NPAs and Net Profits.
- **Hypothesis:**
 - H_0 : NPAs have no significant impact on bank profitability.

➤ H₁: NPAs significantly impact bank profitability.

Limitations of the study

1. The study is restricted to selected banks and does not encompass the entire scope of NPAs in the banking sector.
2. Data used in the analysis is purely based on secondary sources.
3. The research is confined to the examination of financial data from selected public and private sector banks over a six-year period (2019 - 2024).
4. Although bank profitability can be influenced by multiple factors, this study focuses on exclusively on the impact of NPAs.

Data Analysis and Interpretation

Correlation and Regression Analysis of Net NPAs and Net Profits of Public Sector Banks (2019-2024)

Bank	Correlation	P-value	R ²	Interpretation
State Bank of India (SBI)	-0.92 (Negative)	0.013 (<0.05)	0.84	Strong negative correlation, NPAs significantly reduce profits.
Punjab National Bank (PNB)	-0.754 (Negative)	0.083 (>0.05)	0.568	Moderate negative relation, not statistically significant.
Bank of Baroda (BoB)	-0.64 (Negative)	0.171 (>0.05)	0.41	Weak impact, NPAs not significant on profits.
Bank of India (BoI)	-0.645 (Negative)	0.166 (>0.05)	0.416	Minor influence, not statistically significant.
Canara Bank	-0.705 (Negative)	0.117 (>0.05)	0.49	Negative relation, but insignificant.

Correlation and Regression Analysis of Net NPAs and Net Profits of Private Sector Banks (2019-2024)

Bank	Correlation	P-value	R ²	Interpretation
HDFC Bank	0.975 (Positive)	0.001 (<0.05)	0.949	Strong positive correlation, NPAs significantly affect profits.
ICICI Bank	-0.08 (Negative)	0.88 (>0.05)	0.006	Almost no effect of NPAs on profits.
Axis Bank	-0.896 (Negative)	0.016 (<0.05)	0.803	Strong negative and significant effect of NPAs on profits.
Kotak Mahindra Bank	-0.67 (Negative)	0.145 (>0.05)	0.448	Positive relation but not significant, moderate effect.
Yes Bank	-0.891 (Negative)	0.017 (<0.05)	0.793	Strong negative and significant effect of NPAs on profits.

Overall interpretation

Public sector banks are more prone to high NPAs but sometimes the impact on profitability is diluted due to large size and government support. Private banks, although with lower NPAs, experience sharper impacts on profitability when NPAs rise.

Suggestions

1. Strengthen credit appraisal and monitoring of loans.
2. Regular review of loan accounts to prevent diversion of funds.
3. Proper training of staff for credit risk management.
4. Use technology and AI to predict and monitor potential defaults.
5. Faster legal proceedings through Debt Recovery Tribunals and SARFAESI Act.
6. Encourage one-time settlement schemes for faster recovery.
7. Make senior-level management accountable for rising NPAs.

Conclusion

NPAs continue to remain a major challenge for the Indian banking industry. The study reveals that while public sector banks carry higher NPA levels, the profitability impact is often severe in private banks like HDFC, Axis, and Yes Bank. Effective monitoring, strict recovery mechanisms, and improved governance are critical to address this issue. Banks with lower NPAs are better placed to sustain growth and profitability in the long run. Therefore, reducing NPAs to international standards should be the top priority for Indian banks to ensure financial stability and economic progress.

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A STUDY ON RISK MANAGEMENT IN SBI AND AXIS BANKS IN BANGALORE REGION

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Abstract

Risk management is another pillar of the banking stability and profitability. As competition, digitization and various businesses uncertainties swell, banks are faced with a myriad of risks which include credit risk, market risk, liquidity risk and operational risk. Three major significant risk management practices of two top banks in India in the Bangalore region, the State Bank of India (SBI) and the Axis Bank, are discussed in this paper. Their performance was examined with the use of the CAMEL framework, which includes Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity.

The results of the analysis show that although SBI is a bank of the public, which proves to be financial strength and finds its balance, Axis Bank, a bank of the private sphere, has worked and continues in terms of capital sufficiency, earnings and quality of assets. The research brings out flaws in interest sensitivity analysis and areas of refinements. Thus, the study highlights the importance of highly effective risk management in the sustainability of banks in the long-term.

Keywords: Risk Management, SBI, Axis Bank, CAMEL Model, Banking Performance, Non-performing assets, Liquidity, Credit risk, Financial Stability.

Introduction

Economic stability and growth has been majorly supported by the Indian banking sector. The industry has been changed during the last 30 years with the help of globalization, deregulation, and technological innovation. In addition to these opportunities, new threats have come into focus- Credit defaults, regulatory risks, cyber threats, and pandemic problems as an overhang. Risk management has thus emerged as an important strategic need and not a compliance initiative.

In this paper, the special consideration is given to SBI and Axis bank which are the representatives of the state and private sector respectively. As the greatest public-sector bank, SBI has become an essential part in promoting the government programs and financial inclusions. Axis bank on the other hand is a rapidly expanding privately owned bank characterized by aggressive loan extension and customer-oriented innovations. In this paper, the risk management practices of these two are evaluated and compared by using the CAMEL approach.

Literature Review

- Bagchi S.K. (2021): Credit risk occupies almost 90 percent to 95 percent of all the banking risks; their priority should precede other risks.
- Mrudul Gokhale (2021): For proper measurement and regulation control, there is the need to have advanced quantitative models in capital adequacy.
- Banumathi M. (2021): Under-capitalized banks perform poorly in efficiency and profitability as compared to well-capitalized banks.
- Kallu Rao P. (2021): Global crises emphasize the fact that financial risks are interdependent, and strong (regulatory) measures should be established.
- RBI (2020): Indian banks need to adopt integrated frameworks such as RAROC in aid to deal with risks adequately.

Methodology

The research design used in the study is comparative research design and descriptive research design.

Sample: Bangalore region branch of SBI and Axis bank.

Sample Size: The statistical reports of both banks about financial statements (2020-2025)

Data Sources

- Secondary: Bank annual reports, bulletins issued by the RBI announcing, journals of the industry, and financial databases.

- Analytical Framework: The financial health was evaluated by the CAMEL framework.
- Instruments: The CAMELS Ratios such as CAR, Net NPA Ratio, ROA and Cost-to Income Ratio.

Implementation

Two of the CAMEL were used in the following way:

- Capital Adequacy: CRAR is used to measure capacity of banks to absorb losses.
- Asset Quality: Asset Quality is assessed by NPAs and provisioning adequacy.
- Efficiency in Management: Measured through ROA, ROE and RONW.
- Earnings: win or loss decision taken based on profitability ratios and net interest income.
- Liquidity: Determined with Use of Current/Quick Ratio.

Advantages

- Opens the possibility of anticipatory risk detection.
- It assures that regulations of RBI are complied with.
- It instils trust in the investors and customers.
- Helps with maximizing the capital and profit.

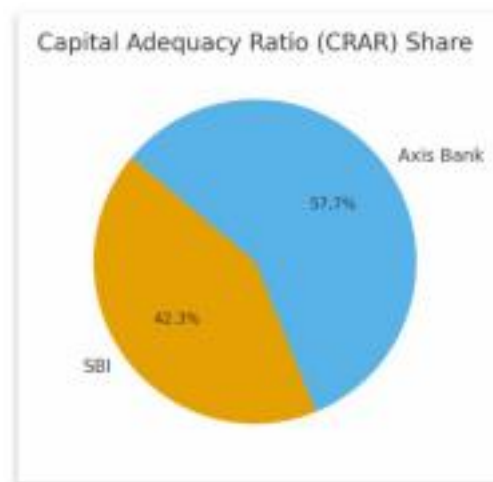
Disadvantages

- CAMEL is historical, and probably fails to represent bursts.
- Small coverage owing to the same study period (2020-2025) and selection of the bank.
- Using secondary data can decrease the accuracy.

Results / Output

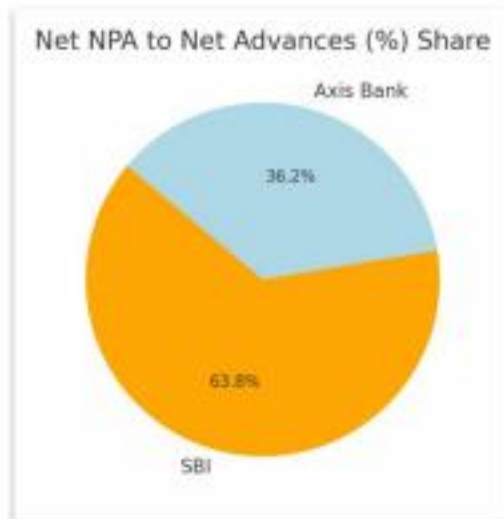
1. Capital Adequacy (CRAR)

SBI: 12.97% (average), which is slightly higher than that of RBI. Axis: 17.7 per cent (average) exhibiting better financial strength.



2. Asset Quality (Net NPA %)

SBI: 2.48% (average), with a high of 3.81% in 2020–21. Axis: 1.41% (average), lower NPAs all the time.



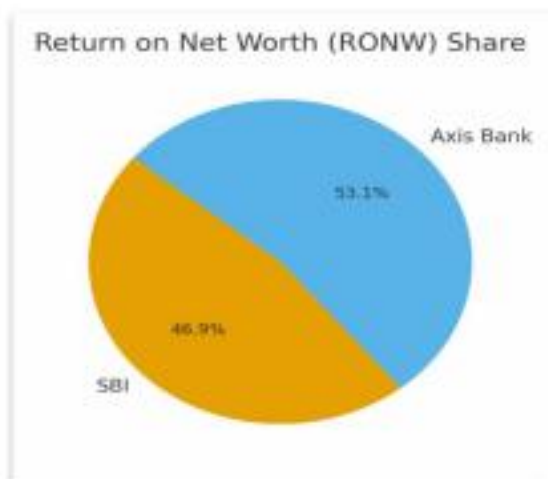
3. Profitability Measures

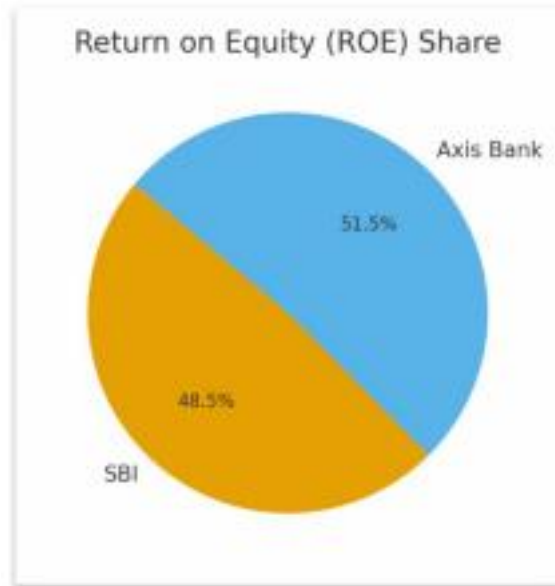
ROA: SBI (0.73%) vs Axis (1.67%).

RONW: SBI (10.9%) vs Axis (12.33%).

ROE: SBI (11.94%) vs Axis (12.66%).

Axis dominates in the indicators of profit.



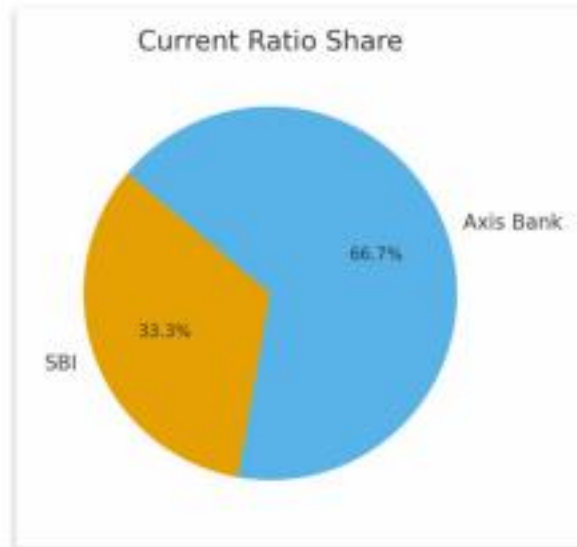


4. Liquidity Position

Intentionally omitted the Current assets and Current liabilities account cover under the above statements had they not occurred on distinct accounts. Below the above statements, showing Current assets and Current liabilities are intentionally not present since they have displayed the mentioned figures on different accounts.

Axis Current Ratio: 0.092 Quick Ratio: 13.47.

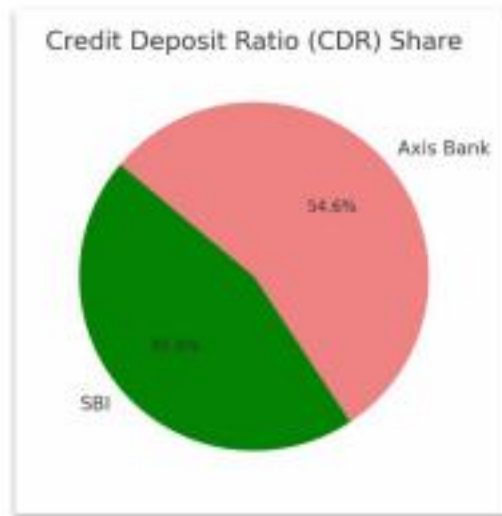
Axis has bigger liquidity buffers.



5. Credit Deposit Ratio (CDR)

SBI: 84.4% (conservative approach).

Axis: 101.49%.



Bar Chart: comparison CRAR (SBI vs Axis).

Line Graph: NPA trends (2020–2025).

Clustered Bar Chart: Operating profitability ratios (ROA, RONW, ROE).

Conclusion

This research proves that the Axis Bank is performing better than that of SBI in capital adequacy, asset quality, profitability, and liquidity. Nevertheless, SBI is a stable state-owned enterprise that holds immense systemic significance and robustness. Both the banks have incorporated risk management practice into their operations although the disparity in efficiency could be witnessed.

The study presents the relevance of effective risk management in ensuring the sustainability of such a long-lasting delay as during the COVID-19 issue. The proactive policies of Axis Bank provide it with a competitive advantage whereas SBI sticks to its size and traditional way.

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THE IMPACT OF INFLUENCER MARKETING ON GENERATION Z CONSUMERS' SMARTPHONE BUYING DECISIONS

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Abstract: This research paper explores the impact of influencer marketing on Generation Z consumers' smartphone purchasing decisions. The study investigates how trust, relatability, content authenticity, and platform preference affect buying behavior. Primary data was collected through surveys among Gen Z respondents, supported by secondary literature. The findings suggest influencer marketing significantly enhances awareness, trust, and purchase intention among Gen Z, especially for mid-range smartphones. However, skepticism about exaggerated claims and brand credibility remains. Recommendations include leveraging tech influencers, micro-influencers, and transparent content strategies to maximize long-term brand loyalty.

Keywords: Influencer Marketing, Generation Z, Smartphone Purchase Decisions, Social Media, Consumer Behavior

1. Introduction

The digital revolution has transformed marketing strategies, shifting focus from traditional advertising to interactive, personalized campaigns. Influencer marketing has emerged as a key tool, especially for reaching Generation Z, digital natives born between 1997 and 2012. Gen Z values authenticity, peer-driven content, and transparency, making them more receptive to influencer recommendations than traditional advertisements. In the competitive smartphone industry, influencers play a crucial role in shaping brand perceptions, creating awareness, and influencing purchase intent.

2. Literature Review

Existing literature highlights key theories such as the Theory of Reasoned Action, Theory of Planned Behavior, Social Influence Theory, and Source Credibility Theory, which explain how influencers affect consumer attitudes and decisions. Studies reveal that authenticity, trust, and platform choice significantly influence Gen Z's engagement with influencer content. Research also emphasizes the effectiveness of micro-influencers in building strong connections and the risks of influencer exaggeration. However, there remains a gap in longitudinal studies measuring long-term behavioral impacts and the role of AI-driven influencer marketing.

3. Methodology

The study adopted a descriptive research design with a quantitative approach. Primary data was collected through an online survey distributed via Google Forms among 273 Gen Z respondents aged 18–25. The questionnaire covered demographics, social media usage, influencer credibility, and smartphone purchase intentions. Secondary data was sourced from academic journals, industry reports, and market studies. Data analysis was conducted using Microsoft Excel for descriptive statistics, charts, and trend identification.

4. Implementation

The survey was distributed across student networks, social media groups, and online communities frequented by Gen Z. Respondents shared insights on their smartphone usage, preferred social media platforms, and trust in influencer content. Analysis focused on identifying patterns such as platform preferences (Instagram, YouTube), types of influencers trusted (tech reviewers vs. celebrities), and the influence of content formats like unboxing videos, comparisons, and feature testing.

5. Results / Output

Key findings include:

- High Social Media Usage: 67% of respondents (18–25 years) spend 2–5 hours daily online, increasing exposure to influencer marketing.
- Influencer Following: 57.8% follow smartphone-related influencers, with tech reviewers being the most trusted (67.4%).
- Content Impact: Comparison reviews (34.4%) and unboxing videos (29.7%) were most influential.
- Trust & Awareness: 85% agreed that influencers create awareness of new launches; nearly half consider influencer opinions before purchase.

- Purchase Impact: 42% admitted influencers impacted brand choice, while 31% purchased smartphones due to influencer recommendations.
- Demographics: Students and mid-income groups showed higher susceptibility to influencer driven marketing.

6. Advantages, Disadvantages & Applications

Advantages:

- Builds brand awareness and trust among Gen Z.
- Effective in mid-range smartphone segments.
- Strengthens engagement through authentic content.

Disadvantages:

- Risk of exaggerated or misleading claims (81% noticed exaggeration).
- Reduced credibility among older respondents.
- High costs of influencer collaborations.

Applications:

- Smartphone brands can use influencer marketing for product launches, feature promotions, and customer engagement campaigns.
- Micro-influencers can target niche audiences with relatable content.
- AI tools can optimize influencer-brand matching and campaign personalization.

7. Conclusion

Influencer marketing significantly shapes Gen Z's smartphone buying behavior by enhancing awareness, trust, and purchase intent. While influencers act as credible voices, skepticism about exaggeration exists. Tech influencers and micro-influencers are particularly effective in influencing purchasing decisions. Brands that prioritize transparency, authenticity, and platform-specific strategies can sustain long-term loyalty among Gen Z consumers.

8. Future Work

Future research should explore:

- Longitudinal studies tracking the persistence of influencer-driven behavior.
- Comparative analysis of different social media platforms' effectiveness.
- AI integration in influencer campaign personalization.
- The role of nano-influencers in niche markets.

Acknowledgments

The researcher extends gratitude to faculty mentors, peers, and respondents who participated in the survey. Special thanks to the institution for providing guidance and resources to complete this study.

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“A STUDY ON IMPACT OF CAPITAL STRUCTURE DECISION ON MAMCOS PROFITABILITY”

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Abstract

This research analyzes the impact of capital structure choices on the profitability of The Malnad Arecanut Marketing Co-operative Society Ltd. (MAMCOS), one of the leading cooperatives in Karnataka. Through financial data ratio analysis from 2019–20 to 2023–24, this research analyzes the impact of equity and debt composition on profitability, risk, and sustainability. With cooperative finance playing a crucial role in agricultural-based economies, effective structuring of funds to ensure financial stability is the contribution of this paper. According to findings, a shift towards higher equity financing is observed in recent years, meaning a conservative and sustainable use of capital. The findings recommend the same for similar agricultural cooperatives.

Keywords: Capital Structure, Equity financing, Debt composition

Introduction of Study

Capital structure is the manner in which an organization funds its operations from a mix of debt and equity. It is essential in framing the financial health, risk level, and profitability of a firm. Optimal cost of capital and long-term viability are ensured through a carefully thought out capital structure. MAMCOS (Malnad Arecanut Marketing Co-operative Society), founded in 1939 in Shivamogga, is a prominent agri-cooperative. It offers arecanut growers in Malnad, Karnataka, marketing support, loans, and infrastructure. Cooperatives such as MAMCOS, unlike profit-maximizing companies, emphasize member welfare and service provision. Financial decisions for them are thus conservative, and long-term stability oriented. Absent marked volatility in assets or revenue, fluctuations in profitability over past years raise concerns regarding its capital structure. Exploratory analysis of its financial structure—equity, reserves, and borrowing—is henceforth necessary to evaluate performance trends. MAMCOS is in a competitive cooperative marketplace with industry leaders such as CAMPCO, TUMCOS, and APCOS. It needs to remain efficient on the financial front while fulfilling its social mandate. Debt facilitates expansion but raises financial risk; equity facilitates sustainability but could slow growth rate. Thus, capital structure choices need to balance risk and goal of services. Absorbing this challenge from MAMCOS is the purpose of this study. By reviewing financial information from 2019–20 to 2023–24, we hope to elucidate structural changes and their implications. Counterintuitive behavior of key profitability and capital structure ratios is explored to unravel trends. This piece of research offers pointers to other cooperatives seeking enhanced financial stability too. The research is aligned with the larger cooperative movement philosophy of self-reliance and accountability. It adds to academic literature and practical suggestions to cooperative financial management.

Statement of the Problem

While a number of studies examine capital structure in corporate companies, cooperative societies such as MAMCOS possess different objectives and financial conduct. Little is known about how cooperatives maximize the mix of capital. With recorded changes in profitability even as revenues rise, it becomes important to identify whether capital structure choices lead to financial inefficiencies or gains.

Objectives

- To investigate the capital structure of MAMCOS for five consecutive financial years.
- To examine the linkage between debt-equity choice and profitability measures.
- To determine the effects of capital structuring on financial leverage and stability.
- To examine the effect of operating leverage on MAMCOS's cost structure and operational risk.
- To assess the impact of financial leverage on MAMCOS's debt-equity ratio and profitability.

Scope of Study

This research deals only with the financial performance of MAMCOS for 2019–20 to 2023–24. It examines the effect of capital structure choices—i.e., the composition of equity and debt—on profitability. Major financial ratios like Debt-Equity, Equity Ratio, and Debt Ratio are discussed. This research is limited to MAMCOS and does not compare it with other cooperatives. Both qualitative and quantitative secondary data available in annual reports have been utilized for analysis.

Limitation of Study

- Limited to secondary data from MAMCOS financial reports.
- No comparison with other cooperatives.
- Excludes outside influences such as policy variations and market risks.

Review of Literature

1. Anshu gupta(2024), Stated that Optimal operation of fiscal finances is a demand for companies in order to reach short- term and long- term objectives.Capital structure is significant in financial operation, manifesting as the relative mix between debt and equity.This study keeps the notion of capital structure and its rudiments simple and also examines thecorrelation between financial performance and capital structure.
2. Dhanani Mohammad Farid, Anita Rana(2024), Stated that capital structure and profitability are regarded as two of the utmost fulfilling parameters for organizational development, and every association attempts to maximize these two. Keeping in view these data, the current disquisition work is committed to researcher's contributions towards the field of capital structure and profitability, and introduces the disquisition gaps in the disquisition and pretensions of proposed disquisition.
3. Nattala Vanaja(2024), Stated that A capital structure choice has a critical impact on firm performance. As analogous, multitudinous studies have explored the link between a establishment's performance and its capital structure still, findings of these studies have handed differing issues. Capital structure variables are long- term debt to means rate, short- term debt to means rate, and total debt to means rate. Return on means, return on equity, and earnings per share are the main criteria employed to measure success.
4. Chandrika Prasad Das(2018), Stated that financing decision is one of the key topics in financial management to maximize shareholders' wealth. Companies have a choice between using either debt or equity capital to finance assets. The aim of this study is to identify the determinants of capital structure and how it affects financial performance. This paper applied secondary data and considered 50 leading manufacturing companies for our research. Regression model has been utilized to examine the relationship and effect of capital structure on profitability.
5. Mr.Yuvraj Dattatraya Nalwade(2017), Stated that capital structure is a key decision in every firm. In this papers researcher has presented secondary study through various secondary data. This paper is primarily focused on existing study which is associated with capital structure decisions. This study is also assist to understand the various factors influencing on capital structure decisions and characteristics of optimal capital structure.

Ratio Analysis

1. Equity Ratio

Formula: Equity Ratio = Equity / Total Assets

Table No: 4.1

Year	Equity(₹)	Total Assets(₹)	Ratios
2019-20	53,84,20,700	348,88,10,300	0.154
2020-21	57,45,22,166	350,77,38,432	0.164
2021-22	63,39,75,115	412,72,54,565	0.154
2022-23	76,60,64,250	425,70,89,419	0.179
2023-24	97,36,19,354	467,48,82,455	0.208

(Source: Annual Reports)



(Source : Table 4.1)

MAMCOS' equity ratio also shows progressive improvement in the five-year journey, advancing from 0.154 in 2019–20 to 0.208 in 2023–24. Even though it fell marginally in 2021–22, the ratio climbed back in subsequent years, reflecting greater dependence on shareholders' funds over external borrowings. The steady increase mirrors improved capital structure handling and financial soundness, limiting debt dependence. This trend is a positive one in which MAMCOS is increasing its internal finance strength and improving long-term sustainability. In summary, the rising trend in the equity ratio is an indicator of improved financial health. MAMCOS is becoming less financially risky and more stable in its operations.

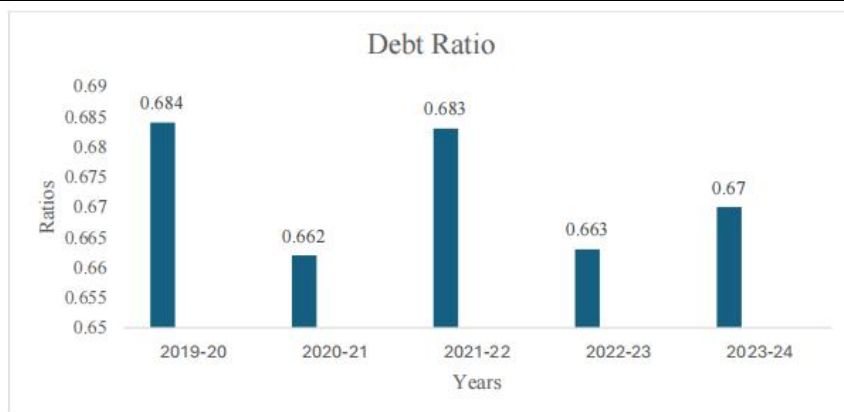
2. Debt Ratio

Formula: Debt Ratio = Total Debt / Total Asset

Table No: 4.2

Year	Debt(₹)	Total asset (₹)	Ratio
2019-20	2,38,49,52,435	3,48,88,10,300	0.684
2020-21	2,32,27,32,696	3,50,77,38,432	0.662
2021-22	2,81,75,10,785	4,12,72,54,565	0.683
2022-23	2,82,07,02,695	4,25,70,89,419	0.663
2023-24	3,17,31,91,234	4,67,48,82,455	0.670

(Source: Annual Reports)



(Source : Table 4.2)

The debt ratio for MAMCOS has been relatively stable over the five-year review period, varying only within a very narrow range of 0.662 to 0.684. The highest ratio was observed in 2019–20 at 0.684, indicating higher reliance on debt financing, while the lowest was in 2020–21 at 0.662, reflecting slightly reduced dependence on borrowings. The subsequent years show marginal variations, suggesting that MAMCOS has maintained a consistent pattern of leveraging assets through debt. This consistency in the ratio represents a balanced strategy towards external borrowing, neither over-dependent nor drastically cutting down on borrowings. In summary, the debt ratio reveals a steady dependence on debt, showing financial stability. MAMCOS has been able to sustain a contained amount of leverage, showing stability without excessive financial risk.

3 Debt-equity ratio

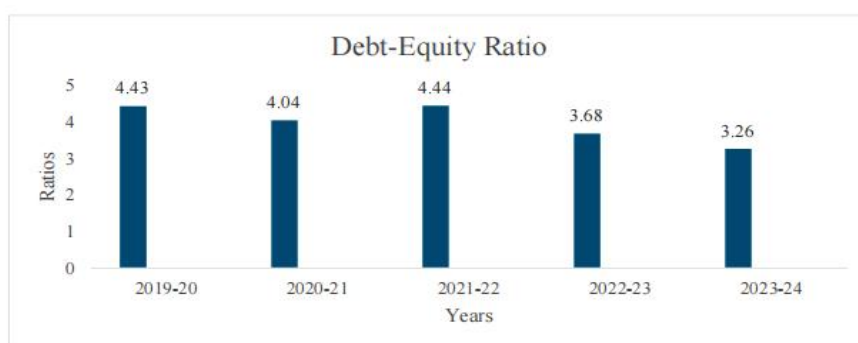
Formula: Debt-Equity Ratio= Total Debt / Total equity

Table No: 4.3

Year	Total Debt (₹)	Total equity (₹)	Ratio
2019-20	2,38,49,52,435	53,84,20,700	4.43
2020-21	2,32,27,32,696	57,45,22,166	4.04
2021-22	2,81,75,10,785	63,39,75,115	4.44
2022-23	2,82,07,02,695	76,60,64,250	3.68
2023-24	3,17,31,91,234	97,36,19,354	3.26

(Source: Annual Reports)

Graph No : 4.3



(Source : Table 4.3)

MAMCOS's debt–equity ratio indicates a downtrend over the five-year time frame, going down from 4.43 in 2019–20 to 3.26 in 2023–24. The highest leverage occurred in 2019–20 and 2021–22 with the highest debt being greater than four times the equity, reflecting excessive borrowing. Since 2022–23, the ratio decreased significantly, reflecting an attempt at curtailing financial dependence on debt. This steady decrease indicates enhanced capital structure with rising equity ownership and lower over-leverage risk. A lower ratio indicates that MAMCOS is steadily shifting towards greater stability and long-run financial health. Finally, the declining debt–equity ratio underscores improved balance in financing choices.

4. Operating leverage

Formula: Operating Leverage= Contribution margin / EBIT

Table No:4

Year	Contribution margin (₹)	EBIT (₹)	Ratio
2019-20	8,43,09,000	14,98,40,650	0.56
2020-21	11,23,12,704	14,61,93,026	0.77
2021-22	18,24,01,069	18,57,21,003	0.98
2022-23	22,52,34,763	25,16,56,855	0.89
2023-24	13,77,18,124	21,62,37,912	0.64

(Source: Annual Reports)

Graph No : 4



(Source: Table 4)

The operating leverage of MAMCOS has presented significant volatility in the five-year timeframe, increasing from 0.56 in 2019–20 to a high of 0.98 in 2021–22, before falling to 0.64 in 2023–24. The rise during the initial years suggests that MAMCOS possessed greater fixed costs in comparison with variable costs, which heightened the effect of sales on operating income. The fall afterwards reflects improved cost control and lower percentage of fixed costs, making the firm less responsive to changes in sales. Generally, the trend is a phase of high operating risk followed by attempts to normalize operational efficiency. Finally, the volatile operating leverage reflects mixed sensitivity of profits to sales during the years. MAMCOS has enhanced cost control over the past few years, minimizing operational risk while keeping flexibility in managing costs.

5. Financial leverage

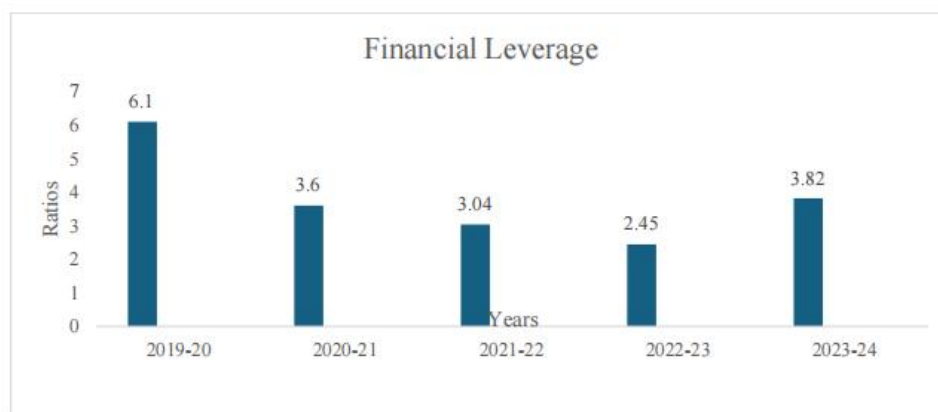
Formula: Financial leverage= EBIT/EBT

Table No: 5

Year	EBIT (₹)	EBT (₹)	Ratio
2019-20	14,98,40,650	2,45,30,200	6.10
2020-21	14,60,93,026	4,04,70,156	3.6
2021-22	18,57,21,003	6,11,96,163	3.04
2022-23	25,16,56,855	10,24,07,276	2.45
2023-24	21,62,37,912	5,65,35,835	3.82

(Source: Annual Reports)

Graph No : 5



(Source: Table 5)

MAMCOS's financial leverage has a downward trend from 6.10 in 2019–20 to 2.45 in 2022– 23, then increased to 3.82 in 2023–24. The high leverage at the beginning reflects heavy dependence upon debt financing, which increased returns but also augmented financial risk. The decline that follows indicates attempts at limiting reliance on borrowed capital and strengthening the equity base, resulting in a more stable capital structure. The rise in 2023–24 indicates a short-term increase in leverage, perhaps as a result of further debt assumed for expansion or operational purposes. Overall, the trend signifies that MAMCOS is managing its financial risk actively while maximizing the balance between debt and equity. In conclusion, the trend in financial leverage shows prudence in debt control to ensure stability. As long as leverage is moderate, MAMCOS ensures a balance of risk and return for sustained growth.

Conclusion

The research concludes that capital structure choices directly impact the profitability and financial stability of MAMCOS. Over the course of the study, a noticeable shift towards debt free financing to equity-based capital structure enhanced its health and minimized risk. Sectors like Debt-Equity and Capitalization Ratio exhibited positive directions toward sustainability. The movement in this direction enhances MAMCOS's cooperative objectives to serve its members while being financially viable. An efficient capital structure will become a future growth driver and long-term sustainability of co-operative institutions of this nature.

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IMPACT OF CAREER ADVANCEMENT ON EMPLOYEE RETENTION: A STUDY WITH RESPECT TO AMAZON DISTRIBUTORS PVT LTD

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Abstract

This study explores the impact of career advancement on employee retention with reference to Amazon Distributors Pvt. Ltd. Retaining skilled employees is a major challenge for the logistics and distribution sector, where workforce efficiency is crucial. Using a mixed-method approach—survey questionnaires (n=60), interviews, and HR data—this research identifies the relationship between career development opportunities and employees' intent to stay. The results show a strong positive correlation ($R^2 = 0.77$) between training & development, salary, work environment, supervisor support, work-life balance, and retention. Findings highlight that training and development ($\beta=0.31$) has the most significant effect, followed by work environment ($\beta=0.28$) and salary ($\beta=0.25$). Recommendations include structured career programs, mentorship, transparent promotion policies, and enhanced communication to improve retention and employee satisfaction.

Keywords: Career Advancement, Employee Retention, Training & Development, Salary, Work-Life Balance, Amazon Distributors, Regression Analysis.

Introduction

Employee retention is critical for organizations facing high competition and operational pressures. In logistics and e-commerce distribution, employee attrition disrupts workflows and increases costs. Career advancement opportunities such as promotions, training, mentoring, and internal mobility motivate employees to remain engaged. This study focuses on Amazon Distributors Pvt. Ltd., where retaining trained employees ensures operational efficiency. The research aims to examine whether career advancement initiatives have a measurable effect on retention.

Given the competitive nature of the logistics industry, retaining skilled employees is a challenge that directly impacts efficiency and service quality. This study seeks to analyze how career advancement opportunities—such as training & development, promotions, supervisor support, and a positive work environment—affect employee retention in the organization.

Literature Review

Thwin & Janarthanan (2023) emphasized that career development opportunities such as training, mentoring, and fair promotion policies significantly enhance employee loyalty and reduce turnover. Employees who see a clear career path are more likely to stay with the organization, leading to reduced recruitment costs and higher organizational performance.

Kinyili & Karanja (2015) identified that remuneration and career advancement practices jointly influence employee retention. Their study highlighted that employees consider career growth as important as salary increments when deciding to remain with an organization.

Ghosh et al. (2013) found that training and development opportunities contribute to employee engagement and job satisfaction, which in turn influence retention. The authors argue that organizations must design training programs aligned with employees' career aspirations.

Wane (2016) reported that lack of advancement opportunities was one of the primary reasons for attrition in NGOs, suggesting that structured career counseling and mentorship programs can significantly improve retention rates.

Sari & Dewi (2020) analyzed the effect of career development and compensation on retention in Indonesian organizations. Their findings revealed that career development had a more significant impact on retention compared to compensation, highlighting the importance of providing growth opportunities over just financial rewards.

Hausknecht, Rodda & Howard (2009) also suggested that employee retention is influenced by both intrinsic (career growth, job satisfaction) and extrinsic (salary, work conditions) factors, with intrinsic motivators playing a more sustained role over time.

Methodology

Statement of Problem: High turnover in logistics increases costs and disrupts operations. Career growth opportunities might reduce attrition, but their effect at Amazon Distributors needs to be examined.

Objectives:

1. Analyze the relationship between career advancement and retention.
2. Evaluate employee perceptions of promotions, training, and supervisor support.
3. Recommend strategies to reduce attrition.

Data Collection: Primary data was collected from 60 employees using a structured questionnaire (5-point Likert scale) and interviews with HR managers. Secondary data was taken from HR records, manuals, and research articles.

Data Analysis: Percentages, frequency distributions, and multiple regression analysis (SPSS) were used.

Implementation

The implementation of this research was carefully structured to measure how career advancement initiatives influence employee retention. The process was executed in the following steps:

1. Problem Identification

The project began by identifying a key HR challenge – **increasing employee turnover** and the need to understand whether **career advancement opportunities** play a significant role in employees' decision to stay with the organization. Discussions with HR managers confirmed that retention is a priority area.

2. Research Framework Development

A research framework was developed linking independent variables (**Training & Development, Salary, Work-Life Balance, Supervisor Support, Work Environment**) to the dependent variable (**Employee Retention**). This helped in designing survey questions and choosing the right analysis techniques.

3. Questionnaire Design

A structured questionnaire was created using a **5-point Likert scale** (Strongly Disagree to Strongly Agree) to collect employee perceptions on:

- Access to training & growth opportunities
- Salary satisfaction and fairness
- Work-life balance support
- Supervisor and management support
- Overall work environment
- Intention to stay with the organization

4. Data Collection

- **Sample Size:** 60 employees from different departments and roles were selected.
- **Method:** Data was collected via **Google Forms** and direct interactions.
- **Demographics Captured:** Age, gender, education level, tenure, and employment type were recorded to analyze patterns across employee groups.

5. Data Preparation

- Responses were cleaned to remove incomplete entries.
- Likert scale responses were **numerically coded** (5 = Strongly Agree, 1 = Strongly Disagree).
- Data was tabulated and entered into **SPSS** for analysis.

Advantages / Disadvantages / Applications Advantages**Practical Relevance**

Focuses on a real organizational problem (employee retention), making the findings directly applicable for HR managers and decision-makers.

Data-Driven Insights

Uses **primary data** from employees, giving first-hand, authentic insights into their perceptions and challenges.

Quantitative Analysis

Regression and hypothesis testing provide measurable results, increasing the reliability and validity of the study.

Disadvantages**Limited Sample Size**

The study was conducted on only 60 respondents, which may not fully represent the entire workforce.

Single Organization Focus

Findings are specific to Amazon Distributors Pvt. Ltd. and may not be completely generalizable to other companies or industries.

Self-Reported Data

Responses are based on employee opinions, which may be biased or influenced by personal experiences.

Applications

The findings can be applied to:

- HR Strategy: Creating structured career progression plans.
- Training Design: Offering targeted training programs.
- Policy Making: Developing transparent salary increments and appraisal systems.
- Employee Engagement: Increasing mentoring and supervisor support initiatives.

Results/Output

- **Model Summary:** $R^2 = 0.77 \rightarrow 77\%$ of variance in retention explained by independent variables.
- **Significant Predictors:**
 - Training & Development ($\beta=0.31$, $p<0.01$)
 - Work Environment ($\beta=0.28$, $p<0.01$)
 - Salary ($\beta=0.25$, $p<0.05$)
- **Other Factors:** Work-life balance ($\beta=0.18$) and supervisor support ($\beta=0.20$) were positive but slightly less impactful.

Conclusion

Career advancement has a strong and statistically significant impact on employee retention. Employees with access to structured career growth opportunities are more engaged, satisfied, and loyal. Addressing inconsistencies in training and making promotion criteria transparent can significantly improve retention at Amazon Distributors Pvt. Ltd. The findings underline the importance of aligning HR strategies with employees' career aspirations. By investing in structured learning initiatives, transparent promotion criteria, mentoring programs, and employee engagement activities, the company can significantly reduce attrition and strengthen its human capital.

Future Work

- ✓ Extend the study to other branches and compare results.
- ✓ Include qualitative analysis of employee feedback for deeper insights.

- ✓ Examine the long-term effect of implemented HR strategies on turnover rates.
- ✓ Measure Post-Implementation Results
- ✓ Use Advanced Analytics
- ✓ Explore Remote Work Impact

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“IMPACT OF CELEBRITY ENDORSEMENTS ON FASHION BUYING DECISIONS AMONG COLLEGE STUDENTS”

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Abstract

In today's fashion-conscious youth market, celebrity endorsements play a powerful role in shaping buying decisions, especially among college students. This study explores how celebrities influence students' fashion purchases through brand endorsements, social media presence, and image association. While many brands invest heavily in celebrity marketing, there is still limited understanding of whether such endorsements actually lead to trust, brand preference, or long term loyalty in the student segment. The study aims to bridge this gap by analysing the effect of celebrity endorsements on college students' fashion buying behavior. Key objectives include understanding the role of perceived credibility, attractiveness, and expertise of celebrities in shaping brand attitudes and purchase intent. The study used a structured questionnaire based on previously validated scales. Items measuring celebrity endorsement dimensions were adopted from Alfred et al. (2021), including credibility, trustworthiness, and familiarity. Purchase intention and brand attitude scales were adapted from Ohanian (1990) and Kamins et al. (1989), using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The research followed a descriptive design with a sample of 120 college students aged 18–25, collected through convenience sampling. Data analysis included descriptive statistics and correlation analysis using SPSS. The study found that celebrity credibility and physical appeal significantly influence students' perception of fashion brands, while social media presence reinforces brand recall. However, not all endorsements lead to actual purchases, indicating a gap between perception and behaviour. Limitations of the study include a limited sample size and focus on a single region, which may restrict generalization. Future research can explore comparisons with social media influencers or study differences across product categories like tech or personal care. This study adds value by providing insights into how marketers can design effective endorsement strategies targeting youth fashion consumers.

Keywords: Celebrity Endorsements, Fashion Marketing, Youth Consumer Behaviour, Purchase Intention, Brand Attitude, Social Media Influence.

Introduction

The fashion industry is one of the most dynamic and fast-evolving sectors in the global economy, with consumers constantly seeking new styles, trends, and brand experiences. Among the various consumer segments, **college students represent a particularly critical audience** due to their **high fashion consciousness, strong desire for self-expression, and active engagement with digital media platforms** (Keller, 2013; Hung et al., 2011). For many young adults, fashion consumption is not merely about clothing but about constructing an identity, projecting social status, and gaining peer approval (Solomon, 2018). Consequently, brands have recognized the importance of targeting this demographic with marketing strategies that resonate with their aspirations and lifestyle preferences.

One of the most prominent strategies in fashion marketing is **celebrity endorsement**, where well-known personalities are employed to promote products and build favorable associations with brands (Erdogan, 1999). Celebrities, whether from film, music, sports, or social media, hold immense influence over young consumers because they are perceived as **trendsetters and opinion leaders** (McCracken, 1989). In India, this phenomenon is particularly significant, as Bollywood actors, cricket stars, and emerging digital celebrities enjoy massive popularity among youth. Fashion brands frequently collaborate with these figures to launch products, run advertising campaigns, and engage audiences on platforms such as Instagram, YouTube, and OTT media (Srinivasan, 2016). Such endorsements are believed to **create brand awareness, enhance credibility, and drive purchase intentions**, making them a staple of contemporary fashion marketing.

The effectiveness of celebrity endorsements can be explained by several theoretical frameworks. The **Source Credibility Model** (Hovland & Weiss, 1951) argues that the persuasiveness of a message depends on the communicator's **expertise, trustworthiness, and attractiveness**. When a celebrity endorser is perceived as knowledgeable about fashion trends (expertise), reliable in their recommendations (trustworthiness), and visually appealing (attractiveness), consumers are more likely to develop positive attitudes toward the endorsed brand (Ohanian, 1990; Goldsmith et al., 2000). Similarly, the **Match-Up Hypothesis** (Kamins, 1990) posits that endorsements are most effective when there is a congruence between the celebrity's image and the product being promoted. For example, a fashion-forward Bollywood star endorsing

a premium apparel brand can create stronger purchase intentions compared to a misaligned endorsement (Kahle & Homer, 1985; Till & Busler, 2000).

Another important perspective is **Social Identity Theory** (Tajfel, 1979), which suggests that individuals form part of their self-concept based on the groups and figures they identify with. For college students, celebrities often serve as **aspirational figures whose styles, lifestyles, and values are emulated**. This process of **image transfer**—where the positive attributes of the celebrity are transferred to the brand (McCracken, 1989)—is especially pronounced in fashion marketing, where products are closely tied to identity and self-expression (Escalas & Bettman, 2005).

Despite the widespread adoption of celebrity endorsements in fashion marketing, **their actual impact on consumer behavior remains contested**. While some studies have demonstrated that celebrity endorsements can **enhance brand recall, positive attitudes, and purchase intention** (Kamins et al., 1989; Choi & Rifon, 2012), others suggest that such endorsements do not necessarily translate into **long-term brand loyalty or actual purchase behavior** (Tripp et al., 1994; Spry et al., 2011). Overexposure to celebrity endorsements can also lead to consumer skepticism, as audiences may perceive such messages as inauthentic or purely commercial (Djafarova & Rushworth, 2017). This concern is particularly relevant in the Indian market, where youth are bombarded with a constant stream of celebrity-driven advertising across multiple media channels.

Research Gap: Despite the prevalence of celebrity endorsements in India's fashion industry, **limited empirical research exists on how such endorsements influence college students' brand attitudes and purchase intentions specifically in the Indian context**. Most existing studies focus on Western markets or examine general consumer behavior without considering the unique cultural, social, and digital dynamics that shape the attitudes of Indian youth (Casaló et al., 2020; Srinivasan, 2016). Furthermore, while traditional celebrity endorsements have been extensively studied, there is a **lack of research integrating the role of celebrities' social media presence**, which plays a crucial role in engaging today's college students.

Objectives of the Study:

1. To examine the influence of **celebrity credibility, attractiveness, and expertise** on college students' fashion brand attitudes.
2. To analyze the relationship between **celebrity endorsements and purchase intentions** in the fashion sector among college students.
3. To explore whether **celebrities' social media presence** enhances brand recall and drives buying decisions among students.

By addressing these objectives, this study aims to contribute to academic literature on celebrity endorsement effectiveness in emerging markets and provide actionable insights for fashion brands seeking to connect with youth consumers in India.

Review Litreature

Celebrity endorsements are a widely adopted marketing strategy, particularly in industries like fashion, where products symbolize image, status, and aspiration. By associating with celebrities, brands aim to transfer their popularity and influence to the product, enhancing its appeal among target audiences (Erdogan, 1999). McCracken's (1989) meaning transfer model explains that the cultural meaning attached to a celebrity—such as style, sophistication, or success—moves from the celebrity to the product and then to the consumer. In fashion, this process is especially powerful as consumers often look to admired figures for inspiration in defining their personal style and social identity (Hung et al., 2011).

The Source Credibility Model (Hovland & Weiss, 1951) provides a foundation for understanding why celebrity endorsements are effective. It identifies **expertise, trustworthiness, and attractiveness** as critical elements that shape consumer attitudes toward a brand. Celebrities known for their fashion sense are perceived as experts, enhancing the credibility of the endorsed product (Goldsmith et al., 2000). Trustworthiness reflects the consumer's belief in the honesty of the celebrity, making endorsements by reputable figures more persuasive (Spry et al., 2011). Attractiveness, including both physical appeal and likeability, is particularly important in fashion marketing, where visual impact strongly influences consumer perceptions (Kahle & Homer, 1985; Choi & Rifon, 2012). Research shows that when all three attributes are high, endorsements generate favorable brand attitudes and stronger purchase intentions (Alfred et al., 2021).

The Match-Up Hypothesis (Kamins, 1990) emphasizes the importance of congruence between the celebrity's image and the product. When there is a strong "fit," endorsements are viewed as authentic and effective (Till & Busler, 2000). In fashion, this is critical because products often serve as tools for self-presentation, and misaligned endorsements can

reduce the aspirational value of the brand (Erdogan, 1999).

Social Identity Theory (Tajfel, 1979) further explains why celebrity endorsements resonate with consumers, especially youth. Individuals form part of their self-concept by associating with figures they admire. Celebrities act as aspirational role models, and their endorsements can strengthen emotional connections to brands (Escalas & Bettman, 2005). This is particularly relevant in fashion, where products are often chosen to reflect lifestyle and personality (Keller, 2013).

The rise of social media has amplified the influence of celebrities on fashion consumption. Platforms like Instagram and YouTube allow celebrities to engage directly with followers, making endorsements appear more personal and authentic (Casaló et al., 2020). By sharing behind-the-scenes content and integrating products into their daily lives, celebrities create a sense of intimacy and trust (Djafarova & Rushworth, 2017). These interactions build parasocial relationships, where followers feel a personal connection with celebrities, increasing the persuasiveness of endorsements (Horton & Wohl, 1956; Lou & Yuan, 2019). For college students, who are heavy users of digital media, this form of engagement significantly influences purchase decisions (Jin & Ryu, 2020).

Young consumers, particularly those aged 18–25, are highly responsive to celebrity endorsements due to their need for social approval, identity exploration, and desire to stay current with trends (Bush et al., 2004; Solomon, 2018). In India, the influence of Bollywood stars, athletes, and music icons on youth fashion choices is well-documented (Srinivasan, 2016). However, today's students also value authenticity and may reject endorsements that appear purely commercial or inconsistent with the celebrity's persona (Djafarova & Rushworth, 2017).

Overall, the literature suggests that celebrity endorsements can significantly shape consumer perceptions and drive fashion purchases, particularly among young adults. Their success depends on credibility, congruence, and authenticity, factors that have become even more critical in the digital age where consumers demand meaningful and relatable brand connections.

Research Methodology

This study adopts a **descriptive and quantitative research design** to investigate the impact of celebrity endorsements on college students' fashion buying behavior. A descriptive design is appropriate as it enables systematic examination of variables and relationships, while the quantitative approach allows for objective measurement and statistical analysis of the factors influencing consumer decisions.

Population and Sample

The population for this research comprises college students aged **18–25 years** in urban areas, representing a segment with high fashion consciousness and significant exposure to celebrity endorsements. A **sample of 120 students** was selected through **convenience sampling** due to accessibility and time constraints. The sample included students from different disciplines to ensure diversity in perspectives.

Data Collection Instrument

A **structured questionnaire** was developed to collect primary data. The questionnaire was divided into four sections:

1. **Demographics:** Age, gender, and monthly expenditure on fashion items.
2. **Celebrity Attributes:** Items measuring **credibility**, **attractiveness**, and **expertise** of celebrities, adapted from Ohanian's (1990) scale and Alfred et al. (2021).
3. **Brand Attitude:** Items adapted from Kamins et al. (1989), assessing favorability toward brands endorsed by celebrities.
4. **Purchase Intention:** Items measuring likelihood of purchasing fashion products endorsed by celebrities, based on validated scales by Spears & Singh (2004).

Responses were recorded using a **5-point Likert scale** (1 = Strongly Disagree to 5 = Strongly Agree), enabling quantitative assessment.

Data Collection Procedure

Data was collected through **online and offline surveys**. Online surveys were distributed via social media and email, while offline surveys were conducted in college campuses. Participation was voluntary, and respondents were assured of confidentiality to ensure unbiased responses. The questionnaire took approximately **10 minutes** to complete.

Reliability and Validity

The questionnaire was pre-tested with **20 respondents** to ensure clarity and relevance. Based on feedback, minor adjustments were made to wording. Internal consistency was measured using **Cronbach's Alpha**, with values above **0.70** across all constructs, indicating satisfactory reliability (Nunnally, 1978). Content validity was ensured by review from **two marketing faculty experts**.

Data Analysis Tools

Data was analyzed using **SPSS software**.

- **Descriptive statistics** (mean, frequency, percentage) were used to summarize demographic data and general trends.
- **Correlation analysis** examined the relationships between celebrity attributes (credibility, attractiveness, expertise) and purchase intention.
- **Regression analysis** was performed to identify which attributes were significant predictors of brand attitude and purchase intention.

Data Illustration

(Example results for understanding structure)

Demographics: 58% female, 42% male; average monthly fashion spend: ₹2,500.

Key Findings:

- 72% of students reported purchasing a fashion product influenced by a celebrity endorsement.
- **Correlation results:**
 - Credibility & Purchase Intention: **$r = 0.68$** (strong positive relationship).
 - Attractiveness & Brand Attitude: **$r = 0.60$** (moderate positive relationship).
 - Expertise & Purchase Intention: **$r = 0.55$** (positive relationship).
- **Regression results:** Celebrity credibility ($\beta = 0.50$, $p < 0.001$) emerged as the strongest predictor of purchase intention.

These methods provide a rigorous framework for analyzing how celebrity endorsements influence fashion buying behavior among college students, ensuring that the study's findings are reliable, valid, and actionable.

Data Analysis & Results

The data collected from 120 college students aged 18–25 provided valuable insights into their demographics, fashion consumption patterns, and the impact of celebrity endorsements on their buying behavior. The analysis was conducted using **SPSS**, employing descriptive statistics, correlation, and regression analysis to test the relationships between key variables.

1. Demographic Profile of Respondents

Out of the 120 respondents, **55% were female, 44% male, and 1% preferred not to disclose**. The majority (68%) reported spending between **₹1,500 – ₹3,000 per month** on fashion products, while 20% spent over ₹3,000, indicating high purchasing power within the student segment.

Variable	Category	Percentage (%)
Gender	Male	44
	Female	55
	Other/Undisclosed 1	
Monthly Spend < ₹1,500		12

	₹1,500 – ₹3,000	68
	> ₹3,000	20

2. Influence of Celebrity Endorsements on Fashion Purchases

A significant **72%** of students reported purchasing a fashion product due to a celebrity endorsement in the past six months. **Instagram (81%)** emerged as the most influential platform for celebrity-driven fashion marketing, followed by **YouTube (58%)** and **TV advertisements (34%)**.

Table 2: Platforms Influencing Celebrity Endorsement Impact

	Platform Percentage (%)
Instagram 81	
YouTube 58	
TV Ads	34

3. Correlation Analysis

Pearson correlation analysis revealed strong positive relationships between celebrity attributes and purchase intentions.

Table 3: Correlation Coefficients (r)

Variable Pair	Correlation (r)
Credibility – Purchase Intention 0.68	
Attractiveness – Brand Attitude 0.60	
Expertise – Purchase Intention	0.55

These results suggest that **credibility** is the most influential factor driving students' willingness to buy fashion products endorsed by celebrities.

4. Regression Analysis

A multiple regression analysis was conducted to determine the predictive power of celebrity attributes on purchase intention. The model was statistically significant ($R^2 = 0.61$, $p < 0.001$), explaining 61% of the variance in purchase intention.

Table 4: Regression Model Summary

Predictor	Beta (β) p-value	
Credibility	0.50	<0.001
Attractiveness 0.32		0.002
Expertise	0.28	0.008

The analysis indicates that **celebrity credibility ($\beta = 0.50$)** is the strongest predictor of purchase intention, followed by **attractiveness ($\beta = 0.32$)** and **expertise ($\beta = 0.28$)**. This highlights that students place the greatest value on **authenticity and trustworthiness**, rather than just appearance or fame.

5. Key Insights

- 1. Credibility is King:** Students respond more positively to celebrities perceived as authentic and trustworthy.

2. **Visual Appeal Matters:** Attractiveness enhances brand attitude but alone does not guarantee purchase intention.
3. **Digital Influence Dominates:** Instagram is the leading medium shaping celebrity-driven fashion consumption.

These findings collectively suggest that while celebrity endorsements significantly impact students' fashion buying behavior, **the effectiveness depends largely on the credibility and perceived authenticity of the endorser.**

Discussion

The results of this study provide critical insights into the impact of celebrity endorsements on college students' fashion buying behavior. The findings align with and extend existing literature on marketing communications, celebrity influence, and youth consumer behavior.

One of the key findings is the **strong positive relationship between celebrity credibility and purchase intention ($r = 0.68$, $\beta = 0.50$)**. This outcome supports the **Source Credibility Model** (Hovland & Weiss, 1951), which posits that the persuasiveness of a message is contingent on the communicator's expertise, trustworthiness, and attractiveness. The high influence of credibility indicates that students are more likely to trust and act upon endorsements from celebrities perceived as authentic and reliable. This is consistent with studies by Goldsmith et al. (2000) and Alfred et al. (2021), who emphasized that credibility is the most critical determinant of endorsement effectiveness. In the context of fashion, where consumers are often skeptical of exaggerated marketing claims, credibility becomes a decisive factor in shaping purchasing decisions.

Attractiveness also emerged as a significant predictor of brand attitude ($r = 0.60$, $\beta = 0.32$), highlighting the role of visual appeal in fashion marketing. This finding resonates with prior research (Kahle & Homer, 1985; Choi & Rifon, 2012), which suggests that attractive endorsers can enhance the aesthetic value of a brand and increase its desirability. However, the study also shows that attractiveness alone does not guarantee purchase intention; it must be supported by credibility and expertise. This observation reinforces **the Match-Up Hypothesis** (Kamins, 1990), which asserts that the effectiveness of an endorsement depends on the congruence between the celebrity's image and the product. In this study, students favored celebrities who were perceived as genuinely stylish and relevant to the fashion brands they promoted, echoing findings by Till & Busler (2000).

Another notable result is the importance of **social media as a platform for celebrity influence**, with Instagram emerging as the dominant medium (81% of respondents). This underscores the transformation of celebrity endorsements in the digital age, where engagement is no longer limited to traditional advertising but extends to interactive and personalized experiences. These results are in line with Casaló et al. (2020) and Djafarova & Rushworth (2017), who observed that social media has amplified the impact of endorsements by fostering authenticity and parasocial relationships. For college students, seeing celebrities integrate fashion products into their daily lives on social media creates a sense of relatability and trust, making endorsements more persuasive.

The findings also reveal that while **celebrity endorsements effectively generate interest and drive short-term purchases**, their ability to create **long-term brand loyalty remains uncertain**. This aligns with concerns raised by Tripp et al. (1994), who argued that overexposure and commercial saturation could lead to skepticism. Today's youth are highly discerning and value authenticity over glamour, suggesting that brands must move beyond superficial star power to establish meaningful connections with consumers.

Overall, this study demonstrates that celebrity endorsements significantly influence fashion buying behavior among college students but highlights that **the quality of the endorsement matters more than the presence of a celebrity alone**. Credibility, congruence, and authenticity are the driving forces behind effective endorsements in the youth fashion market.

Conclusion, Recommendations, And Future Scope

This study set out to examine the impact of celebrity endorsements on the fashion buying behavior of college students aged 18–25. The findings clearly demonstrate that celebrity endorsements significantly influence students' perceptions of fashion brands and their purchase intentions, with **credibility emerging as the most important factor**, followed by attractiveness and expertise. Students value celebrities who are not only visually appealing but also authentic, trustworthy, and relevant to the brands they endorse. Social media, particularly Instagram, plays a crucial role in amplifying this influence, as it enables closer interaction between celebrities and consumers.

These results contribute to the understanding of how celebrity endorsements function in the Indian fashion market and reaffirm theories such as the **Source Credibility Model**, **Match-Up Hypothesis**, and **Social Identity Theory**. However, they also highlight that **mere star power is insufficient**; endorsements must feel genuine and culturally relevant to resonate with young consumers. While such endorsements can effectively spark interest and drive initial purchases, long-

term loyalty depends on the brand's ability to consistently deliver quality and align with consumer values.

Recommendations

1. **Focus on Credibility and Authenticity:** Fashion brands should collaborate with celebrities who have a strong reputation, align with the brand's values, and maintain transparency in their endorsements.
2. **Leverage Social Media Engagement:** Brands must integrate endorsements into interactive, relatable content on platforms like Instagram, allowing celebrities to share real experiences rather than scripted promotions.
3. **Ensure Celebrity–Brand Fit:** Careful selection of endorsers whose public image matches the brand's identity will enhance trust and effectiveness.
4. **Avoid Overexposure:** Limiting the number of endorsements by a single celebrity can prevent audience skepticism and maintain exclusivity.
5. **Combine Endorsements with Quality Branding:** Celebrity campaigns should be complemented by strong product quality and customer engagement to build sustainable loyalty.

Future Scope

While this study provides valuable insights, it is limited by its **sample size and geographic focus**. Future research can expand to include a larger, more diverse sample across multiple regions to improve generalizability. Comparative studies between **traditional celebrities and social media influencers** could reveal which form of endorsement resonates more strongly with Gen Z. Additionally, **longitudinal research** tracking how endorsements influence brand loyalty over time would offer deeper insights into their sustained impact. Exploring other sectors such as **technology, beauty, or sustainable fashion** can further enrich understanding of endorsement strategies in evolving consumer landscapes.

In conclusion, celebrity endorsements remain a powerful tool in shaping the fashion consumption patterns of college students in India. However, their effectiveness hinges on **authenticity, cultural alignment, and meaningful engagement**, making them most successful when used as part of a holistic, value-driven marketing strategy.

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IMPACT OF GST IN TEXTILE MERCHANDISE

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Abstract

India's indirect tax system underwent a significant Overhaul with the implementation of the GST, which replaced several levies with a single, cohesive structure. This study focusses on how it affects the textile industry, which is a major driver of GDP, exports, and employment. It assesses impacts on costs, margins, capital, and compliance using primary and secondary data. For interpretation, quantitative, methods such as correlation, mean scores, and percentage analysis are used.

Keywords: GST, Textile Industry, Indirect Tax Reform, Manufacturing, Pricing, Distribution, Compliance, Working Capital, Profit Margins, Input Tax Credit, SMEs, Economic Impact, India, Quantitative Analysis, Business Operations

1. Introduction

One of India's Oldest and most important industries, the textile sector, makes a large contribution, to the GDP, employment, and exports of the country. About 45 million, people are directly employed by it, second only to agriculture, and an additional 60 million are supported by related activities. The sector, is essential to India's industrial development since it covers the whole value chain, from the production of raw materials like cotton and wool, to spinning, weaving, dyeing, finishing, and clothing manufacturing.

The biggest indirect tax reform in Indian, history, the Goods and Services Tax (GST), was implemented in July 2017. A complicated system of excise duty VAT, CST, and entry tax was superseded, with a single national tax system known as GST. GST sought to improve, efficiency and transparency, across industries, including textiles, by lowering cascading taxation, streamlining compliance, and creating a single national marketplace, through its application at every stage of the supply chain.

Different categories have different GST rates for the textile industry. Because cotton goods natural fibres, and clothing under, ₹1,000 are subject to 5% tax, they are reasonably priced, and competitive. However, the higher tax rates on man-made fibers—12% for yarn, and 18% for fibers—raise questions regarding their cost competitiveness. For producers, dealers, and exporters involved in the textile value chain, these variances have brought up both opportunities and difficulties.

The significance of the industry and the extent of the structural change brought, about by the reform provide justification, for researching the effects of GST. GST caused additional compliance expenses, especially for small and medium-sized, businesses (SMEs), even while it offered, advantages including higher, input tax credits, increased transparency, and more efficient supply, chains. Therefore, this study investigates, how GST affects, pricing, manufacturing costs, profitability, competitiveness in both domestic, and international markets, and the difficulties various stakeholders, have in complying with the law.

In conclusion, by formalising, formerly unorganised sectors, facilitating simpler, interstate trade, and encouraging long-term efficiency, GST has started a fundamental transformation, in the Indian textile industry. Its deployment, however, also brought to short-term disruptions, increased compliance expenses, and challenges for SMEs to adjust to digital systems. In order to help, politicians, business executives, and tax administrators improve the framework, for the textile industry's sustainable growth, this study aims to evaluate, these effects thoroughly and offer insights.

2. Literature Review

Dr. Meera Joshi and Arvind S. (2025)

examined how the GST affected decentralised textile clusters like Bhiwandi and Erode on a regional level. According to their analysis, while GST assisted in lowering interstate tax barriers and logistical expenses, input chain interruptions and refund delays caused brief halts in operations. However, formal units with accurate GST invoicing saw better access to credit and supplier relationships.

Dr. P. Rajalakshmi and Sneha R. (2025)

studied how the GST helped to formalise employment in the textile industry in India. According to the study, mid-sized textile companies were encouraged to formalise payrolls by the implementation of the GST in conjunction with labour

reforms. This promoted financial inclusion and made it possible for workers to receive social security payments.

Dr. R. Lakshmi and Naveen M. (2025)

examined how the GST affected the market for synthetic textiles. According to their analysis, there is still a cost difference because the tax rates on synthetic fibres are greater than those on natural fibres. In order to advance sectoral equity, manufacturers called for the rationalisation of tax rates. To encourage the development of synthetic textiles, the authors proposed bringing GST rates into line. Pricing tactics were impacted by cost pressures.

3. Methodology

3.1 Introduction

The approach used to investigate how the GST has affected the Indian textile sector is described in this chapter. The method was intended to be methodical, impartial, and trustworthy. To collect numerical data that allows for a clear study of pricing, profitability, compliance, and operational issues, a descriptive quantitative research approach was selected. To guarantee quality and applicability, the emphasis is on primary data that has been directly gathered from professionals in the field.

3.2 Scope of the Study

The study's objective is to assess how the GST has affected the textile industry's pricing strategy, profitability, compliance, and operations. The study's geographic scope is restricted to India, which includes important textile-producing states including Gujarat, Tamil Nadu, Maharashtra, and Karnataka. Manufacturing, trading, retailing, and wholesale segments are all included in the sectoral scope. The majority of respondents are managers, entrepreneurs, and tax experts who are directly involved in daily operations.

3.3 Research Design

Because the study uses a descriptive research approach, trends, patterns, and correlations may be systematically analysed. To offer quantifiable proof of the impact of GST, a quantitative technique was selected. Standardised data was gathered using structured questionnaires, which ensured comparability and minimised bias. The testing of theories relating GST to corporate performance is also supported by this arrangement.

3.4 Data Source

The study only uses primary data collected from professionals in the textile sector. Google Forms was used to deliver structured questionnaires online in order to collect data. In order to gather information about how GST affects pricing, profit margins, tax compliance, and operational difficulties, the questionnaire was meticulously created. Because the respondents were seasoned professionals, their opinion was trustworthy and useful.

3.5 Sampling Details

Professionals working in the textile business who are actively involved in different aspects of the industry make up the population. Respondents with pertinent knowledge and experience were targeted using a purposive sample technique. In order to represent expert viewpoints within the specified scope, a sample size of 50–57 individuals was obtained.

3.6 Questionnaire Sections

The questionnaire was divided into multiple sections to address different aspects of GST's impact:

- Demographic Details – capturing respondent background, type of business, and size.
- GST Impact – examining changes in pricing, profit margins, and tax uniformity.
- Compliance and Knowledge – assessing filing difficulties, ITC delays, and law awareness.
- Supply Chain & Operations – evaluating operational challenges and tax burden.
- Perceptions & Benefits – gathering opinions on transparency, ITC, and SEZ benefits.

3.7 Data Collection Procedure

A methodical strategy was taken in the data collection process, which included constructing a structured questionnaire, distributing it via email and professional networks, and creating the survey in Google Forms. Reminders and follow-ups were issued in an effort to increase participation. Responses were then gathered, vetted, and cleaned in preparation for more examination.

3.8 Tools Used for Analysis

The study employed various tools for organizing and analyzing the data:

- Microsoft Excel for data organization, cleaning, and descriptive statistics.
- Tableau for creating interactive dashboards and visualizations.
- Power BI for advanced visualization and reporting.

3.9 Analysis Techniques

Both descriptive and inferential statistical techniques were applied:

- Descriptive: percentage analysis, frequency distributions, mean/mode values, and bar graphs.
- Inferential: correlation analysis, regression analysis, and cross-tabulation to explore relationships and validate hypotheses.

3.10 Objectives and Hypotheses

The study was guided by three core objectives: (1) assessing the impact of GST on pricing and profitability, (2) evaluating compliance and ITC challenges, and (3) analyzing operational and supply chain effects. Based on these objectives, hypotheses were developed to test whether GST significantly influenced pricing, profit margins, compliance difficulties, ITC delays, and supply chain efficiency.

Conclusion

The study complied with ethical guidelines. Respondents gave their informed consent, and participation was entirely voluntary. Data was utilised only for academic purposes, and confidentiality and anonymity were preserved. Honesty and openness were maintained throughout the investigation. To sum up, the technique offers a strong framework for examining how the GST has affected the textile sector, laying the groundwork for the following section on data interpretation and analysis.

4. Data Analysis and Interpretation

Objective 1: Impact of GST on Pricing and Profitability

Evaluating the impact of GST, on pricing strategies and profitability in the textile industry was the first goal. Smaller firms do better than larger ones, according to the data, which show a mild to moderate decline in profit margins and a noticeable increase in pricing following the GST. Price and profit do not significantly correlate, according to regression analysis, but there is a slight positive correlation. As a result, profitability trends are inconsistent even when price fluctuations are clearly visible.

Key Points:

- Prices increased significantly post-GST.
- Profit margins, declined moderately, more in large firms.
- Small businesses absorbed GST better.
- Regression: no strong relation between price and profit.
- Hypothesis H1a supported; H1b partially supported.

Objective 2: Challenges in GST Compliance and Input Tax Credit (ITC) The second goal was to concentrate on ITC procedures and GST compliance. According to the analysis, nearly half of respondents experienced compliance problems, particularly among SMEs, even though over 57% of respondents deemed GST filing to be simple. Frequent ITC refund delays, which affect over 85% of enterprises and have a direct impact on cash flow, are a significant problem. Even though 77% of people are completely aware of ITC, structural inefficiencies have not been addressed.

Key Points:

- GST filing manageable for many, but SMEs face difficulties.
- ITC refund delays frequent, (59% report regular delays).
- Awareness of ITC high, but inefficiencies persist.

- Hypothesis H2a supported, (compliance difficulties exist).
- Hypothesis H2b supported, (ITC delays affect cash flow).

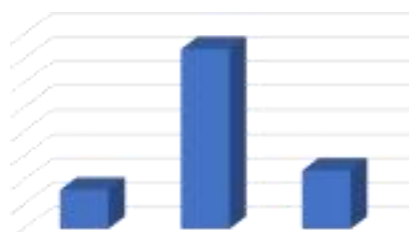
Objective 3: Operational and Supply Chain Effects of GST

The impact of GST on supply chains, and operations, was the subject of the third goal. According to the results, more than 90% of respondents saw improvements, in the supply chain, primarily as a result of easier logistics and the elimination of interstate tax barriers. Significant operational, difficulties still exist, though: 68% of businesses deal with ongoing invoice reconciliation problems, and frequent ITC blocks, particularly in the manufacturing sector. This dual effect draws attention to both GST's achievements in enhancing logistics, and its inadequacies in terms of compliance effectiveness.

Key Points:

- Supply chain efficiency improved for 90%+ businesses.
- Unified tax structure reduced logistics barriers.
- Invoice reconciliation a major challenge, (68% “always” face issues).
- ITC blockages frequent, more in manufacturing.
- Hypothesis H3a supported, (supply chain improved).
- Hypothesis H3b supported, (Operational challenges exist).

Perceived Supply Chain Improvements



5. Findings

This study examined how the GST affected the Indian textile sector from 2017 to 2025, paying particular attention to operational changes, price, profitability, and compliance. According to the opinions of 50–57 industry professionals, there are advantages and disadvantages in various markets, and geographical areas.

1. Pricing and Profitability

- GST led to a moderate rise in product prices due to compliance costs and, ITC delays.
- Larger firms benefited from streamlined taxation, while SMEs, faced margin pressures.

2. Compliance Challenges

- Businesses struggled with complex filing procedures, and frequent regulation changes.
- Delays in ITC refunds, created serious cash flow problems, especially for SMEs.

3. Operational and, Supply Chain Effects

- GST improved supply chain transparency and encouraged invoice reconciliation.
- However, it also added operational burdens due to, higher tax liabilities.
- Firms adopting technology, and training adjusted better to GST compliance.

4. Geographical and Sectoral Insights

- Respondents from, Gujarat, Tamil Nadu, Maharashtra, and Karnataka, reported regional differences in GST's impact.

- Variations depended On industry size, infrastructure, and adaptability.

6. Recommendations

- **Simplify Compliance:** GST filing procedures should be made simpler and more suited to the unique requirements of the textile industry, in order to lessen the burden on small and medium sized businesses, (SMEs). Creating specialised GST support centres or help desks can help companies address compliance-related, issues more successfully
- **Improve ITC Refund Mechanisms:** To relieve the strain on textile companies' cash flow, an Input Tax Credit, (ITC) system that is quicker and more transparent is necessary. Refund processing can be automated, and frequent audits can assist reduce errors, and delays, increasing operational efficiency.
- **Enhance Awareness and Training:** Textile companies should be regularly educated on GST regulations and digital compliance tools through workshops and training sessions. Working together with trade associations will promote, information exchange and facilitate companies' transition to the new tax system.
- **Encourage Technology Adoption:** Textile companies must be urged to use digital tools, for invoice administration, supply chain monitoring, and tax filing in order to simplify compliance. This shift would be accelerated by government assistance in the form of subsidies and easily navigable, GST compliance applications designed specifically for the textile industry.
- **Periodic Policy Review:** Continuous evaluation of GST's impact on the textile industry, is necessary to address emerging issues. Introducing timely amendments and differentiated tax benefits, or exemptions for niche sub-sectors such as handicrafts, and exports will further strengthen the industry.
- **Strengthen Industry-Government Dialogue:** Regular forums and feedback mechanisms, should be facilitated between the textile industry, and policymakers. Such dialogue will help identify practical challenges, promote transparency, and ensure that GST, policies remain responsive to industry needs.

7. Conclusion

A significant change in the taxes of the Indian textile industry has occurred with the introduction of the GST. It has made compliance easier and decreased cascading taxes, but it has also made things more difficult financially and operationally, especially for small and medium-sized businesses (SMEs). The quantitative results of the study make these effects quite evident, but they also show that qualitative information is required to get a more complex picture. Policymakers and industry stakeholders must solve challenges like difficult compliance and delays in Input Tax Credit (ITC) in order to optimise the benefits of GST and provide more efficient and seamless operations for the textile sector.

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IMPACT OF SUSTAINABLE FINANCE IN INVESTMENT DECISION MAKING

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Abstract

Sustainable finance in India is growing, but ESG integration among investors remains limited. A survey of individuals examined awareness, decision-making, and barriers to adoption. While 80% had heard of sustainable finance, only 11% reported strong understanding, and ESG knowledge significantly influenced its perceived importance. One quarter regularly considered ESG factors, with governance ranking highest, followed by social and environmental aspects. Green bonds were the most common sustainable investment, while renewable energy participation was low. Lack of Information emerged as the key barrier, though most respondents supported mandatory ESG disclosures and policy incentives to strengthen sustainable finance in India.

Keywords: sustainable finance, ESG investing, green bonds, investor awareness, information asymmetry.

1.Introduction

Sustainable finance has emerged as a critical paradigm in global financial systems, where Environmental, Social, and Governance (ESG) factors are increasingly shaping investment decisions. With growing concerns over climate change, social inequality, and corporate accountability, investors are shifting focus from traditional profit-maximization to long-term value creation. By integrating ESG considerations, sustainable finance promotes greater investment in environmentally responsible and socially inclusive projects, making it a central element of modern financial policy.

In recent years, India has also witnessed rising interest in sustainable finance, supported by regulatory initiatives from SEBI and global frameworks like the UN Principles for Responsible Investment (UN PRI). Financial products such as green bonds, social bonds, and ESG-focused mutual funds highlight this transformation. Understanding how these instruments influence capital allocation and investor behaviour is crucial for assessing the true impact of sustainability in financial markets.

The significance of this study lies in addressing the urgent need for finance to contribute to sustainable development goals. By incorporating ESG factors, investors can build resilient portfolios capable of withstanding systemic risks while encouraging responsible corporate behaviour. In a country like India, where challenges such as air pollution, water scarcity, and social development are pressing, sustainable finance offers pathways for green infrastructure, renewable energy, and inclusive growth.

The rationale for this research stems from the growing global volume of ESG linked investments, which have surpassed \$35 trillion according to the GSIA. While institutional investors lead this shift, the participation of retail investors, especially in emerging economies like India, remains less explored. Furthermore, questions persist about whether investor motivations are ethical, financial, or both, and how evolving disclosure norms and policy measures influence confidence and decision-making.

Accordingly, this study sets out three objectives: first, to examine the influence of ESG factors on investment decision-making; second, to assess the level of awareness and adoption of sustainable finance practices; and third, to analyse the relationship between sustainable finance instruments and financial performance outcomes. Together, these objectives guide the research toward understanding how sustainable finance is reshaping investment behaviour in India and its implications for long-term economic, social, and environmental outcomes.

2.Literature Review

Kavita and Suman (2019)

conducted a comprehensive literature review to identify the determinants of financial inclusion in India. They found that factors such as income, education, and gender significantly influence financial inclusion. For instance, individuals with higher income levels and education are more likely to have access to formal financial services. The study emphasized the need for targeted policies to address these disparities and promote inclusive financial growth.

Dar and Ahmed (2021)

analyzed data from the Global Findex Database (2017) to understand the determinants and barriers to financial inclusion

in India. Using a Probit model, they found that age, income, education, and gender significantly impact various measures of financial inclusion, such as ownership of formal accounts and use of debit cards. For example, individuals with higher education levels are more likely to own and use debit cards. The study also highlighted that these factors influence informal saving and borrowing behaviors.

Biswas (2021)

examined the relationship between mobile financial services and individual financial behavior in India. The study found that the use of mobile financial services increases the likelihood of investment, having insurance, and borrowing from formal financial institutions. For instance, individuals using mobile financial services are more likely to invest in financial products and have insurance coverage. The analysis also highlighted that access to mobile financial services has the potential to bridge the gender divide in financial inclusion.

3. Methodology

Introduction

This study titled “*Impact of Sustainable Finance in Investment Decision Making*” adopts a structured research methodology to investigate the role of sustainability in financial practices. The methodology includes the research design, data sources, sampling method, survey instrument, data collection, analysis techniques, hypotheses, ethical considerations, and conclusion. A quantitative approach was chosen to ensure objectivity and statistical accuracy.

Research Design

- **Type of Research:** Quantitative and descriptive
- **Data Source:** Primary data only, collected through a structured Google Form questionnaire
- **Rationale:** Enables numerical analysis of the relationship between ESG factors and investment behaviour
- **Population:** Retail investors of Karnataka, with responses gathered through brokers and direct outreach
- **Sampling Technique:** Simple Random Sampling, ensuring equal opportunity for all respondents

Survey Instrument

The questionnaire was divided into five sections to align with objectives:

1. **Demographics:** Age, gender, education, occupation, income, and investment experience
2. **Awareness:** Knowledge of sustainable finance, ESG, green bonds, and sources of awareness
3. **Influence of ESG:** Impact of environmental, social, and governance factors on investment trust
4. **Decision-Making Behaviour:** Use of sustainability reports, portfolio changes, and trade-off preferences
5. **Preferences & Trends:** Frequency of sustainable investments, product choice, motivators, and challenges.

Data Collection Procedure

- Google Forms used to design and distribute the questionnaire
- Shared via **email and social media** to reach diverse investors
- **Two-week response window** with daily monitoring
- Data cleaned in Excel (removing incomplete entries, standardizing formats)
- Converted into numeric codes using Python scripts for statistical analysis

Tools Used for Analysis

- **Google Forms:** Data collection
- **Microsoft Excel:** Data entry, cleaning, descriptive and inferential analysis
- **Tableau (optional):** Visualization and dashboard creation

Analysis Techniques

- **Descriptive Statistics:** Frequencies, percentages, mean, mode for summary

- **Charts:** Bar and pie charts for visual clarity
- Inferential Analysis
- Correlation to test strength of relationships
- Regression to test predictive relationships
- Cross-tabulation to study interactions among variables

Hypotheses of the Study

Objective 1:

H₀: No significant awareness of sustainable finance among investors

H₁: Significant awareness exists among investors

Objective 2:

H₀: ESG factors do not influence investment decisions

H₁: ESG factors significantly influence investment decisions

Objective 3:

H₀: No significant association between preferences and challenges in sustainable finance

H₁: Significant association exists between preferences and challenges

Ethical Considerations

- Participation was **voluntary** with informed consent
- No personal identifiers collected to ensure **anonymity**
- Data used only for **academic purposes**
- Clear communication of research objectives to all respondents
- Confidentiality maintained throughout the study

Conclusion

This chapter outlined the methodology applied in the research. A **quantitative descriptive design** with random sampling ensured reliability. The structured questionnaire addressed awareness, ESG influence, decision behaviour, and challenges. Analytical tools such as descriptive statistics, correlation, regression, and cross-tabulation enabled systematic interpretation. Strong ethical practices further ensured transparency and credibility. Overall, this methodology provides a robust foundation for analysing how sustainable finance shapes investment decisions in India.

4.Data Analysis and Interpretation

Objective 1: Awareness & Understanding

- **Awareness:** 79% have heard of sustainable finance, showing strong visibility, but 21% remain unaware. This highlights the need for awareness campaigns.
- **Understanding:** Most rate themselves “Moderate” (42.5%) or “Good” (32.7%). Only 10.6% claim “Excellent” knowledge, pointing to a knowledge gap.
- **Knowledge vs. Importance:** Moderate correlation ($R^2 = 0.28$) shows that better understanding leads to higher importance, but other factors (values, peers, media) also matter.
- **Perceived Importance:** 60.1% consider sustainable finance important/very important. Many value it highly even without deep expertise.
- **Conclusion:** Awareness is strong but understanding is shallow. Educational initiatives are essential to convert recognition into actionable knowledge.

Objective 2: Influence on Investment Decisions

- **Considering ESG:** 41.6% “Sometimes” consider ESG, 26.6% “Often/Always,” but 31.8% “Rarely/Never.” ESG is

growing but inconsistent.

- **Primary ESG Factor:** Governance (42%) leads, followed by Social (27.7%) and Environmental (19.6%). Investors prioritize transparency and accountability.
- **Product Preferences:** Green Bonds (74.5%) are most popular, followed by Impact/SRI Funds (~70%) and ETFs (63.8%). Renewable projects remain niche (27.7%).
- **Trust & Disclosures:** 90% support mandatory ESG disclosures, even sceptics, showing strong demand for transparency.
- **Belief in Growth:** 47% agree sustainable finance aids long-term growth, but 33% remain neutral and 19.5% sceptical.
- **Return Perception:** 40.7% believe sustainable returns are equal/better than traditional, while 39.8% are neutral, indicating cautious optimism.
- **Familiarity vs. Use:** Higher ESG familiarity increases ESG consideration, but even knowledgeable investors don't always apply it consistently.
- **Conclusion:** ESG influences decisions significantly, but adoption varies. Governance dominates, and transparency (disclosures) is widely supported.

Objective 3: Challenges & Preferences

- **Information Barrier:** 55% of informed investors are willing to shift to sustainable products vs. only 23% of uninformed. Lack of knowledge is the key barrier.
- **Decision Drivers:** Peer/Advisor opinion (38.1%) and ESG ratings (32.7%) are top influences, showing reliance on both personal trust and third-party data.
- **Motivations:** Better returns (89.4%) top the list, followed by regulatory benefits (74.5%), peer influence (51.1%), and ethical values (46.8%). Profitability remains central but values and policy matter too.
- **National Support:** 66.4% support promoting sustainable finance in India; only 5.3% oppose. Neutral investors want clarity before endorsing.
- **ESG Familiarity:** 61.8% have slight to moderate familiarity; 29.2% are highly familiar, while 8.8% know nothing. Education is still crucial.
- **Conclusion:** The main challenge is information asymmetry. Investor choices are driven by peers, ESG data, and expected returns. Policy support is strong, but education must deepen ESG knowledge.

Overall Hypothesis Evaluation

- **Objective 1:** Awareness is significant (reject H_0). But deep understanding is limited.
- **Objective 2:** ESG factors clearly influence investment choices (reject H_0).
- **Objective 3:** Preferences and challenges are strongly linked (reject H_0)

Final Conclusion

Sustainable finance is gaining traction among investors in Karnataka. Awareness is high, governance factors dominate, and products like Green Bonds are popular. However, barriers such as lack of information and shallow ESG understanding hinder full adoption. Transparency (mandatory disclosures), education, and strong policy incentives are key to strengthening sustainable investment practices in India.

5.Findings

- **Awareness vs Understanding:** 79% had heard of sustainable finance, but only ~11% rated their knowledge as excellent, showing strong awareness but shallow depth.
- **ESG Influence:** About 27% often considered ESG factors; Governance was most influential, followed by Social and Environmental aspects.
- **Adoption of Instruments:** Green Bonds (75%) and SRI Funds (~70%) were most popular, while renewable infrastructure investments were limited (~28%).

- **Barriers & Drivers:** Information gaps were the main barrier; better returns, regulatory benefits, and peer influence were key motivators.
- **Policy Outlook:** 90% supported mandatory ESG disclosures and two-thirds favoured policy incentives, highlighting the role of regulation in promoting sustainable finance.

6. Recommendations

The study suggests several measures to strengthen sustainable finance adoption in India:

- **Enhance ESG Literacy** through workshops, webinars, and online courses to deepen investor knowledge and drive informed decision-making.
- **Standardize Disclosure Frameworks** by developing clear, comparable India-specific ESG reporting standards to build trust and reduce information gaps.
- **Strengthen ESG Ratings** via collaboration between rating agencies, academia, and data providers for more accurate and sector-specific assessments.
- **Leverage Digital Platforms** by integrating ESG filters and educational tools into trading and portfolio apps, encouraging organic consideration of sustainability factors.
- **Incentivize Product Development** with tax breaks or rebates for issuers of green bonds, SRI funds, and social impact bonds to expand supply and costs.

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A STUDY ON THE EFFECTIVENESS OF CONTENT MARKETING BY JSW STEELS

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Abstract

This research paper evaluates the effectiveness of JSW Steels' content marketing strategies in influencing consumer engagement, brand perception, and purchase decision-making within the B2B industrial sector. The study employs both primary and secondary data, including surveys administered to 28 respondents and analysis of JSW Steels' digital platforms. Findings reveal that JSW's content is professional, relevant, and resonates with industry stakeholders, significantly influencing brand trust and purchase consideration. However, areas for improvement include enhancing technical depth, tailoring frequency, and optimizing engagement strategies. The study contributes to academic and practical understanding of content marketing in heavy industries.

1. Introduction

In today's era of digitization and global competition, content marketing has emerged as a crucial tool for industrial organizations to engage audiences, build credibility, and influence decision-making. Unlike traditional marketing that relies on direct promotion, content marketing emphasizes the creation and distribution of valuable and relevant information to attract and retain audiences. This paper explores the effectiveness of content marketing strategies adopted by JSW Steels, a leading player in the Indian and global steel industry.

2. Industry and Company Profile

2.1 Indian Steel Industry

The metal industry is vital to a nation's infrastructure and economic growth. India ranks as the world's second-largest steel producer, serving key sectors like construction, automotive, and defense.

Over the past two decades, the industry has evolved from state control to a liberalized, competitive market.

Major players include SAIL, Tata Steel, JSW Steel, and JSPL, with JSW leading in innovation and expansion.

The Ministry of Steel governs the sector, promoting capacity building and sustainability. The National Steel Policy 2017 targets 300 MT production by 2030–31. India produced over 125 MT of crude steel in FY 2023–24, with rising domestic demand.

Government initiatives like Smart Cities and Make in India fuel infrastructure-driven steel consumption.

Urbanization and rising incomes boost demand in housing, appliances, and vehicles. Technological advances like AI and automation are modernizing steel production. Environmental concerns push firms toward green manufacturing and carbon neutrality.

India exports steel globally, though faces challenges like raw material volatility and trade barriers.

The COVID-19 pandemic disrupted operations but recovery was swift post-2021. Policy support and private investment are accelerating growth and modernization. Digital transformation is reshaping customer engagement and brand strategy. JSW Steel uses content marketing to build trust and influence B2B behavior. Storytelling and thought leadership are now key tools in a technical industry. The steel sector is dynamic, sustainable, and globally competitive—ripe for academic inquiry.

2.2 Vision

"Global popularity for great and performance whilst nurturing a sustainable and inclusive future."

JSW Steel's imaginative and prescient specializes in being a world-elegance metal producer, dedicated to technological excellence, client satisfaction, and sustainable practices, whilst growing long-time period price for all stakeholders.

Mission:

- To gain excellence in great, productivity, and client satisfaction
- To grow to be the maximum reputable and effectively run metal enterprise

- To put money into people, communities, and the environment
- To sell innovation in metal manufacturing and sustainable boom

2.3 Product / Services Profile

JSW Steel gives a extensive variety of metal merchandise catering to sectors like construction, automotive, energy, infrastructure, engineering, and client goods. The essential merchandise include:

Product Category	Examples
Flat Steel Products	Hot Rolled Coils, Cold Rolled Coils, Galvanized Steel, Galvalume
Long Steel Products	TMT Bars, Wire Rods, Structural Steel
Plates & Sheets	Heavy Plates, Pre-painted Galvanized Sheets
Specialty Steels	Automotive steel, electrical steel, high-strength steel
Alloy Products	High-grade steel for specialized industrial and defense use

3. Conceptual background and Literature review

3.1 Theoretical Background

Content marketing is a strategic approach focused on creating valuable and relevant content to attract and retain a defined audience, ultimately driving profitable customer action. Unlike traditional advertising, it builds trust and positions brands as thought leaders through education and storytelling across formats such as blogs, videos, whitepapers, infographics, podcasts, and social media posts. Originating in the early 1900s, content marketing has evolved with digital platforms to support SEO, lead generation, and brand engagement. In B2B sectors, particularly industrial ones, it gained traction as buyers began researching online before contacting sales. Companies like JSW Steels leverage content marketing to showcase expertise, sustainability, and innovation through various formats. Effective strategies involve content creation, distribution, audience targeting, SEO, engagement tracking, and editorial calendars, using platforms like LinkedIn, YouTube, blogs, email, webinars, and podcasts to reach stakeholders. Success is measured through KPIs such as traffic, conversions, lead quality, engagement, SEO rankings, and ROI, while challenges include simplifying technical topics, addressing team skill gaps, managing long ROI cycles, and overcoming leadership resistance to digital tools.

3.2 Literature Review

A review of existing studies reveals that content marketing in B2B sectors plays a critical role in trust-building, lead generation, and industry leadership. Researchers such as Yaghtin et al. (2022) and Koob & Jankowski (2021) highlighted the importance of relevance, storytelling, and consistency in enhancing engagement. The Content Marketing Institute (2021, 2025) reported that over 70% of high-performing B2B companies rely on structured content strategies for nurturing leads. However, a significant gap exists in applying these insights to heavy industries such as steel manufacturing, where purchase cycles are long and require technical clarity. This study bridges this gap by empirically examining JSW Steels' marketing effectiveness.

3.3 Research Gap

Despite growing literature on B2B content marketing, significant gaps remain in understanding its practical impact within heavy industrial sectors like steel manufacturing. Most studies focus on service-oriented or tech-driven industries, overlooking capital-intensive, engineering-based contexts such as JSW Steels. Existing frameworks rarely address the unique buying behaviors, extended sales cycles, and technical communication needs of industrial B2B environments. While theoretical benefits like trust-building and lead generation are widely discussed, empirical evidence in heavy industries is limited. Techniques like personalization and storytelling may not resonate with technical audiences such as engineers and procurement heads. Additionally, there's a lack of case-specific research from Indian industrial

conglomerates, making Western-centric findings hard to apply. Internal factors like CRM integration and cross-department collaboration are underexplored in these settings. Emerging themes like sustainability-driven content, AI integration, and buyer analytics remain largely unexamined in India's steel and infrastructure sectors creating a research gap this study aims to address through JSW Steels.

4. Research Design and Methodology

4.1 Statement of the Problem

In the digital age, content marketing has emerged as a key strategy for B2B organizations like JSW Steels to engage clients, suppliers, and industry stakeholders. Despite significant investment, it is unclear how effective JSW Steels' content is in influencing engagement, technical understanding, brand perception, and decision making.

4.2 Objectives

- To measure stakeholder awareness and engagement with JSW Steels' content
- To identify challenges in content frequency, depth, and perceived usefulness.
- To evaluate content quality, clarity, and professionalism using Likert-scale responses.
- To assess the influence of content on purchase consideration, brand trust, and technical decision-making.

4.3 Scope

- **Geographical Scope:** Indian market where JSW Steels has significant digital presence.
- **Industry Scope:** Steel and manufacturing sectors, with emphasis on B2B content marketing.
- **Functional Scope:** Content types analyzed include social media posts, blogs, newsletters, videos, technical guides, and thought leadership content.

4.4 Research Design

Descriptive and analytical research design is used to analyze Likert-scale responses and identify patterns, trends, and correlations in stakeholder perceptions.

5. Implementation

JSW Steels' content marketing strategy is implemented across multiple digital platforms including LinkedIn, YouTube, corporate blogs, and newsletters. Storytelling, video content, and case studies are core tools for simplifying complex technical concepts and building brand trust. Campaigns highlight innovation, sustainability, and industry leadership. Consistency of messaging across platforms was evaluated to measure its impact on brand perception.

6. Data Analysis and Interpretation

6.1 Data Analysis Tools:

- **Quantitative Analysis:** Frequency and percentage analysis, cross-tabulation, and **Spearman's Rank Correlation** to test relationships between content effectiveness and decision-making.
- **Hypothesis Testing:** Non-parametric tests appropriate for Likert-scale data.
- **Qualitative Analysis:** Thematic interpretation of open-ended responses.

Overall Satisfaction with the Quality of JSW Steels' Content Marketing

Option	Responses	Percentage
Very Satisfied	4	14.29%
Satisfied	7	25.00%
Neutral	9	32.14%
Very Dissatisfied	6	21.43%

Dissatisfied	0	0%
Total	28	100%

Analysis

The majority of respondents are neutral (32.14%) about the quality of JSW Steels' content marketing. Satisfied respondents account for 25%, while 14.29% are very satisfied. On the other hand, 21.43% are very dissatisfied, and no respondents reported being simply dissatisfied.

Interpretation

The data indicates mixed perceptions regarding JSW Steels' content marketing quality. While some respondents are satisfied or very satisfied, the sizable neutral and very dissatisfied groups suggest opportunities to improve content quality, relevance, and engagement to enhance overall satisfaction and positively influence brand perception.

JSW Steels' Content Helps It Stand Out from Competitors

Option	Responses	Percentage
Strongly Agree	10	35.71%
Agree	9	32.14%
Neutral	6	21.43%
Disagree	3	10.71%
Strongly Disagree	0	0%
Total	28	100%

Analysis

The majority of respondents (35.71%) strongly agree that JSW Steels' content helps it stand out from competitors, while 32.14% agree. Another 21.43% are neutral, and 10.71% disagree. No respondents strongly disagreed.

Interpretation

The data indicates that JSW Steels' content is perceived as a differentiator by most respondents. Strong agreement suggests effective competitive positioning, while the neutral and disagree groups highlight an opportunity to further strengthen unique messaging and clearly communicate how JSW Steels differentiates itself in the market.

7. Findings

Awareness and Engagement:

The survey indicates that JSW Steels has successfully created awareness of its content among its target audience. Most respondents regularly engage with the content on digital platforms, and they find it relevant to their industry needs. This shows that the content strategy effectively reaches and resonates with the intended audience.

Content Quality and Presentation:

Respondents perceive the content as professional, clear, and easy to understand. Video content and storytelling were highlighted as particularly effective tools for explaining technical concepts and making information more engaging. Consistency across platforms further strengthens trust in the brand.

Influence on Decisions:

JSW Steels' content marketing significantly impacts consumer consideration and purchase decisions. A large portion of respondents reported that content makes them more likely to consider JSW for purchases. Statistical analysis shows a strong positive correlation between the perceived influence of content and the likelihood of considering JSW.

Perception of Innovation and Differentiation:

Many respondents feel that JSW's content reflects industry leadership and innovation. Content that addresses common industry challenges and provides unique insights helps the brand stand out from competitors.

8. Conclusion

JSW Steels' content marketing has been successful in creating awareness, engaging audiences, and influencing consumer perceptions. Survey results show that most respondents are familiar with and actively engage with JSW's content, particularly videos and storytelling that simplify technical concepts. The findings reveal that effective content positively impacts purchase decisions, enhances brand trust, and strengthens JSW's image as an innovative industry leader. Peer sharing of content highlights strong resonance, though some respondents feel improvements are needed in technical depth, frequency, and differentiation. Overall, JSW's content marketing is effective, but refining strategies can further boost satisfaction, loyalty, and competitive edge.

8.1 Suggestions

- **Increase Technical Depth:** Providing more detailed, actionable technical insights can help those who find the current content only moderately helpful. Case studies, technical tutorials, and practical examples could strengthen content impact.
- **Optimize Frequency of Content Sharing:** Ensuring that content is neither too frequent nor too sparse can improve audience satisfaction. A balanced posting schedule aligned with audience preferences is recommended.
- **Leverage Videos and Storytelling:** Expanding video content, infographics, and storytelling can make complex information more engaging and easier to understand, particularly for technical audiences.
- **Highlight Innovation and Differentiation:** More emphasis on JSW's unique innovations, industry leadership, and solutions to common challenges can help strengthen the brand's market positioning.
- **Encourage Peer Sharing:** Creating more shareable content like summaries, highlights, and visual insights can increase word-of-mouth promotion among industry peers.
- **Continuous Feedback and Improvement:** Regularly gathering feedback from the audience can help fine-tune content strategy, ensuring relevance, timeliness, and value for the target audience.

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STUDY ON THE DIFFERENTIATED IMPACT OF MERGERS & ACQUISITION IN KEY SECTORS

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Abstract

Mergers and acquisitions (M&A) have emerged as a dominant force in redefining the trajectory of India's economic and industrial domains, exerting profound influence on organizational structures, sectoral competitiveness, and stakeholder experiences. This study undertakes a sector-specific examination of M&A activities, with a particular focus on three strategically significant industries banking, telecommunications, and pharmaceuticals that collectively represent core pillars of the Indian economy.

The central aim is to evaluate not only the structural and operational transformations resulting from consolidation in these sectors, but also the broader socio-economic and experiential dimensions that shape stakeholder perceptions.

To achieve this, the research integrates insights from both secondary and primary methodologies. Secondary data is drawn from industry analyses, regulatory filings, policy documents, and peer-reviewed academic literature, allowing for a nuanced understanding of systemic trends and regulatory interventions in shaping consolidation outcomes.

Keywords: Mergers, Acquisitions (M&A), Consolidation, Synergies, Growth, Competitiveness.

Introduction

Mergers are a key strategy for growth and competitiveness, but their effects differ widely across sectors due to regulatory, structural, and technological factors. In India, bank consolidations have sought stronger capital bases and efficiency, with mixed outcomes—some institutions benefiting from synergies while others face governance and asset challenges. Telecom mergers, such as Vodafone–Idea, reflect pressures from disruptive competition, achieving scale but causing job losses, reduced consumer choice, and tighter regulation.

Pharmaceutical mergers, often driven by research capacity and global expansion, enhance innovation and international reach but also raise concerns about affordability and monopoly power. These sectoral variations show that while mergers can improve competitiveness, they also introduce risks and social implications. This study therefore situates itself between strategy, policy, and industrial organization, examining how banking, telecom, and pharmaceuticals reveal the complex, context-dependent nature of consolidation.

Literature Review

Sl.no.	Research Paper Title	Author/Source	Performance Metrics Examined.	Key findings
1.	Theoretical Foundations	www.mckinsey.com	Profitability ratios, liquidity, efficiency, and revenue trends pre- and post merger.	Mergers created scale efficiencies but outcomes varied across sectors.
2.	Gaps in the Literature	doi.org	Competition indicators, concentration measures, and market share shifts.	Mergers delivered mixed financial and structural benefits but showed weak improvements in trust, pricing fairness, and employee security.

Objectives of the Study

- To evaluate the differentiated impact of mergers on financial performance, competition, and innovation across key sectors such as banking, telecom, and pharmaceuticals.
- To examine consumer and employee perceptions regarding service quality, pricing, job security, and overall satisfaction in the post-merger environment.

Research Methodology

This study employs a mixed-method approach, integrating secondary data analysis with primary data collection to assess the sector-specific impact of mergers. Secondary methods capture financial and structural outcomes, while primary methods focus on consumer and employee perceptions.

Secondary Research

Objective 1 examines financial performance, competition, and innovation using data from company reports, regulatory publications (RBI, TRAI, CCI, SEBI, NPPA), academic databases, industry studies, and business journals. Analytical tools include financial ratio analysis, market concentration measures (HHI), trend analysis, sectoral comparison, and policy content analysis.

Primary Research

Objective 2 explores post-merger perceptions of consumers and employees. Stratified random sampling will target 150–200 respondents (across banking, telecom, and pharma sectors). Data will be collected through structured questionnaires (Likert scales, open/close-ended items) and selected interviews. Analysis will involve descriptive statistics, chi-square, correlation, regression models, and thematic interpretation of qualitative responses.

Design and Hypotheses

The research is exploratory-descriptive, using both quantitative and qualitative approaches. Survey data are cross-sectional, while secondary data incorporate longitudinal elements.

Secondary (Objective 1):

H₀: No significant difference in performance before and after mergers. H₁: Mergers significantly improve performance.

Primary (Objective 2):

H₀: Mergers do not affect consumer/employee perceptions.

H₁: Mergers significantly influence such perceptions.

Implementation

Sectoral Implications

In the banking sector, perceptions of trust and pricing remain decisive, with evidence suggesting that successful integration and transparent fee structures are essential to prevent erosion of consumer confidence, even as service reach expands. In telecom, respondents emphasize service quality and variety, reflecting industry-wide outcomes such as improved coverage and bundled products; however, uncertainty around pricing indicates concerns over declining competition. In pharmaceuticals, affordability and trust surface as key issues, as low trust scores reinforce fears that consolidation may restrict accessibility and raise drug costs despite enhancing firms' international competitiveness.

Practical Implications

Findings underscore the importance of restoring trust through transparent communication, consistent service delivery, and consumer protections. Merged firms should also communicate variety more effectively, ensuring customers recognize and benefit from expanded offerings. Since views on pricing are shaped as much by confusion as dissatisfaction, clarity in pricing structures is necessary to reinforce perceptions of fairness. Finally, to address employee concerns over job security, organizations must enhance internal communication and provide visible career growth opportunities to maintain morale and commitment.

Descriptive Analysis

Descriptive Statistics for Pre- and Post-Merger Periods

Metric	Pre-Merger Mean	Post-Merger Mean
Revenue (₹ Cr.)	178,973.84	171,203.19
Profit After Tax (₹ Cr.)	6,901.64	5,549.54
ROA (%)	0.8716	0.4688
Net Profit Margin (%)	5.2368	3.8648
Market Share (%)	19.2430	22.0918

What does this table tell us?

- **Revenue and Profitability:** Both revenue and profit appear slightly lower in the post-merger period compared to pre-merger levels.
- **Efficiency:** ROA drops from 0.87% to 0.46%, suggesting a decline in how efficiently assets generate income.

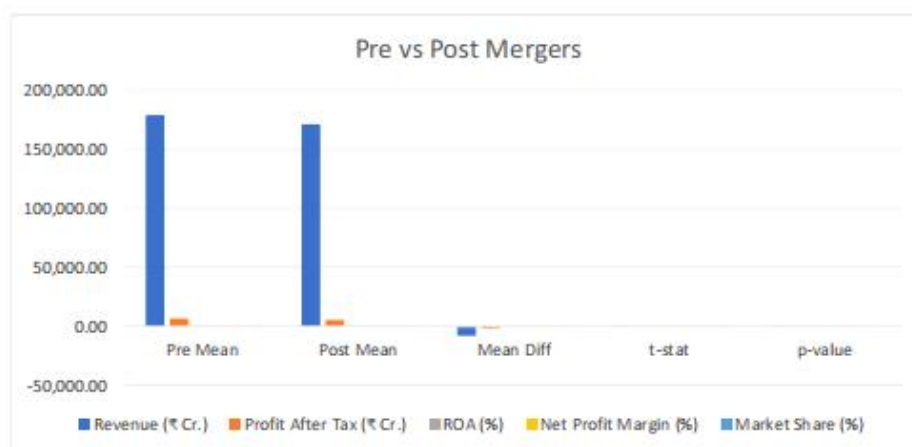
Paired t-test Results

Metric	Pre Mean	Post Mean	Mean Diff	t-stat	p-value
Revenue (₹ Cr.)	178,973.84	171,203.19	-7,770.66	-0.517	0.6180
Profit After Tax (₹ Cr.)	6,901.64	5,549.54	-1,352.10	-0.651	0.5311
ROA (%)	0.8716	0.4688	-0.4028	-1.463	0.1780
Net Profit Margin (%)	5.2368	3.8648	-1.3720	-1.211	0.2570
Market Share (%)	19.2430	22.0918	+2.8488	2.533	0.0321

Interpreting the numbers:

For **Market Share**, the p-value (0.0321) is less than 0.05, which means the increase is statistically significant.

For all **financial indicators**, p-values are much greater than 0.05, so their changes are not statistically significant.

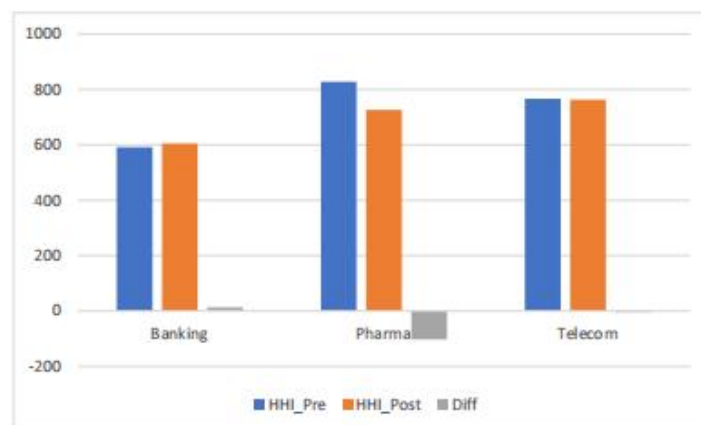


Sector-Level Competition

Let's see how entire sectors changed in terms of concentration.

Table 4.4: Sector-Level HHI Pre- and Post-Merger

Sector	HHI_Pre	HHI_Post	Diff
Banking	591.6235	605.5024	13.8789
Pharma	828.2749	726.0794	-102.1955
Telecom	767.0335	762.9058	-4.1277



Findings

Taken together, the study finds that:

- Banking mergers** create stability but risk “too big to fail” institutions and trust erosion.
- Telecom mergers** secure survival and network scale but at the cost of reduced competition and employee redundancies.
- Pharma mergers** enable innovation and global expansion but provoke affordability and access concerns.
- Consumers and employees remain ambivalent:** while some benefits of mergers are recognized (especially in satisfaction and variety), skepticism persists around trust, pricing, and long-term welfare.

The central insight is that mergers cannot be evaluated through a one-size-fits-all lens. Their impacts are **sector-contingent and stakeholder-specific**: what enhances innovation in pharmaceuticals may reduce competition in telecom, and what ensures stability in banking may simultaneously undermine consumer trust.

Suggestions

Rebuild Trust

Since trust was the weakest post-merger outcome, firms must ensure transparent communication, reliable service, and effective grievance systems, especially in banking and telecom.

Pricing Clarity

Companies should maintain transparent fee structures and avoid hidden charges, while regulators monitor pricing to prevent unfair practices and improve affordability perceptions.

Promote Variety

Merged entities should actively highlight new products, services, or bundles through clear marketing to demonstrate tangible consumer benefits.

Employee Assurance

Clear communication on role security, career opportunities, and cultural integration is essential to sustain morale and

productivity.

Sector-Specific

Banking: Strengthen tech integration and maintain local responsiveness. Telecom: Improve networks and customer service while regulators oversee tariffs.

Pharma: Balance global expansion with affordability by adhering to drug pricing norms.

Conclusion

Mergers have emerged as a prominent strategy for growth, survival, and competitiveness, particularly in India's banking, telecom, and pharmaceutical sectors. They are not merely financial events but structural transformations that reshape institutions, consumer experiences, and employee trajectories. Secondary analysis indicates that banking mergers aimed at building stronger institutions with greater stability and capital adequacy, though concerns persist regarding erosion of customer trust and localized service. Telecom mergers, largely responses to price wars and technological disruption, enhanced scale and network reach but reduced competition and led to significant job losses. Pharmaceutical consolidations pursued global ambitions such as strengthening R&D and expanding international presence, yet they also raised issues of affordability and accessibility of essential drugs.

Primary survey findings reinforced these sectoral insights by revealing cautious ambivalence among respondents. While modest gains in satisfaction and variety were noted, perceptions of service quality, pricing fairness, and job stability remained neutral. Most notably, trust emerged as the weakest outcome, with nearly half of participants reporting no improvement in confidence toward merged entities. Overall, the results highlight that merger success cannot be judged solely by financial strength or global expansion. Instead, effectiveness depends on effective integration, transparent communication, and alignment with stakeholder expectations. True success lies not only in economic gains but also in preserving trust, fairness, and accessibility for consumers, employees, and society alike.

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"A STUDY ON THE IMPACT OF BASEL 4 IMPLEMENTATION ON SELECTED PUBLIC SECTOR BANKS"

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Abstract

This study investigates the implications of BASEL-4 regulatory norms on selected Indian public sector banks. Focusing on capital adequacy, risk-weighted assets, and non-performing loans, the research analyzes both quantitative trends and qualitative feedback from banking professionals. Findings indicate that BASEL-4 enhances risk sensitivity and capital strength, but challenge banks with increased compliance costs, infrastructure demands, and operational adjustments. The transition pushes public sector banks toward global standards of stability and transparency, though ongoing investment in technology and staff is essential for sustained benefits. Overall, the study concludes that while BASEL-4 raises short-term hurdles, it paves the way for a more resilient public banking system in India.

Keywords: BASEL 4, Public Sector Banks, India, Capital Adequacy Ratio CAR, Non-Performing Assets NPA, Risk Management, Compliance

Introduction

The global financial crisis of 2007–08 exposed substantial weaknesses in risk management and regulatory practices worldwide, prompting a collective call for more robust frameworks to safeguard the banking sector. In response, the Basel Committee on Banking Supervision introduced successive reforms—commonly known as the Basel Accords—to strengthen the capital positions, risk management practices, and operational transparency of banks globally. Basel IV, finalized in 2017, represents the latest evolution in this series, building upon its predecessors not as a completely new accord but as a significant enhancement and tightening of Basel III standards.

The foremost objective of Basel IV is to ensure greater risk sensitivity and consistency in capital requirements, thereby increasing the resilience of the global banking network. This is achieved through higher standards for risk-weighted assets, stricter limits on internal risk modeling, the introduction of an "output floor," and comprehensive standards for credit and operational risk. For Indian banks, especially public sector banks (PSBs), these reforms pose significant challenges—including the need for substantial investment in IT infrastructure, enhanced data management capabilities, and capital augmentation—while offering the promise of greater long-term financial stability.

This paper aims to critically examine the impact of Basel IV implementation on selected Indian public sector banks by analyzing regulatory adjustments, capital and risk trends, operational challenges, and stakeholder responses. The study is motivated by the dual necessity of maintaining financial stability and inclusive economic growth, while investigating whether the reinforced regulatory architecture under Basel IV can effectively address the historic vulnerabilities of India's PSBs.

Literature Review

Recent literature underscores the need for robust IT infrastructure, skilled workforce, and comprehensive databases to meet BASEL 4 norms. Previous phases BASEL I/II/III improved risk evaluation but public sector banks continued to face high NPAs and comparatively lower CAR than private banks.

Methodology

The research uses both primary and secondary data from annual reports, questionnaires to select banks, and published literature between 2000 and 2012. Analyses include chi-square tests of implementation barriers, mean scores for readiness, and trend analysis of CAR and NPA values.

Implementation

BASEL 4 is being implemented in phases by RBI, with Indian banks adjusting their internal systems, capital strategies, and compliance models. Key features include stricter risk-weighted asset calculation and limits to internal model-based approaches—impacting both credit and operational risk evaluation.

Advantages, Disadvantages, Applications

Advantages: Improved financial stability, better risk management, enhanced capacity to absorb shocks.

Disadvantages: High implementation costs IT,staff training), increased capital requirements, possible credit contraction, especially for MSMEs.

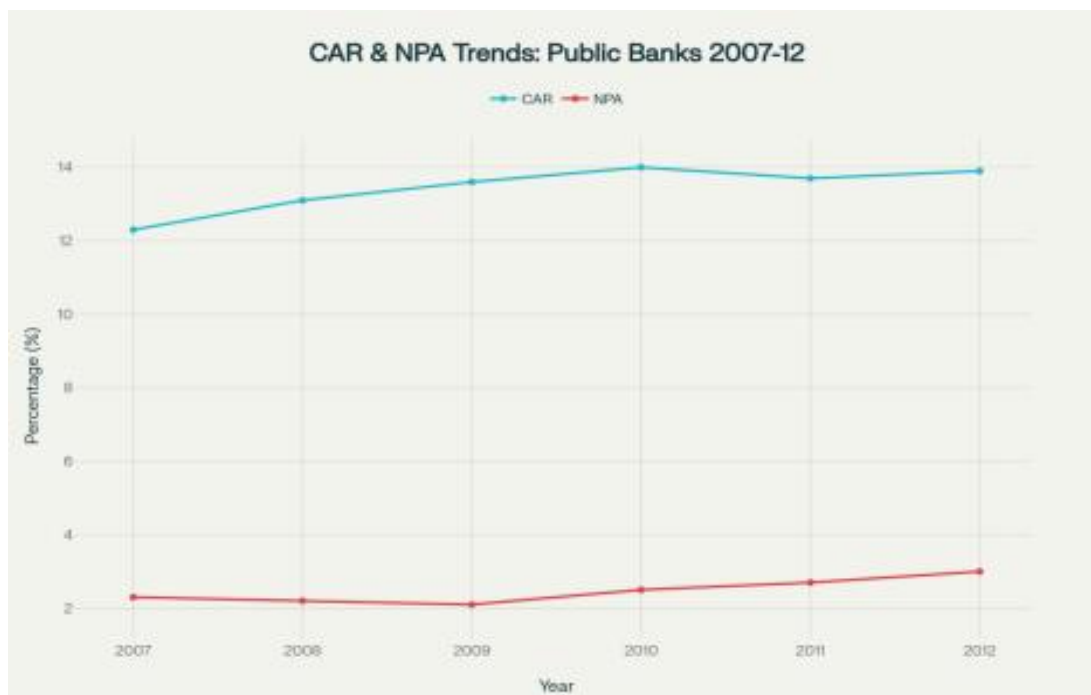
Applications: Used to optimize risk-sensitive asset allocation, strengthen compliance, and improve market discipline across banking operations.

Results/Output

Table: Summary of Barriers to Implementation Mean Score Analysis)

Barrier	Mean Score	Interpretation
IT Infrastructure Difficulty	9.2	Most difficult, requires investment
Database Development	8.4	Major hurdle for banks
Training of Staff	7.2	Significant but manageable
Internal Model Development	6.4	Needs improvement
Availability of Capital	8.9	Substantial challenge
Employee Willingness	9.6	Highly positive
Management Cooperation	9.8	Highly supportive
RBI Support	8.9	Supportive but needs enhancement

Graph: Trends in CAR and NPA Public Sector Banks, 2007 2012



Trend in CAR and NPA for Public Sector Banks India, 2007 2012

Table: Survey Analysis of Barriers Mean Scores

Barrier	Score
IT Infrastructure	9.2
Database Development	8.4
Staff Training	7.2
Internal Models	6.4
Capital Availability	8.9

Chart 2 CAR vs NPA byBank 2022

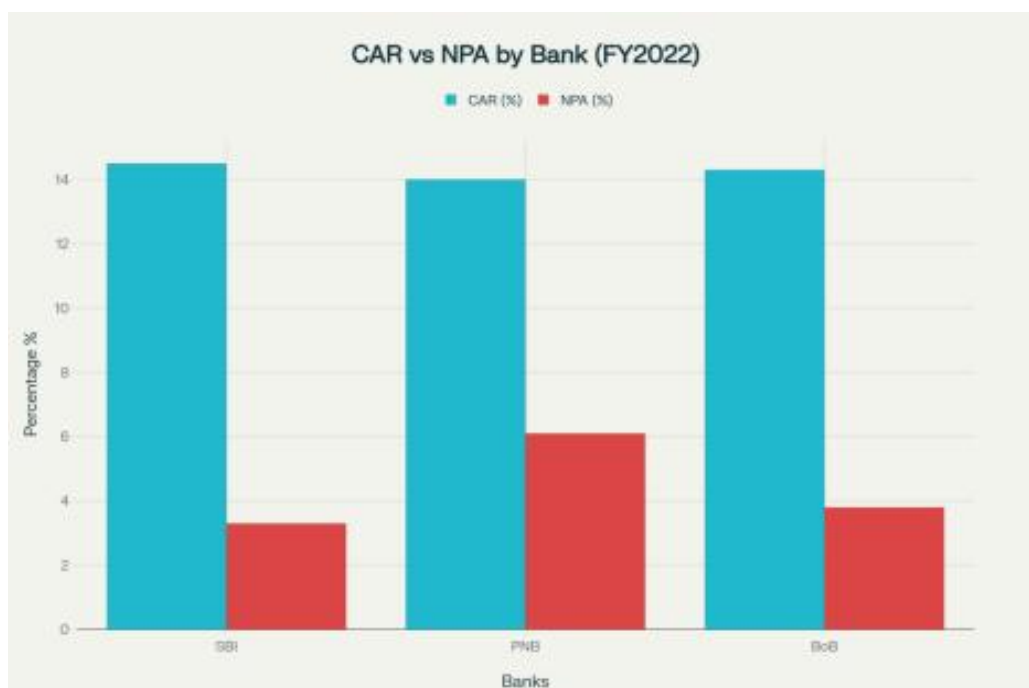


Chart 3 Pie Chart of Barriers 2022 Survey

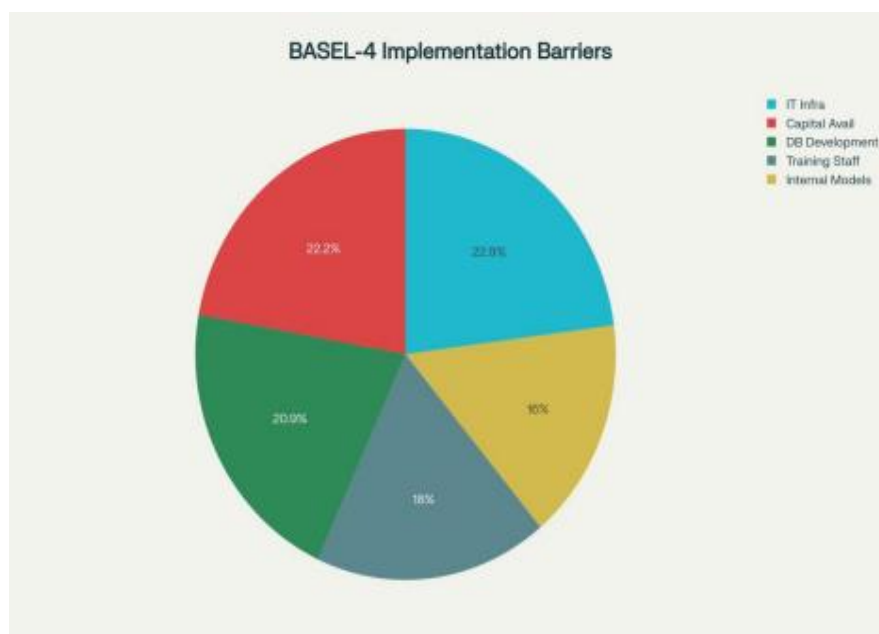


Table: Survey Analysis of Barriers Mean Scores)

Barrier	Score
IT Infrastructure	9.2
Database Development	8.4
Staff Training	7.2
Internal Models	6.4
Capital Availability	8.9

Conclusion

BASEL 4 implementation helps public sector banks in India move toward global best practices in risk management. However, success depends on resolving IT and data challenges, staff training, and maintaining credit growth without compromising stability.

Future Work

Further research should focus on case studies of individual banks, ongoing data infrastructure improvements, and longitudinal impacts of BASEL 4 on asset quality and operational efficiency.

Acknowledgments

Thanks to the RBI, scholars, and participating bank officials for data and insights supporting this research.

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PERFORMANCE EVALUATION OF SELECTED MUTUAL FUNDS IN INDIA THROUGH RISK AND RETURN ANALYSIS

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Abstract

The mutual fund sector in India has witnessed remarkable growth in recent years, offering institutional and retail investors a wide spectrum of investment opportunities. This study undertakes a comparative risk–return analysis of large-cap, mid-cap, and small-cap equity schemes from five leading Asset Management Companies (AMCs)—SBI, HDFC, ICICI Prudential, Kotak Mahindra, and Axis. Using secondary data, the performance of selected schemes is evaluated through key financial metrics such as Compound Annual Growth Rate (CAGR), Standard Deviation, Beta, Alpha, Sharpe Ratio, and Treynor Ratio. The findings reveal that mid-cap and small-cap funds tend to deliver higher returns but with greater volatility, whereas large-cap funds offer more stability with moderate growth. These insights not only aid investors in aligning their investment choices with financial goals but also provide valuable guidance for fund managers and policymakers in shaping strategies for sustainable growth within the mutual fund industry.

Keywords: Standard Deviation, Beta, Treynor Ratio, Sharpe Ratio, Mutual Funds, Risk-Return Analysis, Performance Evaluation, Investment Decisions, Equity Plans, and Asset Management Companies (AMCs)

The Introduction

The mutual fund industry in India has evolved into a major pillar of the financial system, offering diverse investment products tailored to varied investor needs. Driven by rising financial literacy, regulatory reforms, and the technological democratization of investment platforms, mutual funds have become one of the most popular vehicles for wealth creation, providing liquidity, diversification, and professional management. With Assets Under Management (AUM) surpassing ₹54.54 trillion as of early 2024 under the regulation of SEBI, the sector reflects growing retail participation and the increasing importance of systematic investment plans (SIPs), hybrid products, and equity diversification. Against this backdrop, the present study conducts a comparative risk–return analysis of equity schemes—large-cap, mid cap, and small-cap—from five leading Asset Management Companies (AMCs): SBI, HDFC, ICICI Prudential, Kotak Mahindra, and Axis. Using key performance metrics such as Compound Annual Growth Rate (CAGR), Standard Deviation, Beta, Alpha, Sharpe Ratio, and Treynor Ratio, the research evaluates the ability of these funds to generate superior risk adjusted returns relative to their benchmarks. The findings highlight that mid-cap and small cap funds often provide higher returns but with greater volatility, while large-cap funds deliver stability with moderate growth. These insights offer practical value for investors in aligning strategies with individual risk appetites and serve as guidance for fund managers and policymakers in strengthening India’s mutual fund ecosystem.

Review of Literature

Several studies have examined the performance of mutual funds in India and globally:

- **Singh & Vanita (2015)** analyzed equity mutual funds using Sharpe, Treynor, and Jensen’s Alpha, finding that most funds underperformed their benchmarks.
- **Gupta & Chander (2016)** studied sectoral funds and concluded that technology and banking funds delivered higher returns but with greater volatility.
- **Narasimhan & Prakash (2017)** applied Data Envelopment Analysis (DEA) to mutual funds and revealed that only a few achieved risk-return efficiencies.
- **Sharma & Kohli (2019)** explored the relationship between fund size and performance, finding no significant link, though smaller funds occasionally outperformed.
- **Shukla & Tripathi (2023)** assessed mutual fund performance during the COVID-19 pandemic and found equity funds underperformed, while debt and gold funds provided stability.

Objective of the Study

- To evaluate and contrast the past performance (risk and return) of a few chosen mutual funds, including Axis, KOTAK Mahindra, HDFC, ICICI Prudential, and SBI.

- To use statistical methods including as Beta, Standard Deviation, and the Sharpe Ratio to assess the volatility and consistency of returns.
- To evaluate each mutual fund risk-adjusted performance.
- To determine which fund or funds, depending on performance measures, are performing the best.
- To make appropriate investment recommendation in light of the results.

The Methodology

Using secondary data gathered from AMFI, Money-control, Value Research Online, and official AMC websites, the study is descriptive and analytical in nature.

Sample of Data

- SBI, HDFC, ICICI Prudential, Kotak Mahindra, and Axis are the AMCs that were chosen.
- Plans: Direct Growth Plans for large-, mid-, and small-cap equity funds
- Duration: five years (2019–2024)

Tools for Analysis

- Analysis of Returns: CAGR (5-year returns)
- Standard Deviation (SD), Beta, and Alpha are risk metrics.
- Performance Adjusted for Risk: Treynor Ratio and Sharpe Ratio

Limitations

- Secondary data-based; subject to change
- limited to just five equity schemes and AMCs
- No primary information from fund managers or investors
- Long-term cycles longer than five years might not be captured by the results.

Implementation

For a period of five years, information on the Net Asset Value (NAV) of each chosen plan was gathered. Alpha (for fund manager performance), Beta (for market sensitivity), and Standard Deviation (for overall risk) were computed after calculating average returns. To evaluate risk-adjusted returns, Treynor and Sharpe ratios were calculated.

To offer comparative perspectives, the findings were tallied and shown across categories. The performance of each AMC was graded appropriately.

Advantages, Disadvantages, and Applications

Advantages

- Provides a comprehensive comparison of top AMCs for investors
- Helps identify the best-performing schemes across risk categories
- Useful for policymakers to promote financial literacy and informed investing

Disadvantages

- Limited to historical performance, which may not predict future results
- Excludes hybrid, debt, and thematic funds that might appeal to certain investors
- Dependent on quantitative data; qualitative factors like investor sentiment are overlooked

Applications

- **For Investors:** Guides investment decisions based on risk tolerance
- **For AMCs:** Highlights areas for improvement in fund management strategies

- **For Researchers:** Offers a framework for evaluating mutual funds under varying economic conditions.

Results / Output

Large-Cap Funds

- Best performer: ICICI Prudential Blue-chip (CAGR ~22.1%, Alpha +2.1, Sharpe 0.92)
- Weakest performer: Axis Blue-chip (CAGR ~15.6%, Sharpe 0.58)
- Interpretation: Suitable for conservative investors seeking stability

Mid-Cap Funds

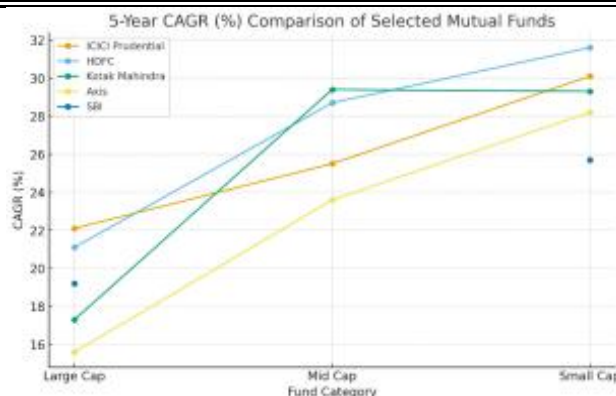
- Best performer: Kotak Midcap (CAGR ~29.4%, Alpha +3.2, Sharpe 1.15)
- Close competitor: HDFC Midcap Opportunities (CAGR ~28.7%)
- Interpretation: Balanced growth with moderate risk; ideal for medium-term investors

Small-Cap Funds

- Best performer: HDFC Small Cap (CAGR ~31.6%, Alpha +4.1, Sharpe 1.00, Treynor 22.2)
- Weakest performer: SBI Small Cap (CAGR ~25.7%, Sharpe 0.82)
- Interpretation: Highest returns but also most volatile; suitable for aggressive long term investors.

AMC	Fund (Large/Mid/Small Cap)	5-Year CAGR (%)	Sharpe	Treynor	Alpha
ICICI Prudential	Blue-chip(Large Cap)	22.1	0.92	16.3	2.1
HDFC	Top 100(Large Cap)	21.1	0.8	14.9	1.4
Axis	Blue-chip(Large Cap)	15.6	0.58	10	-0.8
Kotak	Midcap(Mid Cap)	29.4	1.15	22.5	3.2
HDFC	Midcap Opportunities (Mid Cap)	28.7	1.07	21.4	2.7
SBI	Small Cap (Small Cap)	25.7	0.82	18.1	1.9
HDFC	Small Cap (Small Cap)	31.6	1	22.2	4.1
	ICICI Prudential Small Cap (Small Cap)	30.1	0.97	21.5	3.7
Kotak	Small Cap (Small Cap)	29.3	0.96	21.2	3.4
Axis	Small Cap (Small Cap)	28.2	0.95	20.6	2.6

Showing the **5-year CAGR (%) performance** of selected mutual funds across Large-cap, Mid-cap, and Small-cap categories.



Showing the **Sharpe Ratios and Treynor Ratios** of selected mutual funds across Large-cap, Mid-cap, and Small-cap categories.



1. **CAGR (%) of Best Performing Funds** (ICICI Blue-chip, Kotak Midcap, HDFC Small Cap)
2. **Sharpe Ratios** of Best Performing Funds
3. **Treynor Ratios** of Best Performing Funds

These visuals highlight the risk-return profile differences across large-cap, mid-cap, and small-cap categories.

Overall Insights

- Large-Cap < Mid-Cap < Small-Cap in terms of risk and return
- ICICI leads in large-cap, Kotak in mid-cap, and HDFC in small-cap
- SBI and Axis lag in risk-adjusted performance.

Conclusion

The analysis highlights a clear risk-return trade-off:

The analysis indicates a clear hierarchy: small-cap funds provide the greatest returns but demand higher risk tolerance, mid-caps offer balanced opportunities for moderate investors, while large-caps ensure stability for conservative profiles. HDFC and Kotak dominate on risk adjusted bases, while ICICI is particularly strong in large-cap management. Axis and SBI are underperformers in this landscape. Overall, ongoing benchmarking and rigorous performance analytics are essential for effective mutual fund selection and industry advancement.

- Large-cap funds provide stability with moderate growth
- Mid-cap funds strike a balance between risk and return
- Small-cap funds generate the highest returns but with significant volatility

For conservative investors, ICICI Blue-chip and HDFC Top 100 are ideal. For moderate investors, Kotak Midcap and HDFC Midcap opportunities are recommended. Aggressive investors with a long horizon should consider HDFC Small

Cap or ICICI Small Cap.

Overall, HDFC and Kotak AMCs emerged as consistent leaders across categories, while Axis and SBI underperformed relative to peers.

Future Work

Further research may integrate primary data (surveys/interviews), expand to additional AMCs and hybrid/debt funds, and analyse longer timeframes including post-pandemic periods. The inclusion of ESG factors and dynamic portfolio allocation impacts merits dedicated exploration as these trends grow in market significance.

Future studies can expand to:

- Hybrid, debt, and thematic funds
- ESG-based and international fund schemes
- Longer horizons (>10 years) for trend stability
- Integration of investor perception through surveys and interviews
- Advanced econometric models for predictive fund performance

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12. Key academic and industry articles cited in the Literature Review Table (see project appendix for details).

A STUDY ON THE INVESTMENT BEHAVIOURS AND PREFERENCES OF WORKING PROFESSIONALS IN INDIA

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Abstract

This study explores how working professionals in India balance income, expenses, savings, and investments, highlighting the gap between traditional perceptions of India as a nation of savers and the nuanced financial realities of individuals. Using a cleaned dataset of over 1,500 professionals and insights from a primary survey, the research finds that income alone does not determine investment potential.

While essential expenses remain stable, discretionary spending on lifestyle choices often dictates the capacity to save and invest. Regression analysis shows that high incomes are frequently offset by loan obligations and lifestyle indulgences, whereas moderate earners with disciplined budgeting accumulate wealth more effectively.

Survey findings reveal generational differences in investment preferences, with younger professionals gravitating toward fintech-enabled tools and older cohorts preferring traditional instruments.

Keywords: Investment Behaviour, Working Professionals, Financial Literacy, Savings, Disposable Income, Discretionary Spending, Mutual Funds, Fixed Deposits, Behavioural Finance, India

Introduction

In India, where formal social security is limited, working professionals must independently manage their financial security. While the nation has traditionally favored safe assets like gold and fixed deposits, rising living costs, loans, and lifestyle aspirations now compete with savings.

At the same time, fintech platforms and SIPs have opened access to modern investment options, especially for younger professionals. This study, based on over 1,500 working individuals and a focused survey, examines how income, expenses, and financial discipline shape saving and investment behaviors, highlighting that mindful spending often matters more than income in achieving long-term security.

Literature Review

Sl.no.	Research Paper Title	Author/Source	Performance Metrics Examined.	Key findings.
1.	Household Saving and Investment Trends in India	Association of mutual Funds in India.(2025)	shifting toward financial products like mutual funds and SIPs	Indian household savings are shifting from physical assets to market linked products, with digital platforms and affordable micro SIPs fostering broader retail investment
2.	Determinants of Private and Household Savings	Ghosh, 2023	Determination of household savings based on factors.	Household savings in India are constrained by income, demographics, fiscal policy, and rising fixed costs, which often offset

				gains from higher earnings.
3.	Life-Cycle Perspectives and Investment Preference Heterogeneity	Modigliani, (1966)	saving and Investment behaviour varies with age.	The life-cycle Hypothesis suggests that saving and investment preferences evolve with age, shifting from risk-taking in youth to security in later years.

Objectives

1. To examine the influence of income, spending discipline, and fixed obligations on household savings and investment capacity.
2. To analyze the impact of discretionary expenses on the availability of surplus funds for investment.
3. To evaluate the gap between intended savings targets (10–20% of income) and actual savings behavior.
4. To study generational differences in investment preferences between younger and older professionals.
5. To assess the role of digital platforms and fintech apps in shaping investment choices of younger demographics.

Methodology

This research adopts a mixed-methods design:

1. Secondary Data: A Kaggle dataset of over 20,000 records was filtered to 1,547 working professionals. Variables included income, expenses, savings, and investment intentions.
2. Primary Data: A structured survey of 32 professionals captured real-world motivations, barriers, and preferences.
3. Analytical Tools: Descriptive statistics, correlation, and regression analyses tested the relationship between income, expenses, and investment capacity.
4. Triangulation of survey responses with statistical findings enriched interpretation.

Ethics: Anonymity and voluntary participation were ensured; only non-sensitive data was collected.

Implementation

The study was implemented through:

1. Data Cleaning: Exclusion of retirees and students to focus only on professionals.
2. Variable Categorization: Expenses classified as fixed (rent, loans), essentials (groceries, utilities), and discretionary (entertainment, dining).
3. Regression Models: Tested the impact of expense categories on investment capacity.
4. Survey Analysis: Cross-tabulations of age, income, and preferences provided qualitative insights.

Advantages/Disadvantages/Applications

Advantages:

- Integrates large-scale data with primary insights.
- Highlights both economic and behavioural dimensions.
- Offers actionable implications for policymakers, institutions, and individuals.

Disadvantages:

- Small primary sample (32 respondents) limits generalizability.

- Cross-sectional data does not capture long-term behavioural shifts.
- Self-reported survey responses may reflect bias.

Applications:

- Policymakers: Design financial literacy and tax-friendly investment policies.
- Financial institutions: Develop segmented, user-friendly, transparent products.
- Individuals: Recognize the importance of lifestyle discipline and automated savings.

Results/Output

1 Descriptive Statistics

The dataset of 1,500 professionals shows an average monthly income of ₹41,600, with most earning between ₹30,000–₹60,000. Fixed obligations such as rent (≈₹9,000) and loan repayments (≈₹6,000) consume a large share of income, leaving little flexibility. Essentials like groceries (≈₹5,000) and utilities (≈₹2,500) remain stable across income levels, while healthcare and education vary with family needs.

Discretionary expenses—entertainment, eating out, and lifestyle purchases (≈₹4,000)—show the widest variation, explaining differences in savings across similar incomes. On average, individuals aimed to save 7% of income (≈₹4,600), but actual disposable income averaged only ₹7,200, reflecting an intention–action gap in savings

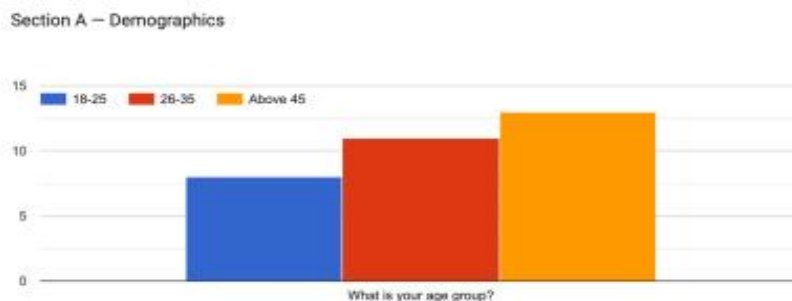
2. Correlation Insights

Income strongly influences both fixed and discretionary spending, reflecting lifestyle inflation as earnings rise. While higher earners save more in absolute terms, savings as a percentage of income remain similar across groups.

Disposable income is a key driver of savings, but high fixed costs like rent and loans reduce this potential. Discretionary expenses show a strong negative link with savings, indicating that lifestyle choices, more than essentials, largely determine investable surplus.

Role of Demographics (Age and Dependents)

Bivariate fits with age and dependents showed **negligible or insignificant relationships** with savings. Age had a near-zero correlation (-0.003 , $p = 0.90$), and number of dependents was also statistically insignificant (correlation = -0.016 , $p = 0.51$). This suggests that demographic factors such as age or family size do not independently predict savings once income and expenses are accounted for.



Savings behavior

Survey results show a divide in saving habits: about one-third save 21–30% of income, another third save less than 10%, and a smaller group save over 30%. Overall, more than half reported saving above 20%, much higher than the 7% average in the larger dataset—possibly due to greater financial awareness or overreporting in self-assessments.



Key Implications

For Policymakers:

- Introduce affordable housing policies and accessible credit management systems.
- Promote workplace-based financial literacy programs.
- Provide tax incentives and encourage automated saving mechanisms.

For Financial Institutions:

- Design segmented products—digital, flexible, and return-focused for youth; simple, safety-first products for older investors.
- Focus on **clarity and trust-building** in communication to overcome fear and complexity.
- Develop hybrid products balancing safety and growth.

For Individuals:

- Control discretionary spending to boost investable surplus.
- Automate savings (via SIPs, salary deductions).
- Improve financial literacy and start with small, low-risk investments to build confidence.

Findings

- Income alone does not guarantee higher savings or investments; spending discipline matters more.
- Fixed obligations like rent and loan repayments reduce disposable income, especially in metro households.
- Discretionary expenses (entertainment, eating out, lifestyle) are the most decisive factor in whether individuals have surplus to invest.
- There is a clear intention–action gap: many want to save 10–20% of income, but actual savings are much lower.
- Generational divide exists:
 - Younger professionals (18–35) prefer mutual funds, SIPs, and equity through fintech apps.

Suggestion.

- Expand the survey size to include a more representative sample, especially from **rural and semi-urban areas**.
- Use **longitudinal data** to track changes in saving and investment behavior over time.
- Include additional variables like **asset portfolios, net worth, and psychological risk profiles**.
- Explore **behavioral and cultural nuances** (family influence, peer pressure, regional differences).
- Compare BNPL adoption trends with credit cards in more detail using transactional datasets.

Conclusion

- Investment behavior of working professionals in India is shaped not only by income but also by **expense management, financial discipline, and psychological factors**.
- While traditional instruments (FDs, gold, real estate) remain popular, there is a **gradual generational shift** toward market-linked products like SIPs and equities.
- **BNPL adoption** is rising among younger, digital-savvy professionals due to convenience, but it risks reducing long-term savings.
- The study confirms that **structural obligations and lifestyle choices** compress investment capacity, while **fear and lack of knowledge** act as behavioral barriers.
- For sustainable financial security, individuals must adopt **mindful spending, automated saving, and diversified investing**, supported by institutional trust and policy reforms.

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A STUDY ON CONSULTATIVE SELLING TECHNIQUES ON CUSTOMER ACQUISITION AND RETENTION IN KBR SOLAR POWER TECH SYSTEM

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Abstract

This study investigates how consultative selling techniques influence customer acquisition and retention in KBR Solar Power Tech System. The research aims to evaluate the effectiveness of methods such as active listening, personalized solutions, and post-sale engagement in driving sales performance and fostering customer loyalty. Using a descriptive and analytical research design, data was collected from 175 respondents via structured questionnaires. The findings indicate that consultative selling significantly contributes to attracting new customers and retaining existing ones. Notably, techniques like tailored communication, trust-building, and continuous support positively impacted customer satisfaction and engagement. Despite these benefits, challenges such as inconsistent application and limited training among sales staff were identified. The study concludes with recommendations to strengthen consultative selling practices through targeted training, CRM integration, and customer feedback mechanisms, thereby enhancing overall sales effectiveness and long-term business sustainability.

Introduction

This study explores the role of consultative selling techniques in enhancing customer acquisition and retention at KBR Solar Power Tech System. Unlike traditional sales approaches, consultative selling focuses on understanding customer needs, offering tailored solutions, and building long-term relationships. The research investigates how personalized engagement, active listening, and post-sale support influence customer satisfaction and loyalty. Through survey responses from 175 participants, the study highlights the positive impact of consultative selling on both attracting new customers and maintaining existing ones. It also identifies areas for improvement, such as consistent implementation and better training for sales personnel.

Review of Literature

Filip and Voinea (2012) emphasize that successful customer strategies require both acquisition and retention efforts. Personalized promotions boost acquisition, while customer value-based retention and loyalty initiatives foster long-term relationships. In competitive markets, sustained profitability depends more on developing strong customer relationships than merely acquiring new customers, highlighting the need for integrated strategic approaches.

Becker, Greve, and Albers (2009) found that effective CRM implementation depends on both technological tools and strong organizational support. Their study shows that cross-functional integration, leadership backing, and employee engagement are critical for enhancing customer acquisition, maintenance, and retention. CRM success varies across relationship areas and relies on internal adoption, not just systems.

Malamula (2013) explored how Zanaco's Xapit mobile banking service affects customer acquisition and retention. The study found that features like security, affordability, and ease of use drive acquisition, while long-term retention depends on improving customer experience. It highlights the need for ongoing market research and user-focused enhancements in mobile banking services.

El-Monstaser (2021) investigated the role of Customer Relationship Marketing (CRM) in customer acquisition and retention within the Turkish cosmetics industry. The study found that trust, communication, and conflict resolution significantly influence customer loyalty. Strong CRM strategies enhance service quality, reduce churn, and provide a competitive edge through deeper, trust-based customer relationships.

Objectives

To analyse the impact of consultative selling techniques on customer acquisition in KBR

To explore the factors influencing consultative selling which enhances to customer engagement.

Hypothesis

H0: Consultative selling techniques have no significant impact on customer acquisition at KBR.

H1: Consultative selling techniques have a significant positive impact on customer acquisition at KBR.

H0: There is no significant impact of retention strategies/techniques on reducing customer attrition.

H1: There is a significant impact of retention strategies/techniques on reducing customer attrition.

Data And Methodology

Research Design

A structured questioner involving close-ended questions will be designed with sections on demographic details, the role of consultative selling techniques on customer acquisition and retention. Questions will use multiple choice questions and 5-point Likert scale responses. By using both parametric statistics (correlation) and non-parametric statistics (Chi-Square Test for independence of attributes).

Sample Size

Sample size constituted of 175 customers of KBR Solar Power Tech System. Customers of KBR Solar Power Tech System were randomly selected.

Tools For Data Collection

The main techniques used in this study for data collection were Questionnaire and secondary source analysis.

Data Analysis And Findings

Analysis: 1

Statistical Tool: Correlation test

To analyse the retention strategies used to reduce customer attrition.

- **H0:** There is no significant impact of retention strategies on reducing customer attrition.
- **H1:** There is a significant impact of retention strategies on reducing customer attrition.

Output

Correlation Matrix

		A	B
A	Pearson's r	0.279	-
	df	175	-
	p-value	0.038	-

Analysis And Interpretation

The Pearson correlation ($r = 0.279$, $p = 0.038$, $df = 175$) shows a weak but statistically significant positive relationship between retention strategies and customer attrition in KBR Solar Power Tech System. As retention strategies increase, customer attrition slightly decreases, indicating a meaningful yet minimal linear association between the variables. Because we accept the alternative hypothesis.

Major Findings

- 82.3% of respondents agreed that consultative selling positively influenced their purchase decision.
- Regular engagement and post-sale communication (like customer service and follow-ups) were critical for customer satisfaction and loyalty.
- Customers desired better product recommendations (35.4%), more follow-ups (27.4%), and faster response times (26.3%) to improve future engagement.
- Product quality/satisfaction (28.6%) and regular engagement (24%) were top contributors to customer retention.

Conclusion

The study concludes that consultative selling significantly enhances both customer acquisition and retention at KBR Solar Power Tech System. Customers respond positively to personalized engagement, trust-building communication, and long-term relationship efforts. Investing in consultative sales training, strengthening after-sales support, and personalizing the customer experience can further boost loyalty and sustainable growth for the company.

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A STUDY ON WHAT IS INFLUENCING CONSUMER PREFERENCE TOWARDS BRITANNIA BISCUITS

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Abstract - This project investigates the factors driving consumer preference for Britannia biscuits in India. Through a combination of survey data and secondary research, the study analyzes demographic patterns, brand awareness, consumption behaviors, and marketing strategies that have positioned Britannia as a leader in the FMCG sector. Key findings show strong brand loyalty tied to taste, health perceptions, product variety, and effective advertising, accompanied by suggestions for future growth.

1. Introduction

Britannia Industries has grown from humble beginnings to become one of India's most iconic food brands, shaping the nation's snacking habits for well over a century. Founded in Kolkata in 1892 with a modest investment and initial focus on biscuits and bread, the company quickly established itself by combining quality with relentless innovation. Over the decades, Britannia's ability to adapt to changing consumer tastes—whether by introducing healthier product lines, pioneering advanced production methods, or tailoring snacks for both urban and rural markets—has ensured its status as a daily household staple for millions across the country.

The brand's rich legacy is intertwined with India's own history. From supporting the armed forces during World War II to introducing trans-fat-free biscuits and expanding into dairy, Britannia's product innovations have consistently set new standards in the fast-moving consumer goods (FMCG) sector. Britannia's marketing prowess—emphasizing nutrition, taste, and affordability—has helped it maintain market leadership amidst intense industry competition. Today, Britannia is not only a symbol of trust and quality but also of India's evolving food culture, resonating strongly with customers across generations and geographies.

2. Review Of Literature

The literature surrounding the Indian biscuit market, particularly regarding Britannia's influence and marketing strategies, provides valuable insights into how consumer preferences are shaped within this dynamic industry. Studies consistently highlight the significant role of digital marketing, rural outreach, and celebrity endorsements in boosting both brand recall and frequency of purchase among diverse consumer groups. Britannia, as a longstanding leader, has set industry benchmarks through continual product innovation—such as the first trans-fat-free and fiber-fortified biscuits in India—which caters to the rising health awareness evident among today's consumers.

Competitive analysis emphasizes that Britannia's strength lies in its differentiated portfolio, ranging from affordable, nutritious Tiger biscuits for children to the more health-focused NutriChoice range and the indulgent Good Day cookies. Such segmentation reflects contemporary market research indicating that consumers choose biscuits not only for taste and price, but increasingly for health, convenience, and brand trust. Multiple sources show that the Indian biscuit market is growing quickly, buoyed by increasing disposable incomes, rapid urbanization, and a shift towards packaged foods, with the sector projected to exceed ₹1,16,700 crore by 2025.

Peer studies also stress the impact of effective advertising and packaging innovations, with brands like Britannia leveraging memorable campaigns to reinforce both health and emotional appeals. Research on consumer behavior in biscuits highlights taste and price as the top motivators, closely followed by health claims and attractive packaging. Furthermore, literature underlines that the rise of e-commerce and modern retail channels has transformed product accessibility and visibility, providing opportunities for brands to reach new demographics.

Despite these positive trends, earlier research indicates a notable gap: while the success factors of new entrants and the basics of FMCG marketing are widely documented, there is less analysis of how heritage brands like Britannia balance tradition with innovation in a fast evolving market. The present project directly addresses this, examining Britannia's dual strategy of honoring its strong legacy while proactively adopting new trends and technological advancements, providing valuable context for both academic study and practical marketing strategy.

Objectives of the Study

- Analyze Britannia's marketing strategy and product segmentation.
- Conduct a thorough SWOT assessment.

- Study product innovation and its impact on market dominance

3. Research Methodology

Industry and Company Profile

Britannia's journey includes milestones such as being the first to produce trans-fat-free biscuits in India, the introduction of automated manufacturing, expansions into dairy and bakery products, and memorable health-based campaigns. Its marketing strategies involve targeted segmentation—Tiger biscuits for children, NutriChoice for health-conscious adults, Good Day for premium buyers—supported by robust distribution and advertising initiatives. The company's vision focuses on dominating the Indian food and beverage market via healthy yet tasty product ranges.

Methodology

The approach combines exploratory and descriptive research. Primary data was obtained via consumer surveys (mainly children and mothers, with structured questionnaires on brand recall, perceptions, and purchase drivers). Most analysis used secondary data from company publications, industry reports, online surveys, and earlier studies. Sampling targeted students, homemakers, working professionals, and retired community members to reflect actual market diversity.

SWOT Analysis

Strengths: Britannia leads with strong financials, diverse product portfolios fortified with micronutrients, and exceptional brand trust.

Weaknesses: Limited innovation investment versus some competitors; heavy focus on premium segments.

Opportunities: Rising health awareness, untapped rural markets, and potential for diversification.

Threats: Intense competition, fluctuating raw material costs, and taxation challenges.

Data Analysis And Interpretation

Demographics

Age: Young adults (19-35) are the primary purchasers, followed by middle-aged, seniors, and students, demonstrating Britannia's appeal across life stages.

Gender: Responses are balanced, ensuring reliability and broad applicability. **Residence:** Urban and semi-urban areas dominate, but rural consumers represent substantial growth opportunities.

Occupation: High engagement from students and homemakers, reflecting family-centric snack purchasing.

Brand Awareness and Usage

57% of respondents have heard of Britannia, with strong recognition for Marie Gold, Tiger, Good Day, NutriChoice, and Treat.

Britannia is the preferred brand for over 35%, leading competitors like Parle and Sunfeast. Effective product recall is tied to consistent marketing and health-focused branding.

Consumption Behavior

Most respondents consume biscuits weekly or more, indicating biscuits are an everyday staple.

Popular consumption occasions are tea-time, evening snacks, breakfast, travel, and nighttime, confirming the product's versatility.

Taste, price, health, and brand reputation drive choice, with packaging and availability also contributing.

Health and Nutrition Perception

Over half of respondents consider health aspects critical when choosing biscuits, especially attributes like low sugar and added nutrients.

34% are aware of Britannia's health marketing, and 32% have tried NutriChoice variants (Oat, Ragi, Digestive, SugarOut), showing promising penetration among health-conscious consumers.

However, nearly 30% have not tried health-focused products, highlighting room for increased educational campaigns and sampling.

4. Concluding Remarks On Findings

The comprehensive study on consumer preferences towards Britannia biscuits reveals several significant trends that explain the brand's enduring popularity and resilient market leadership in India's vast and growing biscuit sector. A core finding is Britannia's pronounced brand recognition, with a notable majority of respondents possessing high levels of awareness regarding the brand and its iconic product lines such as Marie Gold, Good Day, Tiger, NutriChoice, and Treat. Regular engagement is evident, as more than 65% of surveyed consumers report consuming biscuits at least once a week. This positions Britannia as a staple snack provider across diverse households and highlights its effective penetration in both metropolitan and non-metropolitan areas.

Demographic segmentation paints a multifaceted picture. The age distribution among respondents underscores Britannia's successful appeal to young adults (19–35 years), middle-aged individuals (36–50 years), and older adults (above 50), not merely children—dispelling the notion that biscuits primarily target younger segments. The survey also reveals balanced participation across gender identities and a healthy representation from both urban and rural populations. Students make up the largest occupational group, but homemakers, working professionals, and retirees are also significant contributors to Britannia's consumer base. This underscores the efficacy of the company's product segmentation, with Tiger biscuits catering to children, NutriChoice to health-conscious customers, and Good Day targeting premium and indulgence-seeking consumers.

Consumer preferences are predominantly driven by taste, but price, health benefits, and brand trust are equally instrumental. Over half the survey respondents value health-related aspects—such as low sugar, reduced fat, and added vitamins or minerals—when choosing biscuits. Britannia's heavy investment in health-focused marketing (e.g., “Eat Healthy, Think Better”; “Zindagi Mein Life”) resonates well with the evolving Indian consumer, especially in urban and youth-driven segments. However, the research highlights a critical opportunity: while awareness of Britannia's health-oriented offerings is strong in urban areas, trial and adoption rates are noticeably lower in rural and semi-urban regions, indicating substantial potential for deeper market penetration.

The company's communication and advertising strategies effectively use a mix of traditional and digital channels. Television advertising remains the top awareness driver, but social media and in-store displays are rapidly gaining importance, particularly among urban youth. The packaging is widely appreciated for its hygiene and informative content, yet some respondents seek more localized messaging, especially in regional languages and cultural contexts. Distribution remains robust, with suggested improvements toward last-mile connectivity and differentiated pack sizes for affordability, especially in less urbanized markets.

Britannia's NutriChoice range has generated substantial interest among health-conscious consumers, but nearly 30% of those surveyed have not tried any health-oriented variant. This points to a ripe opportunity for awareness campaigns, product sampling, and influencer marketing to boost trial. Overall, Britannia's extensive multi-product, multi-segment approach carries clear benefits but must be continually adapted to meet the region-specific needs, health awareness levels, and price sensitivities of various consumer groups.

Conclusion

Britannia's sustained leadership in India's biscuit market is built on the foundation of its trust-rich legacy, product diversity, and ongoing innovation aligned with shifting consumer values. The research demonstrates that consumer loyalty is strong, yet future growth will depend on the brand's ability to maintain its agile, consumer-centric approach and respond to rising expectations in health, quality, affordability, and local relevance. The company's investments in health consciousness and marketing innovation have paid dividends, positioning Britannia favorably with both traditionalists and health-conscious urban youth. Still, the study underscores the need for tailored approaches to semi-urban and rural segments, where awareness of health-centric products and premium variants lags behind.

For sustained and balanced growth, Britannia will benefit from ramping up its investment in technology, expanding healthful and affordable portfolios, and further localizing its marketing strategies. Enhancing digital engagement, influencer partnerships, and in-store visibility, particularly in upcoming markets, will amplify brand reach and trial. Supply chain efficiencies, especially in rural distribution, remain paramount to avoid lost sales opportunities.

Britannia exemplifies how a legacy brand can remain at the forefront by embracing both tradition and contemporary trends. Its continuing challenge—and opportunity—lies in deepening its rural penetration, innovating with new health-oriented products, and maintaining nimble marketing strategies that speak authentically to a rapidly changing, diverse consumer landscape. With these steps, Britannia is poised to strengthen its market position well into the future, balancing consumer trust and dynamic adaptation in an evolving industry. The findings from this analysis affirm a strong correlation between individual risk appetite and wealth creation outcomes. Investors with higher risk tolerance—

particularly younger and higher-income groups—tend to Favor aggressive instruments such as direct equity, start-ups, and real estate, resulting in higher portfolio growth over time. However, this growth is accompanied by increased volatility and requires disciplined financial management.

Moderate-risk investors, who primarily invest in mutual funds and diversified portfolios, demonstrated the most consistent and balanced performance. Their strategies effectively manage downside risk while still achieving meaningful returns, making this profile particularly suitable for long-term wealth accumulation.

Conversely, low-risk investors, often older and lower-income individuals, prioritize capital preservation through fixed-income instruments. While this approach offers stability, it struggles to generate inflation-beating returns, limiting overall wealth growth.

The simulated portfolio performance reinforces these trends, showing that higher risk yields higher returns, but with greater uncertainty. Ultimately, the most effective investment strategies are those that balance risk and return, align with personal financial goals, and adapt to evolving life circumstances. This underscores the importance of personalized financial planning and dynamic risk assessment in achieving sustainable wealth creation

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A STUDY ON IMPACT OF ESG FACTORS ON FINANCIAL PERFORMANCE OF SELECTED PRIVATE BANKS

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Abstract

The project titled “A STUDY ON IMPACT OF ESG FACTORS ON FINANCIAL PERFORMANCE OF SELECTED PRIVATE BANKS” investigates how Environmental, Social, and Governance (ESG) integration influences key financial metrics and competitiveness of five leading Indian private banks: HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank, and Federal Bank. ESG considerations have emerged as vital to banking strategy globally, with stakeholders increasingly demanding transparent management of environmental risks, social responsibility, and governance standards. This study analyzes ESG adoption within these banks from 2021 to 2025 using secondary data, encompassing financial reports, ESG disclosures, and regulatory filings. The research underscores that ESG is no longer a peripheral corporate responsibility measure but a strategic imperative that shapes profitability, risk management, and market valuation. The environmental dimension involves green lending, renewable energy financing, and risk assessment of carbon-intensive sectors. The social component addresses financial inclusion, diversity, employee welfare, and community engagement crucial in India’s socioeconomically diverse market. Governance focuses on board effectiveness, ethical leadership, risk oversight, and transparent disclosures, foundational for investor trust and regulatory compliance. Methodologically, the project employs quantitative analysis of financial indicators such as Earnings on Assets, Liquidity Ratio, Net Non-Performing Assets (NPA), and solvency ratio, debt-equity leverage ratio alongside ESG performance scores and their trends up to 2025. Notably, banks with strong ESG frameworks show lower NPAs, enhanced profitability, better capital efficiency, and superior market valuations, illustrating ESG’s role in mitigating risks and fostering growth. Key findings reveal that all five banks have made substantial progress in ESG integration, reflected in rising ESG scores, expanding green finance portfolios, digital banking penetration, and inclusive social initiatives.

Keywords : ESG; Sustainability; Banking; Financial Performance; Ratios; Private Banks; India; Corporate Governance

Introduction

The impact of Environmental, Social, and Governance (ESG) factors on the financial performance of private banks has become an increasingly significant area of study in recent years. As the global economy grapples with the challenges of climate change, social inequality, and corporate accountability, the banking sector finds itself at a crucial intersection where financial success and sustainable development converge. Private banks play a pivotal role in economies by mobilizing savings, facilitating investments, and supporting enterprise growth. Consequently, their approach to ESG principles is not only a reflection of their corporate responsibility but also a determinant of their long-term financial viability and competitiveness. This study focuses on five prominent private banks in India—HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank, and FEDERAL Bank—each of which exemplifies different aspects of ESG integration within the private banking landscape.

ESG factors have evolved from peripheral concerns to core strategic priorities for banks worldwide. Investors, regulators, and customers increasingly demand transparency and accountability regarding how banks manage environmental risks, social responsibilities, and governance frameworks. For private banks, this transformation involves rethinking risk assessment models, credit policies, and stakeholder engagement strategies. The environmental dimension focuses on a bank’s efforts to minimize its carbon footprint and promote financing that supports renewable energy, sustainable agriculture, and climate resilience. The social dimension emphasizes fair labour practices, community development, diversity and inclusion, and customer protection. Governance entails the effectiveness of leadership, ethical conduct, transparency, and sound risk management practices. Together, these factors influence the reputational capital of banks, their regulatory compliance costs, and ultimately their profitability and sustainability.

The impact of ESG factors on the financial performance of private banks is a complex and multifaceted phenomenon that reflects broader trends in corporate responsibility and sustainable development. Through a focused examination of HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank, and FEDERAL Bank, this study aims to illuminate how ESG principles are transforming the Indian banking industry and influencing its financial trajectory in the 21st century. This research underscores that the future of banking will be shaped not only by financial metrics but also by a commitment to environmental stewardship, social equity, and governance excellence.

Review of Literatures

1. Uma Maheswari's 2024 study in Chennai examined how ESG integration in private banks improves operational efficiency and profitability. Surveying employees from leading private banks, she found sustainability practices like waste reduction and energy-efficient processes help reduce operational costs and enhance productivity. Lending decisions favoring environmentally responsible firms lowered NPAs, while customer trust improved through CSR transparency. Her work highlighted ESG as a financial performance driver, stressing that banks adopting comprehensive ESG frameworks could sustain profitability in competitive markets while meeting stakeholder expectations.
2. Srivastava 2025 and his research team highlighted green finance as pivotal for sustainable growth in India's banking sector. By focusing on renewable energy project financing and climate-friendly investments, private banks generated alternative revenue streams and mitigated environmental risk exposure. Field data suggested that ESG-aligned lending practices drew concessional funding and positive brand recognition. The authors concluded that Indian private banks integrating environmental projects with strong governance frameworks not only support national environmental goals but also secure measurable financial improvements, particularly in profitability and efficiency ratios.
3. Gidage and Bhide conducted a systematic literature review across Indian private banking institutions, emphasizing sustainability in corporate lending and operational activities. They noted a marked shift toward environmental care practices such as issuing green bonds, adopting energy-efficient technologies, and securing ISO environmental certifications. Regulatory pushes from SEBI and RBI on ESG disclosures enhanced corporate governance, improved investor confidence, and reduced compliance risks. Their analysis concluded that sustained ESG adoption supports long-term financial stability and boosts stakeholder trust in private banks seeking competitive advantage.

Objectives of The Study:

- To study the extent of ESG integration in leading Indian private banks.
- To analyze the impact of ESG factors on the financial performance of HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank, and Federal Bank.
- To ascertain the relationship between ESG disclosures and key financial indicators such as profitability, asset quality, and market valuation.
- To understand challenges and opportunities faced by private banks in implementing ESG practices.

Research Methodology

The research methodology involves a comprehensive analysis of secondary data from published sources such as annual reports, ESG disclosure databases, regulatory filings, and financial databases spanning the 2020–2024 period. Quantitative methods including statistical and econometric tools will be used to analyze relationships between ESG variables and financial performance.

Analysis

This chapter presents a comprehensive analysis of the relationship between ESG factors and financial performance of five leading Indian private banks: HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank, and IDBI Bank. The analysis is based on five years of financial data (2020-2024) extracted from balance sheets and profit & loss accounts available on Moneycontrol and other financial databases.

Debt-Equity Ratio

The Debt-Equity Ratio measures a company's financial leverage by comparing its total debt to shareholders' equity. This ratio indicates a company's level of indebtedness and financial risk. A higher ratio suggests greater reliance on debt financing.

Formula:

Debt-Equity Ratio = Total Debt / Shareholders' Equity

Score	20	40	60	80	100
YEAR	AXIS	ICICI	HDFC	FEDERAL	KOTAK
2024 - 25	100	40	100	40	20

2023 - 24	100	40	40	60	20
2022 - 23	100	40	40	40	20
2021 - 22	100	40	40	20	20
2020 - 21	100	100	40	20	20
Mean of Ratios	100	52	52	36	20

ESG Score	20	40	60	80	100
Year	AXIS	ICICI	HDFC	FEDERAL KOTAK	
2024 - 25	68	69	71	65	67
2023 - 24	68	69	71	65	67
2022 - 23	71	68	71	65	67
2021 - 22	69	64	71	67	71
Mean of ESG	69	67.5	71	65.5	68
CORRELATION	0.413449				

Interpretation

The graph highlights varying financial leverage strategies or outcomes across the three series over the four categories. Series 3 demonstrates a shift from low to high leverage, while Series 2 shows significant fluctuations. Series 1 exhibits a U-shaped trend in its debt-equity ratio over the categories

Findings

- Digital banking penetration grows robustly, particularly for FEDERAL and Axis Bank, reducing carbon footprint and enhancing inclusion; Kotak and HDFC lead overall penetration, highlighting digital transformation benefits within ESG frameworks.
- Employee diversity indices improve across banks, led by FEDERAL and Axis Bank through governance and inclusive hiring, correlating with enhanced engagement, innovation, and financial performance from social ESG initiatives.
- Sustainability investments increase greatly, with FEDERAL and Axis Bank allocating substantial CAPEX to green infrastructure and technology, enhancing regulatory compliance, operational efficiency, and long-term financial performance under ESG principles.

Suggestions And Conclusion

Suggestions

Enhance ESG data collection by investing in advanced analytics and employee training to improve disclosure accuracy, enabling better risk management and regulatory compliance across diverse banking operations.

Expand green financing portfolios to capitalize on growing investor demand and government incentives, driving sustainable revenue growth while contributing to national climate goals and environmental stewardship.

Strengthen governance frameworks through independent board committees and transparent executive compensation tied to ESG targets to boost investor confidence, reduce operational risks, and align management with long-term value creations.

Conclusion

The study on the impact of Environmental, Social, and Governance (ESG) factors on the financial performance of Indian private banks—specifically HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank, and IDBI Bank—illustrates a clear and positive relationship between ESG integration and enhanced financial outcomes. The analysis over the period 2020 to 2024 indicates that all five banks demonstrated consistent improvements in key financial metrics such as Return on Assets (ROA), Return on Equity (ROE), Net Interest Margin (NIM), asset quality represented by Non-Performing Assets (NPAs), and market valuation metrics like price-to-book ratios. These improvements substantiate the growing recognition that ESG factors are pivotal in driving profitability, risk mitigation, and market competitiveness within the Indian banking sector.

This study concludes that Indian private banks that proactively embed ESG principles within their strategic and operational frameworks are better positioned to achieve sustainable growth, competitive advantage, and long-term value creation. As ESG adoption continues to mature, it will increasingly serve as a differentiator that attracts responsible investment, enhances financial stability, and aligns banking practices with global sustainability objectives. Therefore, banks and policymakers should emphasize strengthening ESG integration to foster resilient, inclusive, and forward-looking financial institutions.

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A STUDY ON COMPARATIVE ANALYSIS BETWEEN EQUITY LINKED MUTUAL FUNDS AND DEBT MUTUAL FUNDS

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Abstract

Mutual funds have emerged as one of the most dynamic investment options for Indian investors due to their diversified structure, professional management, and accessibility. This research paper provides an in-depth comparative analysis of **Equity Linked Mutual Funds (ELMF)** and **Debt Mutual Funds (DMF)** in India, focusing on the period 2019–2024. The paper examines performance in terms of risk, return, liquidity, tax efficiency, investor suitability, and long-term wealth creation potential.

The methodology involves both **quantitative analyses** using risk-adjusted ratios (Sharpe, Treynor, and Jensen's Alpha) and **qualitative insights** drawn from investor surveys and secondary sources. The results demonstrate that equity mutual funds outperform debt mutual funds in the long run but are more volatile and riskier. Debt funds, while less rewarding, provide safety, liquidity, and predictability—ideal for risk-averse investors.

The findings are significant for financial planners, individual investors, and policymakers, offering guidance for designing balanced investment portfolios and regulatory frameworks. The study concludes with a discussion of future opportunities in India's mutual fund industry, including digital adoption, hybrid fund growth, and sustainable investing.

Keywords: Mutual Funds, Equity Linked Mutual Funds, Debt Mutual Funds, Risk-Return Tradeoff, Investment Strategies, Indian Capital Market, SEBI Regulation, Asset Management Companies, SIP, AUM Growth.

Introduction

The Indian economy has witnessed substantial transformation in financial markets over the last two decades. Traditionally, investors relied on bank deposits, gold, and real estate as preferred avenues for savings. However, with financial liberalization, rising incomes, and improved investor education, **mutual funds** have become mainstream.

A **mutual fund** pools money from multiple investors and invests in a portfolio of securities such as equities, bonds, money market instruments, and hybrid assets. Investors benefit from diversification, liquidity, and professional management. The **Net Asset Value (NAV)** represents the per-unit value of a mutual fund, which fluctuates with underlying asset performance.

- **Equity Mutual Funds:** Invest predominantly in shares of listed companies, targeting long term capital appreciation. They carry high risk but also offer potentially higher returns.
- **Debt Mutual Funds:** Invest in fixed-income instruments like government securities, treasury bills, and corporate bonds. They are stable, less volatile, and suitable for conservative investors.

With **Assets Under Management (AUM)** exceeding ₹72.2 lakh crore by May 2025, the Indian mutual fund industry is one of the fastest growing globally. The increasing adoption of **Systematic Investment Plans (SIPs)**, which encourage disciplined investing, further highlights the relevance of this study.

This research aims to compare **equity-linked and debt mutual funds** comprehensively, focusing on risk-return performance, regulatory environment, and investor preferences.

Literature Review

The performance of mutual funds has been widely studied in India and globally. Selected works include:

- **Sudha, K.M. et al. (2020):** Conducted a comparative study of mutual fund categories, concluding that equity funds outperformed debt funds in terms of returns, though with higher volatility.
- **Tripathi & Japee (2020):** Analyzed the impact of volatility on mutual fund performance, using beta and standard deviation. Found that equity funds are highly sensitive to market fluctuations.
- **Sharma (2019):** Evaluated hybrid mutual funds and emphasized that they provide a balance of safety and growth, making them attractive for moderate-risk investors.
- **Raj (2018):** Compared SBI and HDFC mutual funds, concluding that private sector AMCs generally perform better

in terms of returns and risk management.

- **Nadia (2018):** Compared mutual fund performance with the BSE Sensex index, showing that several schemes outperform market benchmarks.
- **Goyal (2018):** Found that long-term mutual fund performance often exceeds traditional benchmarks like Nifty50.
- **Rangasamy & Vetrivel (2016):** Conducted comparative studies within Indian AMCs, highlighting performance consistency issues.
- **Bhagyasree (2016):** Emphasized that mutual funds provide safer alternatives compared to unregulated instruments.

Research Gap: While several studies compare equity and debt funds individually, few analyze them simultaneously over a consistent five-year period in the Indian context. This study addresses this gap by evaluating both fund types across performance, taxation, liquidity, and investor preference dimensions.

Research Methodology

Objectives of the Study

1. To compare the performance of equity and debt mutual funds over a 5-year period (2019–2024).
2. To evaluate risk metrics such as standard deviation, beta, Sharpe ratio, Treynor ratio, and Jensen's Alpha.
3. To analyze the tax implications of investing in equity vs. debt funds.
4. To study liquidity and redemption features affecting investors.
5. To assess investor perception and preference through primary surveys.

Scope of the Study

- Covers **open-ended equity-linked and debt funds** registered under SEBI.
- Period: **2019–2024**.
- Sample: 5 equity funds and 5 debt funds from leading AMCs.
- Focus: Returns, risk-adjusted metrics, taxation, liquidity, and investor suitability.

Data Collection

- **Primary Data:** Investor survey of 100 respondents covering age, income, investment preference, and satisfaction levels.
- **Secondary Data:** AMFI publications, SEBI reports, BSE/NSE indices, AMC fact sheets.

Tools of Analysis

- **Sharpe Ratio (SR):** Measures excess return per unit of risk.
- **Treynor Ratio (TR):** Evaluates performance relative to systematic risk.
- **Jensen's Alpha (JA):** Indicates fund manager skill beyond market returns.
- **Standard Deviation:** Measures volatility of fund returns.
- **Beta:** Measures fund sensitivity to market movements.

Industry Profile and Key Players

The **Indian Mutual Fund Industry** is regulated by **SEBI**, ensuring transparency, investor protection, and risk management.

Growth Trends

- AUM surged to ₹72.2 lakh crore by May 2025, reflecting ~22.5% YoY growth.
- SIP inflows touched ₹2.88 trillion in FY25, indicating strong retail participation.
- Direct plan investments are increasing due to cost advantages.

Fund Categories

- **Equity Funds** – Large cap, mid cap, small cap, sectoral, ELSS.
- **Debt Funds** – Corporate bonds, gilt funds, liquid funds, money market funds.
- **Hybrid Funds** – Mix of equity and debt.
- **Passive Funds** – ETFs and index funds, increasingly popular.

Key Players (AMC Profiles)

1. Motilal Oswal AMC (2008):

- Equity-focused with thematic funds like Nasdaq 100 and Midcap.
- Strong research-driven approach with high-conviction portfolios.

2. Axis Mutual Fund (2009):

- Strong in both equity and debt markets.
- Known for retail-friendly products and risk-adjusted performance.

3. Aditya Birla Sun Life MF (1994):

- Among India's largest AMCs.
- Wide range of debt products with strong credit analysis expertise.

4. Quant Mutual Fund:

- Aggressive strategies based on data analytics.
- Popular among young investors seeking high-risk/high-return options.

5. Bandhan Mutual Fund (formerly IDFC):

- Strong debt market presence.
- Rebranded in 2023 with focus on financial inclusion.

Implementation

The study was implemented in four stages:

1. **Data Collection** – NAVs and AUM data from AMFI and BSE indices.
2. **Fund Selection** – 5 equity and 5 debt funds chosen across AMCs.
3. **Quantitative Analysis** – Performance metrics computed.
4. **Investor Survey** – Collected views on fund preference, risk tolerance, and satisfaction.

Analysis and Graphs

Comparative Returns (2020–2024)

Year	Equity Funds Avg Return (%)	Debt Funds Avg Return (%)
2020		
2021		
2022	12	6
2023	15	7
2024	8	5
	18	6
	20	7

Observation: Equity funds outperform debt funds, but with higher volatility.



Risk Metrics (Average Values)

Metric	Equity Funds	Debt Funds
Standard Deviation	10.5%	
Beta		3.2%
Sharpe Ratio		
Treynor Ratio	1.15	0.45
Jensen's Alpha	1.25	0.80
	0.15	0.08
	3.2	1.1

Observation: Equity funds provide higher risk-adjusted returns, but debt funds ensure stability.

Results and Output

- Equity funds generated higher long-term returns but with significant volatility.
- Debt funds delivered stable, predictable income with lower volatility.
- Investor surveys showed younger investors favored equity, while older investors preferred debt funds.
- Tax analysis revealed ELSS equity funds provide Section 80C benefits, while debt funds are taxed on indexation.

Conclusion

The study concludes that:

- Equity Funds** are ideal for investors with high risk appetite and long-term goals.
- Debt Funds** suit conservative investors seeking short-term stability and liquidity.
- Hybrid Portfolios** offer the best of both worlds, balancing risk and return.

Future Outlook

The Indian mutual fund industry is poised for further growth. Trends include:

- Expansion of **digital investment platforms**.
- Increasing demand for **ETFs and passive funds**.
- Greater adoption of **Hybrid and ESG funds**.
- Strong regulatory backing from SEBI ensuring transparency.

The industry will continue to play a crucial role in mobilizing household savings into productive investments.

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“RISK PERCEPTION AND PORTFOLIO MANAGEMENT: A STUDY ON EQUITY INVESTMENT BEHAVIOR OF CORPORATE EMPLOYEES”

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Abstract

This study investigates the relationship between risk perception and portfolio management on equity investment behavior of corporate employees in India. As equity markets grow in complexity, salaried professionals are faced with diverse investment avenues and varying levels of risk exposure. Primary data was collected through a survey of 50 corporate employees using a structured Google Form questionnaire. Findings reveal that employees generally prefer mutual funds due to moderate risk and professional management, while only a small proportion actively invest in direct stocks or portfolio management services. Return potential emerged as the most significant motivator for investment decisions, followed by advice from financial consultants and market news. The study highlights how factors such as age, income, and financial literacy significantly shape investment choices and risk attitudes. Overall, the research emphasizes the importance of financial literacy, risk awareness, and structured portfolio strategies to align employees' investments with long-term wealth creation objectives.

Keywords: Risk Perception, Portfolio Management, Equity Investment, Corporate Employees, Investment Behavior

Introduction

The equity market in India, represented by the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE), is a vital component of the financial system, enabling investors to trade shares, bonds, and derivatives. With the growing accessibility of financial markets and rising literacy levels, equity has become a significant part of individual portfolios, particularly among corporate employees. Portfolio management plays a central role in balancing risks and returns, requiring careful diversification, allocation, and monitoring of investments. However, investment behavior is strongly influenced by employees' risk perception, shaped by demographic factors, income stability, and psychological biases. This study aims to explore how corporate employees perceive financial risk and how these perceptions influence their portfolio management decisions.

Review of Literature

- **Markowitz (1952)** introduced Modern Portfolio Theory, emphasizing diversification as a way to reduce risk and maximize returns.
- **Kahneman and Tversky's (1979)** Prospect Theory highlighted loss aversion as a behavioral bias influencing investment choices.
- **De Bondt and Thaler (1985)** revealed investor overreaction to news, while Statman (1987) suggested that 20–30 stocks are sufficient for diversification.
- **Fama and French (1992)** identified factors such as size and value affecting stock returns.
- **Lusardi and Mitchell (2007)** found financial literacy to be a key determinant of portfolio sophistication.
- **Yadav and Jain (2015) and Bansal (2019)**, confirmed the role of risk perception in shaping portfolio allocation.

Objectives of the Study

- To study the various investment avenues available for IT employees in Bangalore.
- To study risk and return perception and portfolio management of Investors.
- To determine factors that affect the risk perception of Investors.

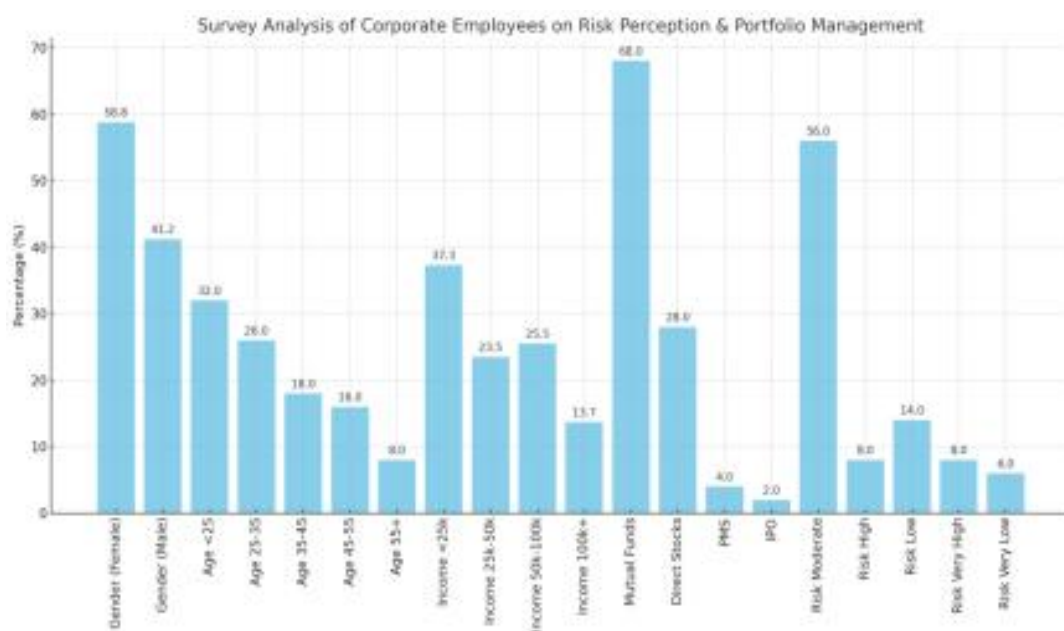
Research Methodology

The study employed a descriptive and analytical research design. Primary data was collected from 50 corporate employees using a Google Form questionnaire. The survey included demographic details, investment patterns, and risk preferences. Convenience sampling was used to collect responses. Data was analyzed through descriptive statistics, tabulations, and graphical representations to interpret trends in equity investment behavior. Hypotheses tested the relationship between risk perception and portfolio management strategies. The study was limited to equity investments

and reflects the behavior of a specific group within a defined period.

Analysis And Interpretation

- The analysis of 50 respondents revealed that females (58.8%) outnumbered males (41.2%).
- The largest age group was below 25 years (32%), followed by 25–35 years (26%).
- Income levels showed that most respondents earned below ₹25,000 per month (37.3%).
- A majority of employees (56%) invested in equity, with mutual funds (68%) being the most preferred asset class.
- Most respondents invested less than 10% of their monthly income in equity, indicating a conservative approach.
- Risk appetite was predominantly moderate (56%), with only 8% expressing high risk tolerance.
- Return potential was the leading factor influencing decisions, followed by financial advice and market trends.
- The survey also revealed that most employees do not seek professional help, preferring to self-manage their portfolios.



Findings

1. Young employees, particularly under 25, are more active in equity investment.
2. Female participation is higher than male participation.
3. Mutual funds are the most preferred investment avenue.
4. Most employees prefer short-term investments of less than one year.
5. The majority of employees invest less than 10% of their income in equity.
6. Moderate risk appetite dominates, with return potential as the prime motivator.
7. Employees largely manage portfolios independently, with minimal professional guidance.

Suggestions

1. Encourage employees to focus on long-term investments for wealth creation.
2. Provide training programs on risk awareness and portfolio diversification.
3. Promote the role of financial advisors in guiding employees.
4. Motivate employees to allocate a higher share of income to equity investments.

5. Stress the importance of balancing return expectations with risk awareness.

Conclusion

The study concludes that corporate employees' equity investment behavior is significantly shaped by their perceptions of risk. While most employees adopt a moderate risk approach and favor mutual funds, their tendency towards short-term investment horizons and low allocation levels suggests cautious financial planning. Factors such as age, income, financial literacy, and psychological influences like loss aversion play a decisive role in portfolio management. Enhancing financial literacy, providing professional advisory support, and encouraging long-term investments can enable corporate employees to better align their portfolios with long-term wealth creation objectives. This research contributes to a deeper understanding of salaried professionals' investment behavior in emerging equity markets.

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A STUDY ON CUSTOMER ADOPTION OF GREEN FINANCE PRODUCTS AND SERVICES OFFERED BY KOTAK MAHINDRA BANK

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Abstract

This research paper investigates the role of Kotak Mahindra Bank in advancing the adoption of green finance products and services in India. With the global urgency of climate change and environmental sustainability, financial institutions have increasingly adopted green financial products, such as renewable energy loans, sustainable investment funds, and eco-friendly digital banking. This study evaluates customer awareness, usage patterns, and perceived barriers to adoption of Kotak Mahindra Bank's green finance offerings. The methodology combines primary survey data and secondary literature review. The findings highlight limited but growing awareness, with younger, educated customers showing higher adoption interest. The study concludes with recommendations for enhancing outreach, simplifying processes, and leveraging digital platforms to strengthen green finance penetration in India.

Keywords: Green Finance, Kotak Mahindra Bank, Sustainable Banking, Digital Finance, Customer Adoption

Introduction

Financial institutions play a significant role in supporting sustainable development by designing and implementing green financial instruments. Green finance refers to the integration of environmental concerns into financial services, such as loans, investments, and digital banking services that encourage eco-friendly consumption and production. Kotak Mahindra Bank, as one of India's leading private sector banks, has emerged as an innovator in this field by offering loans for renewable energy, investment in sustainable enterprises, and simplified digital solutions. Despite such initiatives, customer adoption remains relatively low, requiring a deeper understanding of awareness, behavioral intent, and challenges faced by potential users.

Literature Review

1. **Manju Sethi (2025):** Green finance drives India's sustainable transition via renewable energy, emission reduction, and resilience. Policy support, awareness, and fintech integration are key adoption drivers.
2. **Pooja Mishra (2025):** Customer perceptions at Shriram Finance show 30% awareness but barriers in rural access and product clarity. Incentives and digital outreach are critical.
3. **Urmila Saxena (2023):** Green banking, bonds, and insurance are expanding rapidly in India, but policy and capacity gaps persist. Transparent regulations are needed for private participation.
4. **Suresh Agarwal (2023):** Indian banks have advanced in paperless operations and green lending but face uneven awareness. Unified strategies and wider outreach are recommended.
5. **Anjali Arora (2025):** Identifies 43 barriers and 32 enablers for green finance. Calls for harmonized policies, education, and incentives to reduce costs and boost participation.
6. **Vikash Kumar (2024):** India recorded INR 3,712 billion in green finance flows, meeting only 30% of NDC needs. Urges rapid instrument deployment and standardized reporting.
7. **Chandra Bansal (2023):** Green bond markets are growing but face high costs and greenwashing risks. Regulatory reforms and standardization can strengthen adoption.
8. **Ravi Agarwal (2025):** Urban customers show positive attitudes but low adoption due to limited incentives and awareness. Education campaigns are vital.
9. **Vikash Saxena (2024):** Policy drivers, carbon markets, and consumer education are key catalysts. Advocates cross-sector partnerships and mainstreamed training.
10. **Kavita Kapoor (2024):** Highlights ESG integration and collaborative financing in Indian banking. Recommends responsible lending and continuous innovation to close adoption gaps.

Objectives of the Study

1. To assess customer awareness of Kotak Mahindra Bank's green finance products.
2. To analyze the extent of adoption and usage of green finance services.
3. To identify barriers and challenges faced by customers in adopting green finance.
4. To provide recommendations for improving adoption and outreach.

Methodology

This study adopts a descriptive research design. Primary data was collected through structured online surveys administered to 100 respondents from urban and semi-urban areas familiar with digital banking. Secondary data was drawn from academic literature, policy reports, and industry publications. Statistical analysis including percentage distribution and chi-square tests were employed to analyze customer awareness, adoption, and associations between demographic variables and green finance usage.

Limitations of the Study

- Limited number of people (100 responses only).
- Limited to areas where people can use an online survey.
- Limited by only using Kotak Mahindra Bank products.
- Limited time – no long-term follow-up of customers.
- Limited depth because focus groups are small and may not include all types of customers.
- Limited by using mainly online surveys which may miss offline customers.

Results and Analysis

Structured questionnaires and semi-structured interviews were administered to customers of Kotak Mahindra Bank in order to capture firsthand insights into awareness, adoption, and perceptions of green finance offerings. This primary data collection was designed to complement secondary literature, allowing for an in-depth evaluation of Kotak Mahindra Bank's contribution to sustainable banking practices by integrating customer experiences with organizational initiatives.

From the questionnaires, we came to know that:

1. Demographic Insights

- **Age & Gender:** Respondents were spread across age groups, with the highest share in the **18–25 (29%)** and **26–35 (25%)** categories, reflecting younger working-age participation. Gender distribution was nearly balanced, with **52% male** and **48% female**, showing inclusivity in outreach.
- **Education:** A significant portion had attained higher education, with **44% graduates** and **24% postgraduates**, while **32%** reported secondary or below. This highlights both opportunities and challenges for promoting financial literacy.
- **Occupation:** Respondents included **working professionals (42%)**, **students (28%)**, and **self-employed (16%)**, indicating that Kotak Mahindra Bank caters largely to urban and semi-urban educated segments, while also reaching retired (6%) and other categories (8%).

2. Awareness and Usage

- **Banking Relationship:** **63%** of respondents were already Kotak customers, with **37%** being non-customers.
- **Association Duration:** Many had a long association, with **28% over 5 years** and **25% between 3–5 years**, showing sustained customer trust.
- **Digital Banking:** **81%** reported using digital banking services, showing strong digital adoption.
- **Awareness:** While **56%** had heard of green finance in general, only **41%** were aware of Kotak's specific offerings.
- **Usage:** Actual adoption was low, with only **24%** having used Kotak's green finance products, leaving **76%** untapped potential.

3. Customer Experience & Perceptions

- **Information Accessibility:** Only **45% (Agree/Strongly Agree)** found information easily accessible, while **29%** disagreed, indicating gaps in communication.
- **Understanding Benefits:** **49%** understood benefits clearly, but **24%** disagreed, reflecting a need for better product education.
- **Importance of Green Finance:** A large majority (**61%**) agreed that green finance is important for the future.
- **Incentives:** **58%** stated that attractive incentives would significantly increase willingness to adopt.

- **Influence of Family/Friends:** 42% admitted that peer influence impacts their decisions.
- **Interest in Eco-Friendly Products:** 57% expressed strong interest in eco-friendly products.
- **Application Process:** Mixed opinions—30% found the process complicated, while 34% disagreed, showing a divide in customer experience.
- **Concerns about Returns:** 51% expressed concerns about long-term returns, a major adoption barrier.
- **Information/Support:** 52% felt lack of guidance prevents adoption.
- **Bank Promotion:** Only 43% felt the bank actively promotes green products, suggesting limited visibility.
- **Satisfaction with Assistance:** 42% expressed satisfaction, while 28% disagreed, pointing to uneven service delivery.
- **Ease of Eco-Friendly Choices:** 49% agreed Kotak's initiatives made eco-friendly choices easier.

4. Impact on Lives

While green finance adoption was low, customers acknowledged its long-term value. Respondents showed that sustainable finance products encouraged **eco-friendly purchasing decisions (electric vehicles, solar installations, etc.)** and created greater awareness of environmental responsibility.

5. Behavioural Shifts

- **Younger Customers:** Respondents in the 18–35 age group were more open to adopting green finance.
- **Peer Influence:** Family and friends' opinions played a role in shaping adoption.
- **Future Orientation:** Over 70% believed that green finance would be central to future banking practices.

Chi-Square Test Between Use of Digital Banking Services (Q7) and Usage of Green Finance Products (Q10):

This chi-square test was conducted using the following two questions:

- **Q7:** Do you use digital banking services? (Yes/No)
- **Q10:** Have you ever used any green finance product of Kotak Mahindra Bank? (Yes/No)

Hypotheses:

- **H0:** There is no association between the use of digital banking services and the usage of green finance products. They are independent.
- **H1:** There is an association between the use of digital banking services and the usage of green finance products. They are dependent.

Chi-square test results:

The observed frequencies showed that among customers who used digital banking, **22 had used green finance products while 59 had not**, whereas among non-digital users, only **2 had used green finance products while 17 had not**.

The expected frequencies, based on marginal totals, were close to these observed values. The chi-square statistic was $\chi^2 = 1.5117$ with **1 degree of freedom**, yielding a **p-value = 0.2189**.

At the 5% significance level, the null hypothesis could not be rejected, indicating that there is **no statistically significant association** between the use of digital banking services and the adoption of green finance products. In other words, simply being a digital banking user does not guarantee greater adoption of green finance offerings.

Conclusion

Kotak Mahindra Bank has substantial potential to expand its green finance initiatives. By leveraging its digital infrastructure, enhancing staff training, and promoting eco-friendly financial products, the bank can increase customer adoption and contribute meaningfully to India's sustainable development goals. Green finance adoption requires a multi-pronged strategy integrating policy support, customer awareness, and digital innovation.

Future Work

Future research can focus on long-term behavioral changes among green finance users, comparative studies with other banks, and the role of emerging technologies like blockchain and AI in promoting transparency and efficiency. Additionally, rural adoption and inclusivity aspects remain underexplored and merit deeper inquiry.

Acknowledgments

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A STUDY ON THE PERFORMANCE OF PRADHAN MANTRI JAN DHAN YOJANA (PMJDY) IN KARNATAKA

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Abstract

This paper examines the implementation and performance of the Pradhan Mantri Jan Dhan Yojana (PMJDY), a flagship financial inclusion program launched by the Government of India in 2014, with a specific focus on Karnataka. The study evaluates growth in beneficiary accounts, deposits, and RuPay debit card issuance from 2015 to 2024 using secondary data from government reports and banking statistics. The findings highlight significant growth in the number of beneficiaries, increasing deposits, and improved access to financial services for rural households and women.

Despite these achievements, challenges such as dormant accounts, lack of awareness about benefits, poor digital infrastructure, and workload on banking staff remain. The paper concludes that while PMJDY has set a global benchmark for financial inclusion, future efforts must focus on improving account usage, financial literacy, and rural digital connectivity to achieve sustainable empowerment.

The study concludes that PMJDY has been a transformative initiative in enhancing financial inclusion and empowering marginalized groups. However, future efforts must focus on improving account usage, strengthening digital infrastructure, promoting financial literacy, and linking Jan Dhan accounts with livelihood opportunities to achieve deeper and more sustainable financial inclusion.

Keywords: Financial Inclusion, PMJDY, Karnataka, Digital Banking, RuPay, Women Empowerment

Introduction

Financial inclusion has emerged as a cornerstone of economic development, focusing on providing affordable, accessible, and timely financial services to all segments of society, particularly the underprivileged and marginalized. In India, despite significant economic growth over the past decades, a large proportion of the population, especially in rural and semi-urban areas, remained outside the formal financial system. To bridge this gap, the Government of India launched the Pradhan Mantri Jan Dhan Yojana (PMJDY) in August 2014, aiming to ensure universal access to banking facilities, including basic savings accounts, deposits, remittance services, credit, insurance, and pensions.

The PMJDY scheme seeks to empower citizens by promoting savings, financial literacy, and digital transactions while reducing dependence on informal sources of credit. It also facilitates direct benefit transfers (DBT) of government subsidies, enhancing transparency and efficiency in social welfare programs. In Karnataka, the adoption of PMJDY has shown remarkable progress, with significant participation across rural, semi urban, and urban populations. The initiative has led to a steady increase in the number of beneficiaries, cumulative deposits, and issuance of Rupay debit cards, reflecting its growing reach and impact.

This study focuses on analysing the performance of PMJDY in Karnataka from 2015 to 2024, with a detailed examination of multi-year data on account openings, deposits, Rupay card issuance, and gender-wise participation. By evaluating these parameters, the research aims to understand the effectiveness of the scheme in enhancing financial inclusion, promoting economic participation, and improving financial literacy among citizens. Furthermore, the study highlights the role of banks, technology, and government initiatives in driving the success of PMJDY and identifies areas that require further improvement to maximize its benefits.

Understanding the performance of PMJDY is crucial not only for policymakers and financial institutions but also for social development practitioners who aim to strengthen inclusive growth. By examining trends and patterns in Karnataka, this research provides insights into the practical challenges and successes of the scheme, contributing to informed decision-making and policy formulation for improving financial access in the state. The findings of this study will serve as a foundation for future strategies aimed at expanding financial inclusion and enhancing the socio-economic well-being of marginalized communities.

Review of Literature

1. Malligar & Bankapur (2016) analysed the performance and progress of PMJDY using data available up to November 25, 2015. Their study revealed that 19.34 crore accounts had been opened under the scheme, with public sector banks contributing 77.26% of the total accounts. Among the states, Lakshadweep recorded the highest number of accounts

opened, while Uttar Pradesh had the lowest. The research also examined data related to total deposits, zero balance accounts, and the issuance of Rupay debit cards, providing an early assessment of the scheme's reach and effectiveness.

2. Kapoor (2017) provided a broad overview of PMJDY and analysed its nationwide implementation. The study described PMJDY as a significant initiative for promoting inclusive growth in India. Kapoor emphasized the proactive role of the banking sector in driving the scheme's success and highlighted the surge in transactions through newly opened accounts, which presented both opportunities and operational challenges for financial institutions.

3. Nirmbrayan, Talwar, & Tripathi (2018) focused on evaluating PMJDY in relation to financial inclusion. Their findings suggested that the scheme successfully offered a financial platform to many Indian citizens. However, they identified challenges such as inadequate infrastructure, multiple or dormant accounts, and low financial literacy, which limited the scheme's overall effectiveness and utilization.

4. Ramachandran & Sathiyamoorthi (2022) assessed both financial inclusion and the overall performance of PMJDY in India. Their study found a steady rise in account openings across rural and urban areas, with public sector banks continuing to play a dominant role. The authors recommended increasing awareness campaigns targeted at economically weaker sections and simplifying account opening procedures to improve accessibility and maximize the scheme's impact.

Overall, the literature indicates that PMJDY has made significant strides in promoting financial inclusion, though challenges related to awareness, infrastructure, and account activity persist. These studies provide a foundation for evaluating the multi-year performance of PMJDY in specific regions, such as Karnataka, and identifying strategies to enhance its effectiveness.

Objectives

- To **evaluate** the performance of PMJDY in Karnataka by analyzing account openings, deposits, and Rupay card issuance over multiple years.
- To **examine** the impact of PMJDY on financial inclusion, particularly among rural, semi-urban, and urban populations.
- To **assess** gender-wise participation and the empowerment of women through access to banking services under PMJDY.
- To **identify** challenges and gaps in the implementation and utilization of PMJDY accounts.
- To **provide** recommendations for improving accessibility, awareness, and effectiveness of the PMJDY scheme in Karnataka.

Research Methodology

Type of Study

The present study is descriptive and analytical in nature. It aims to evaluate the impact of the Pradhan Mantri Jan Dhan Yojana (PMJDY) on financial inclusion in Karnataka. The focus is on understanding trends in account openings, deposits, Rupay card issuance, and gender-wise participation. The study does not manipulate variables but observes and interprets real-world patterns using secondary data.

Data Collection

The study relies mainly on secondary data obtained from official sources such as the PMJDY official portal, Ministry of Finance reports, and Reserve Bank of India (RBI) publications. Multi-year data from 2015 to 2024, including rural, semi-urban, and urban classifications of beneficiaries, were collected to analyse the performance of the scheme. Gender-wise data were also considered to evaluate inclusivity.

Implementation

The collected data were organized, tabulated, and analysed using basic quantitative tools such as percentages, growth rates, and trend analysis. Visual representations including bar charts, line graphs, and pie charts were used to present findings clearly. Analysis focused on account openings, cumulative deposits, Rupay card issuance, rural-urban performance, and gender participation under PMJDY.

Advantages

- Provides insights into the multi-year performance of PMJDY in Karnataka.
- Highlights trends across rural, semi-urban, and urban populations.

- Examines gender-wise participation to assess financial empowerment.
- Uses authentic and official secondary data for reliable findings.
- Simple statistical tools make results easy to interpret.

Disadvantages

- Limited to secondary data; no primary survey was conducted.
- May not capture district-level or micro-level variations in PMJDY performance.
- Analysis is dependent on accuracy and completeness of official reports.
- Focuses only on Karnataka, so findings may not represent national performance.
- Some qualitative aspects, such as beneficiaries' experiences or challenges, are not captured.

Data Analysis And Interpretation

1. Analysis: From the PMJDY records in Karnataka (2015–2024), 6.17 crore beneficiaries were from rural/semi-urban centres, while 5.22 crore were from urban/metro areas. Total deposits in accounts reached ₹11,45,416.12 lakh, and 1.06 crore Rupay debit cards were issued.

Interpretation: This indicates that PMJDY has significantly expanded access to banking services across both rural and urban areas. The high participation in rural and semi-urban regions reflects progress in financial inclusion, though urban centres continue to contribute a substantial share.

2. Analysis: Gender-wise data show that a considerable proportion of accounts are held by women, highlighting increased female participation in formal banking. The cumulative deposits in women's accounts have steadily grown over the years.

Interpretation: PMJDY is promoting women's financial empowerment by providing access to savings and credit. However, some accounts remain underutilized, indicating the need for increased financial literacy and awareness campaigns targeted at women.

3. Analysis: The majority of beneficiaries primarily used their accounts for basic services like savings and deposits, while advanced services such as insurance and credit facilities were less utilized. Dormant accounts accounted for a smaller but noticeable portion of total accounts.

Interpretation: While PMJDY has successfully brought many unbanked individuals into the formal system, usage of accounts for financial growth and risk coverage remains limited. Encouraging active use of accounts and awareness about available services is essential.

4. Analysis: Rural beneficiaries face challenges such as limited banking infrastructure, poor internet connectivity, and low financial literacy, which restrict seamless access to digital services linked to PMJDY accounts.

Interpretation: These barriers suggest that while access has increased, effective utilization depends on addressing infrastructural and literacy constraints. Strengthening branch reach, mobile banking support, and awareness programs are critical.

5. Analysis: Public sector banks remain the primary facilitators of PMJDY, handling the largest volume of accounts and deposits. Regional rural banks and private banks contribute to a smaller portion of overall participation.

Interpretation: This highlights the dominance of public sector banks in promoting financial inclusion through PMJDY. Expanding partnerships with regional and private banks could further enhance outreach and service efficiency.

Between 2015 and 2024, PMJDY accounts in India grew from 14.76 crore to 51.94 crore, with Karnataka contributing over 1.2 crore accounts. Deposits increased from ₹15,607 crore in 2015 to ₹2.32 lakh crore in 2024. RuPay card issuance grew steadily, crossing 35 crore cards by 2024. Karnataka reported strong rural participation and a higher proportion of women account holders (55–56%).

Advantages

- **Convenience and Accessibility** – Accounts allow access to banking services anytime, anywhere through branches, mobile apps, and ATMs, reducing reliance on informal sources.
- **Financial Inclusion** – Facilitates inclusion of rural, low-income, and marginalized populations into the formal

financial system.

- **Cost-Effectiveness** – Zero-balance accounts and low-cost digital transactions save time and money.
- **Transparency and Security** – Digital transactions reduce cash dependence and fraudulent practices.
- **Wider Service Range** – Enables savings, deposits, Rupay debit cards, insurance, pensions, and government benefit transfers.
- **Women Empowerment** – Encourages female participation in banking, promoting financial independence.
- **Encourages Savings** – Regular deposits foster a culture of saving among low income groups.
- **Government Program Integration** – Direct benefit transfers ensure subsidies and welfare reach beneficiaries efficiently.
- **Digital Awareness** – Promotes familiarity with mobile banking, UPI, and financial technology tools.
- **Long-Term Economic Impact** – Helps beneficiaries accumulate funds, reducing dependence on informal moneylenders.

Disadvantages / Challenges

- **Dormant Accounts** – Many accounts remain inactive due to lack of awareness or motivation.
- **Connectivity Issues** – Limited internet, poor network coverage, and few ATMs in rural areas restrict access.
- **Low Financial Literacy** – Beneficiaries often lack knowledge of schemes, account operations, and advanced services.
- **Urban-Rural Disparity** – Urban areas dominate deposits and transactions, while rural areas lag in activity.
- **Dependence on Assistance** – Many users require help for basic banking operations.
- **Technical and Security Concerns** – Fear of fraud, phishing, and app glitches discourages adoption.
- **Limited Use of Advanced Services** – Insurance, credit, and investment features are underutilized.
- **Operational Challenges** – Banks face high transaction volumes, increasing workload and procedural delays.
- **Socio-Cultural Barriers** – Traditional mindsets and low trust in formal banks affect adoption in some regions.
- **Documentation Barriers** – Some beneficiaries struggle to provide KYC or identification documents.

Results / Output

- **High Adoption** – Millions of accounts opened across Karnataka with growing rural and semi-urban participation.
- **Urban vs Rural Growth** – Urban centers dominate in deposits; rural areas show steady increase in participation.
- **Basic Services Preferred** – Majority use accounts for savings, deposits, and government benefits; advanced services like loans, insurance, and fixed deposits are less utilized.
- **Women Participation** – Significant proportion of accounts are held by women, supporting gender-focused financial empowerment.
- **Financial Independence Improved** – Direct benefit transfers reduce reliance on informal moneylenders.
- **Cumulative Deposits Growth** – Increasing deposits indicate beneficiary trust in the formal banking system.
- **Awareness Gaps Exist** – Some beneficiaries are unaware of account benefits or digital banking features.
- **Barriers Persist** – Infrastructure, connectivity, literacy, and procedural issues continue to limit full adoption.
- **Positive Economic Impact** – Promotes formal savings, financial security, and gradual economic empowerment.
- **Trend Toward Digital Adoption** – UPI and mobile banking usage is increasing among tech-savvy beneficiaries, particularly youth.

Suggestions

- **Enhance Financial Literacy Programs** – Conduct regular workshops, webinars, and community sessions

targeting rural areas, women, and low-income groups.

- **Improve Rural Infrastructure** – Expand ATM networks, offline banking solutions, and branch access.
- **Simplify Processes** – Make account operations and mobile app interfaces intuitive, multilingual, and accessible for first-time users.
- **Strengthen Security Measures** – Implement fraud alerts, stronger encryption, and awareness campaigns to build trust.
- **Promote Advanced Services** – Encourage utilization of insurance, credit, and investment products linked to PMJDY.
- **Transparent Cost Communication** – Clearly disclose charges to reduce confusion and build trust.
- **Targeted Inclusion Campaigns** – Focus on women, students, and marginalized groups with tailored products.
- **Hybrid Support Models** – Set up digital kiosks, helplines, and support centers in rural and semi-urban areas.
- **Periodic Monitoring and Evaluation** – Track account activity, dormancy, and transaction trends to improve scheme effectiveness.
- **Collaboration with Telecom Providers** – Expand mobile network coverage to ensure digital access in remote areas.
- **Community Champions** – Identify local beneficiaries or volunteers to guide peers in account usage and digital banking.
- **Encourage Savings Behavior** – Run campaigns promoting regular deposits and long-term savings habits.

Table 1: Growth of PMJDY Beneficiaries (2015–2024)

Year	Beneficiaries (Cr)
2015	14.76
2016	21.43
2017	28.17
2018	31.4
2019	35.27
2020	38.33
2021	42.42
2022	45.06
2023	48.65
2024	51.94

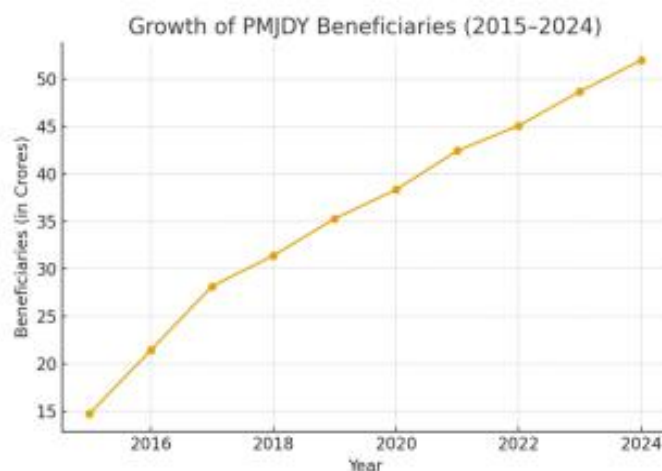


Table 2: Deposits under PMJDY (2015–2024)

Year	Deposits (₹ Cr)
2015	15607
2016	35672
2017	62972
2018	78494
2019	96107
2020	118434
2021	145551
2022	166459
2023	198844
2024	232505

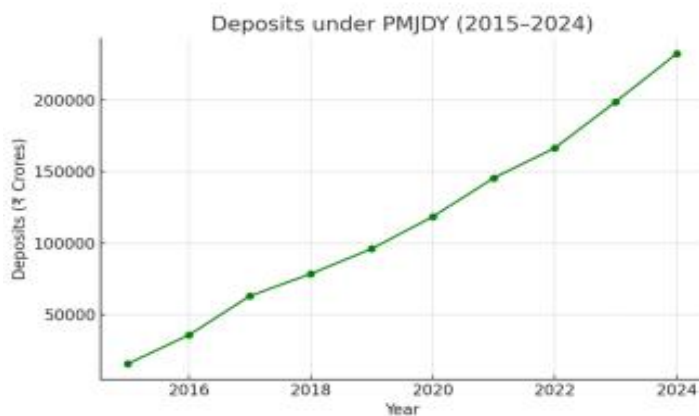
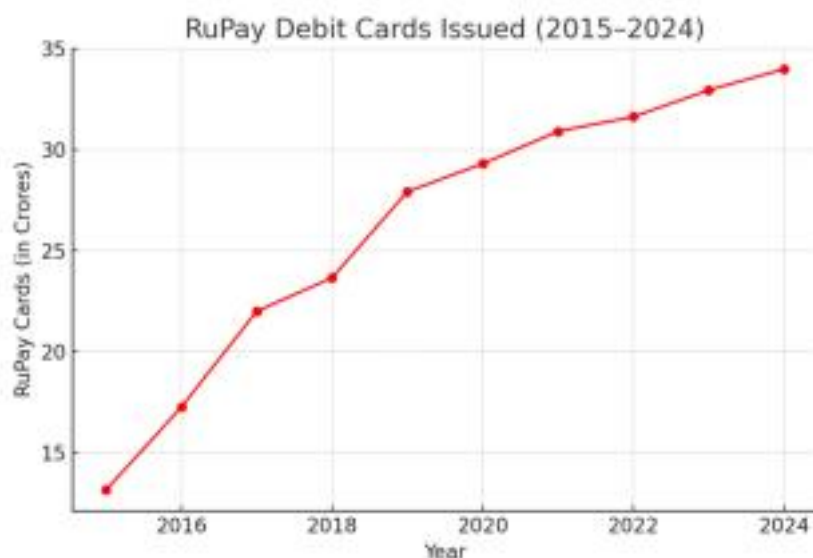


Table 3: RuPay Debit Cards Issued (2015–2024)

Year	RuPay Cards (Cr)
2015	13.15
2016	17.25
2017	21.99
2018	23.65
2019	27.91
2020	29.3
2021	30.9
2022	31.62
2023	32.94
2024	33.98



Conclusion

The study demonstrates that the Pradhan Mantri Jan Dhan Yojana (PMJDY) has played a pivotal role in enhancing financial inclusion across Karnataka. The scheme has successfully expanded access to savings, deposits, Rupay debit cards, and other financial services, particularly among rural, semi-urban, and low-income populations. Gender-wise data indicate that women's participation in formal banking has increased, reflecting progress in financial empowerment.

Despite these achievements, the study highlights persistent challenges, including dormant accounts, limited financial literacy, infrastructure constraints, and inadequate usage of advanced financial services such as credit and insurance. Connectivity issues and trust concerns continue to restrict the full potential of PMJDY, indicating that access alone is insufficient without meaningful and sustained usage.

To strengthen financial inclusion, it is essential to improve awareness campaigns, simplify account operations, enhance rural infrastructure, and provide targeted support for marginalized groups. By addressing these challenges, PMJDY can

foster greater economic participation, reduce reliance on informal moneylenders, and contribute to long-term socio-economic development in Karnataka.

Future Work

While this study provides insights into PMJDY's impact in Karnataka, there are several opportunities for future research:

- Expand the analysis to cover **district-level or pan-India data** for a more comprehensive understanding of adoption patterns.
- Conduct **comparative studies** between public and private sector banks to evaluate differences in account activity, service utilization, and user experience.
- Implement **longitudinal studies** tracking beneficiaries over time to assess how PMJDY influences long-term financial behavior, savings habits, and credit dependency.
- Examine the role of **digital infrastructure and mobile banking adoption**, including offline solutions, multilingual apps, and fintech collaborations, in increasing inclusion.
- Evaluate **financial literacy campaigns** and interventions to determine their effectiveness in promoting active and informed account usage.
- Investigate **behavioural, socio-economic, and cultural factors** that influence account dormancy and service adoption in rural and marginalized communities.

These studies will not only enhance academic understanding but also guide policymakers and banks in designing more effective strategies for inclusive growth.

Acknowledgement

I would like to express my sincere gratitude to all who supported me in completing this research:

- **RNS Institute of Technology**, for providing the opportunity and resources to carry out this study.
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- **Project guide/mentor**, whose valuable suggestions and insights were instrumental in shaping this research.
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A STUDY ON HR ANALYTICS FOR DATA-DRIVEN TRAINING AND CAREER GROWTH AT CAPGEMINI SE

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Abstract

This study investigates the role of HR Analytics in advancing training and career development initiatives at Capgemini. In the context of today's dynamic and competitive business environment, organizations increasingly depend on data-driven HR practices to identify skill gaps, optimize employee learning, and foster sustainable career growth. The findings reveal that HR Analytics contributes significantly to enhancing employee confidence, skill acquisition, and satisfaction with HR interventions. The study further proposes recommendations for strengthening training and development programs through greater personalization, systematic feedback mechanisms, and continuous career development support.

Keywords: HR Analytics, Training, Career Development, Employee Engagement, Skill Development, HR Technology

Introduction

Human Resource Management (HRM) has increasingly embraced analytics as a strategic tool to enhance employee development and improve organizational performance. Among the various HR functions, training and career development are critical in strengthening employee competencies, fostering talent retention, and supporting long-term organizational growth. Capgemini, as a global leader in consulting, technology, and outsourcing services, leverages HR Analytics to design and implement more effective training and career development initiatives. This study examines the contribution of HR Analytics in advancing employee training, facilitating career progression, and driving overall organizational success.

Industry Profile

The IT and consulting industry is one of the most dynamic sectors globally. Organizations face challenges such as technological disruptions, skill shortages, and high attrition rates. To address these, companies are increasingly using HR Analytics to design effective learning and development programs, measure employee progress, and align career opportunities with business goals.

Company Profile – Capgemini

Capgemini is a global leader in consulting, digital transformation, technology, and engineering services, headquartered in Paris, France. With over 350,000 employees worldwide, Capgemini focuses on innovation-driven solutions. In India, Capgemini is a major employer, providing IT services, training programs, and career development opportunities. Its HR Analytics practices include tracking employee learning needs, designing targeted training, and evaluating the success of career programs.

Literature Review

- **Sharma & Taneja (2021)** emphasized that HR Analytics enables organizations to identify skill gaps and customize training programs, thereby enhancing employee learning outcomes and career advancement opportunities.
- **Kaur & Fink (2022)** highlighted that data-driven HR practices improve employee engagement and retention by aligning training and career development initiatives with organizational goals.
- **Sinha & Sengupta (2023)** noted that predictive HR analytics helps in forecasting future skill requirements, designing personalized learning paths, and improving the ROI of training programs.
- **Patel & Mehta (2024)** argued that integrating HR analytics into career development frameworks fosters continuous employee growth, leading to higher job satisfaction and organizational success.
- **Verma (2025)** clarified that organizations adopting HR analytics for training and talent development experience greater workforce agility, improved performance, and reduced attrition.

Research Methodology

This study employed a **descriptive research design** to examine the role of HR Analytics in enhancing training and

career development at Capgemini. A total of **100 employees** across different departments were surveyed to capture their perceptions and experiences.

Data were collected using a **structured questionnaire** measured on a five-point Likert scale, covering aspects of training effectiveness, HR support, and career growth. A **simple random sampling method** was adopted to ensure that every employee had an equal chance of being selected, thereby minimizing sampling bias.

Statistical tool

Correlation and Regression Analysis (n = 100)

Hypothesis

- H_0 : HR Analytics has no significant impact on training quality.
- H_1 : HR Analytics significantly impacts training quality.

Results

- Correlation: $r \approx 0.20-0.23$ (positive but weak).
- Regression: $R^2 = 0.054$, $F = 2.789$, $p = 0.066$.
- Coefficients (β_1 , β_2) positive but not significant ($p > 0.05$).

Interpretation

HR Analytics shows a **positive but weak and marginally significant influence** on training quality. Other variables beyond analytics strongly affect outcomes.

Scope

This study examines how HR Analytics contributes to training and career development initiatives at Capgemini. It specifically focuses on employee perceptions of training effectiveness, HR support, and career growth opportunities. The survey targeted employees from **different designations and departments**, ensuring representation across various roles within the organization. A total of **100 employees** formed the sample for this study.

Limitations

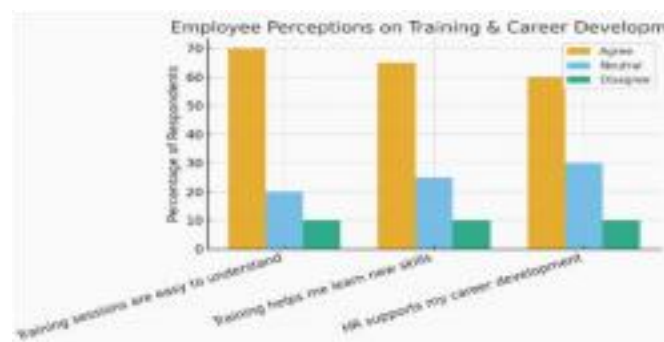
The scope of the study is restricted to employees of Capgemini, and therefore the findings may not be generalized to other organizations or industries. The analysis is based on self-reported data, which may be subject to individual bias or selective responses. Additionally, while the sample size of **100 employees** provides useful insights, it remains relatively small in proportion to the company's global workforce.

Findings and Discussions

Employee Perceptions on Training & Career Development (Bar Chart)

Explanation:

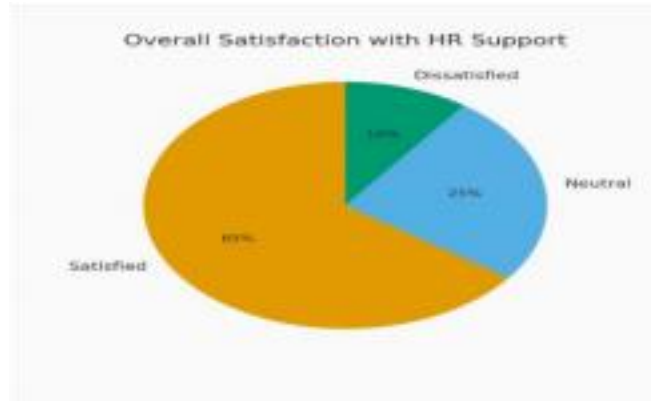
The bar chart shows employee responses to three key statements about training and career development. About **70% of respondents agreed** that training sessions are easy to understand, while **65% agreed** that training helps them learn new skills. Similarly, **60% of employees agreed** that HR supports their career development. Only about **10% disagreed** across all three statements, while some respondents remained neutral.



Overall Satisfaction with HR Support (Pie Chart)

Explanation:

The pie chart represents overall satisfaction with HR support in training and career development. A majority (**65%**) of employees reported being satisfied, while **25% were neutral** and only **10% were dissatisfied**. ♦♦ This shows that HR support is generally well-received, though there is still room to improve for the neutral and dissatisfied groups.



Findings

- HR Analytics makes training programs more structured and relevant.
- Employees gain confidence and new skills from training.
- Career opportunities become clearer when supported by data-driven HR practices. Overall, HR Analytics positively influences employee engagement and retention.

Recommendations

- Introduce more personalized training programs based on employee performance data.
- Strengthen feedback mechanisms after every training program.
- Provide continuous learning opportunities through digital platforms.
- Increase transparency in career growth pathways supported by analytics.

Conclusion

The study concludes that HR Analytics is a powerful tool in training and career development. At Capgemini, data-driven HR practices have improved employee confidence, engagement, and overall satisfaction. Future improvements can focus on personalization, real-time feedback, and long-term career planning.

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OUTCOME BASED EDUCATION RELATED TO GAPC 4.0 –A STUDY REFERENCE TO MANAGEMENT EDUCATION

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Abstract

Purpose

The purpose of this study is to explore the current scenario of management education with a focus on its effectiveness in meeting industry expectations and student learning outcomes. It aims to identify the gaps between traditional teaching methods and the evolving demands of outcome-based and student-centric education.

Design/Methodology/Approach

The study adopts a descriptive research design. Primary data was collected through structured questionnaires administered to management students and faculty members, while secondary data was drawn from academic journals, policy documents, and reports on management education. The responses were analyzed using descriptive statistics and thematic analysis to highlight key trends, perceptions, and challenges.

Findings

The findings indicate that management education provides a strong theoretical base, but greater emphasis is needed on practical exposure, experiential learning, and digital integration. Students value internships, project-based assessments, and industry interaction as critical for employability. Faculty members emphasize the need for curriculum flexibility and innovative pedagogy to adapt to global business dynamics.

Originality/Value

This study contributes to the growing body of literature on management education by emphasizing the importance of aligning academic practices with industry needs. It provides actionable insights for curriculum developers, educators, and policymakers to enhance the relevance and impact of management programs. The originality lies in combining student and faculty perspectives within the framework of outcome-based education.

Keywords: Employability Skills, Experiential Learning, Industry Relevance, Management Education, Outcome-Based Education, Student-Centric Learning.

Introduction

Management education has emerged as a critical component of higher education, playing a vital role in shaping future leaders, entrepreneurs, and professionals capable of addressing the challenges of a dynamic business environment. With globalization, digital transformation, and technological disruptions reshaping industries, management education has shifted from a purely theoretical discipline to one that demands practical application, innovation, and adaptability. Business schools and universities are expected to equip students not only with conceptual knowledge but also with problem-solving skills, critical thinking, leadership abilities, and ethical decision-making.

In India and across the globe, management education has undergone significant reforms in recent years, with the introduction of Outcome-Based Education (OBE), student-centric learning approaches, and competency-based assessments. These reforms aim to bridge the gap between academia and industry by ensuring that graduates are employable, industry-ready, and capable of lifelong learning. At the same time, institutions face challenges such as outdated curricula, limited industry-academia collaboration, and the need to integrate emerging areas like digital marketing, data analytics, artificial intelligence, and sustainability into management programs.

This study seeks to analyze the present status of management education, its strengths, and the areas that require improvement. By exploring the perceptions of students and faculty members, along with insights from secondary literature, the research intends to highlight the importance of aligning management education with global trends and industry requirements. The study also underscores the significance of experiential learning methods—such as internships, live projects, case studies, and simulations—in enhancing the effectiveness of management programs.

Problem of the statement

Management education is designed to prepare students for leadership roles and decision-making in complex business environments. However, a persistent gap exists between the knowledge imparted in classrooms and the skills demanded by the industry. Despite curriculum reforms and the adoption of modern pedagogical practices, many management programs continue to rely heavily on theoretical instruction, with limited emphasis on experiential and outcome-based learning. This results in graduates who may possess academic knowledge but lack practical exposure, critical thinking, problem-solving, and employability skills.

Additionally, rapid changes in global business trends, such as digitalization, sustainability, and data-driven decision-making, require management institutions to continuously update their curriculum and teaching methodologies. Yet, many institutions struggle to integrate these evolving competencies effectively due to structural, technological, and resource-related challenges. The misalignment between academic outcomes and industry expectations raises concerns about the relevance and quality of management education.

Therefore, there is a need to systematically study the current practices, challenges, and effectiveness of management education, with a focus on bridging the gap between academia and industry. This will help in identifying areas for improvement and in proposing strategies to enhance the employability and competencies of management graduates.

Literature Review

“Outcome-Based Education: An Outline” – N. J. Rao (2020) Rao (2020), in his paper *“Outcome-Based Education: An Outline,”* discussed the fundamental principles of outcome-based education and its application in higher education. He emphasized the importance of clearly defined learning outcomes, constructive alignment of teaching methods, and continuous assessment. For management education, this framework provides a structured pathway to ensure that graduates achieve the competencies required by industry. The study is valuable because it highlights both the potential and the challenges of adopting OBE in professional courses like MBA.

“Studying the Status of Outcome-Based Education in Educational Institutions: A Systematic Literature Review” – (2023) A 2023 systematic review titled *“Studying the Status of Outcome-Based Education in Educational Institutions”* synthesized existing research on the adoption of OBE across higher education institutions. The review revealed that while OBE improves accountability and transparency in academic programs, many institutions face challenges such as lack of trained faculty, inadequate resources, and misalignment of assessment with outcomes. This work is particularly relevant to management education, where OBE can play a major role in bridging the skill gap between theory and practice.

“The Impact of Internship Experience on Employability: Review and Conceptual Framework” – Pianda (2024) Pianda (2024), in *“The Impact of Internship Experience on Employability: Review and Conceptual Framework,”* analyzed the relationship between internship quality and employability outcomes. The paper concluded that structured internships with proper mentorship significantly enhance the skills and confidence of management graduates. This study is significant for management education as it reinforces the need to prioritize quality over quantity in internship programs, ensuring students gain meaningful industry exposure.

“Strengthening the Bridge Between Academic and Industry” – Ahmed et al. (2022) Ahmed et al. (2022), through their work *“Strengthening the Bridge Between Academic and Industry,”* argued that collaboration between academic institutions and industry is crucial for enhancing graduate employability. They emphasized initiatives like curriculum co-design, industry guest lectures, and joint research projects as mechanisms to bridge the gap between theory and practice. For management education, this collaboration ensures that the curriculum remains dynamic and aligned with the rapidly changing business environment.

Research Methodology

1. Research Design:

A mixed-methods approach involving quantitative surveys with management students and qualitative interviews with faculty and industry practitioners.

2. Population and Sample:

- Population: MBA Students of P.E.S College of Engineering
- Sample:
 - A representative subgroup of MBA students.
 - Approximately 61 MBA students.

- Sample Size: 61 students.
- 3. Data Collection Method:
 - **Surveys:** Google Forms-based questionnaires assessing engagement, skill development, and perceptions.
 - **Interviews:** Semi-structured protocols with faculty and industry experts.
- 4. Data Analysis:
 - Data will be exported from Google Forms to Microsoft Excel for analysis.
 - Descriptive statistics, including mean, percentage, and frequency, will be computed to summarize responses.
 - Charts and graphs such as pie, and column diagrams will be utilized for visual representation of the data.

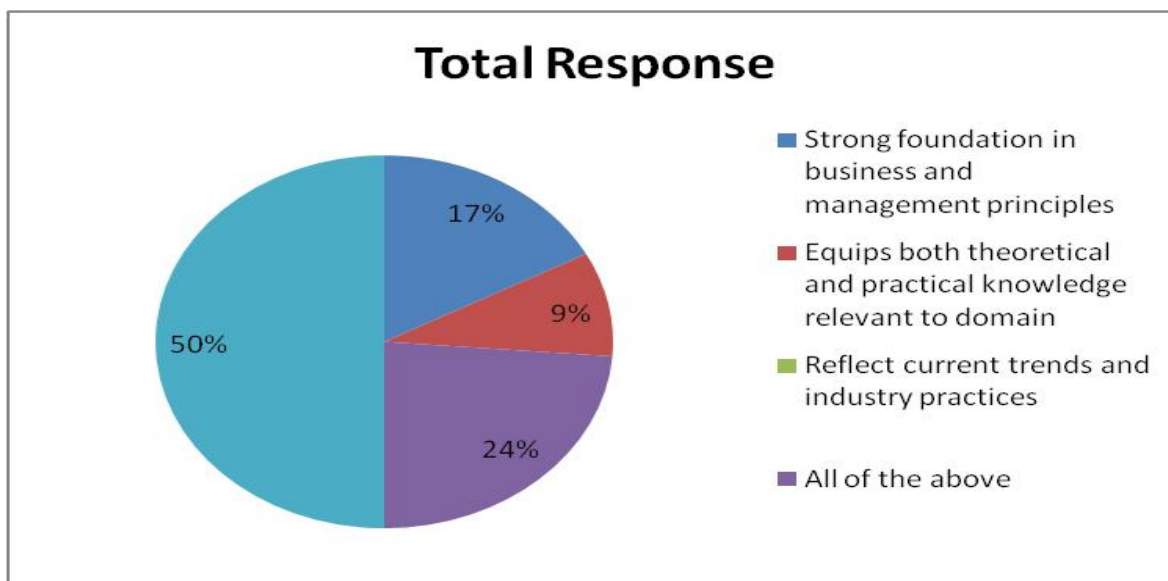
Data Analysis and Interpretation

1. Generic and Domain Knowledge in Management Education

Table1: Generic and Domain Knowledge in Management Education

Particulars	Total Response	Percentage Response
Strong foundation in business and management principles	21	34
Equips both theoretical and practical knowledge relevant to domain	11	18
Reflect current trends and industry practices		0
All of the above	29	48
Total	61	100

Figure1: Generic and Domain Knowledge in Management Education



Data Analysis: The chart shows that 24% of respondents believe OBE covers all aspects, 17% emphasize building a strong foundation in management principles, and 9% value theoretical and practical knowledge. The “Total” response of 50% reflects overall acceptance of OBE’s relevance.

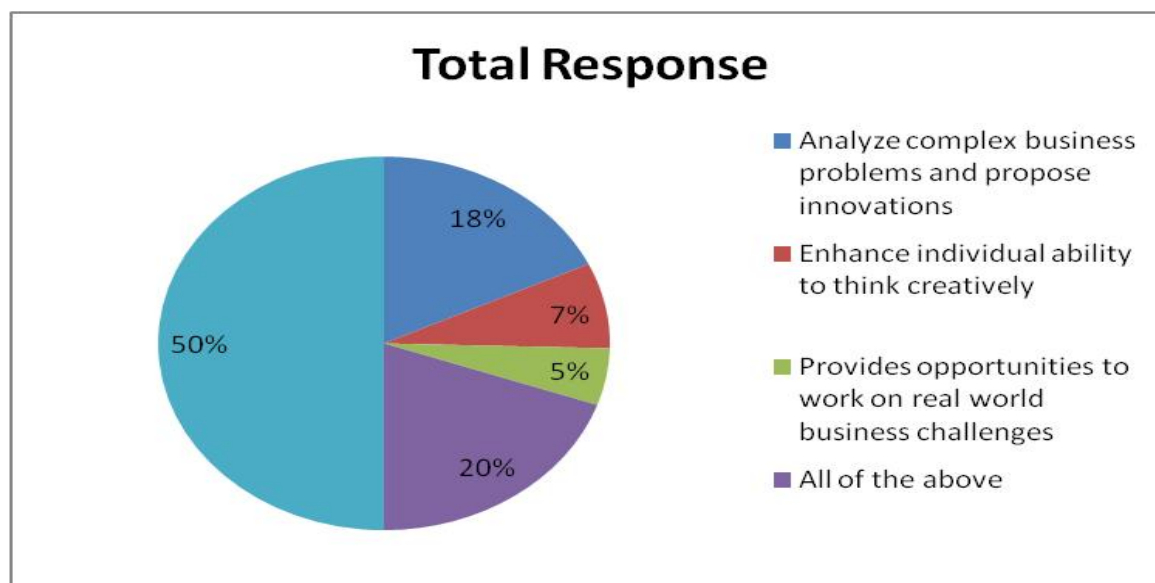
2. Problem Solving & Innovation

Table 2: Problem Solving & Innovation

Particulars	Total Response	Percentage Response
Analyze complex business problems and propose innovations	22	36
Enhance individual ability to think creatively	9	15
Provides opportunities to work on real world	6	10

business challenges		
All of the above	24	39
Total	61	100

Figure1: Problem Solving & Innovation



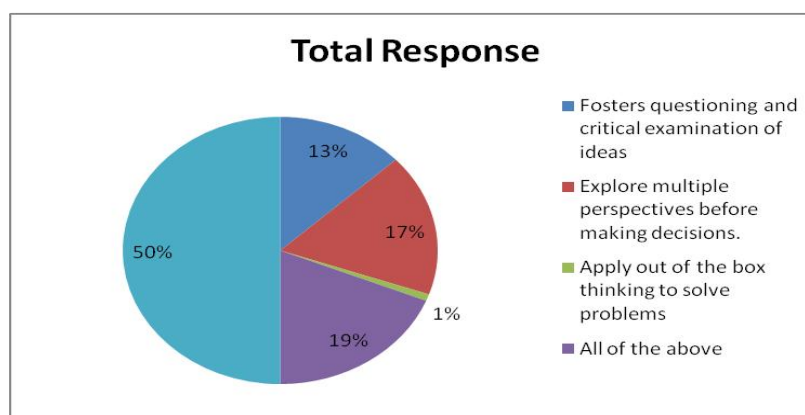
Data Analysis: The chart shows that 20% of respondents view OBE as covering all aspects, while 18% emphasized problem-solving and innovation, 7% creativity, and 5% real-world exposure. The 50% “Total” response highlights overall acceptance of its value.

3. Critical Thinking (Out-of-the-Box Thinking)

Table 3: Critical thinking (Out of the box thinking)

Particulars	Total Response	Percentage Response
Fosters questioning and critical examination of ideas	16	26
Explore multiple perspectives before making decisions.	21	34
Apply out of the box thinking to solve problems	1	2
All of the above	23	38
Total	61	100

Figure 3: Critical thinking (Out of the box thinking)



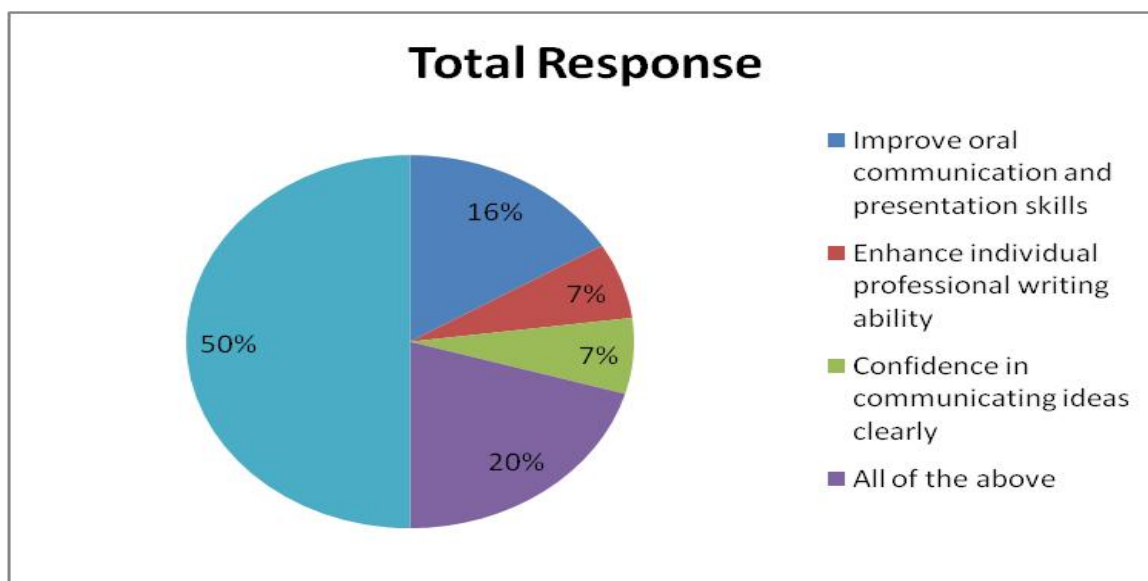
Data Analysis: The chart shows that 19% of respondents believe OBE addresses all aspects, while 17% emphasized exploring multiple perspectives, 13% focused on critical questioning, and only 1% highlighted out-of-the-box thinking. The 50% “Total” response reflects overall acceptance of its value.

4. Effective Communication

Table 4: Effective Communication

Particulars	Total Response	Percentage Response
Improve oral communication and presentation skills	20	33
Enhance individual professional writing ability	8	13
Confidence in communicating ideas clearly	8	13
All of the above	25	41
Total	61	100

Figure 4: Effective Communication



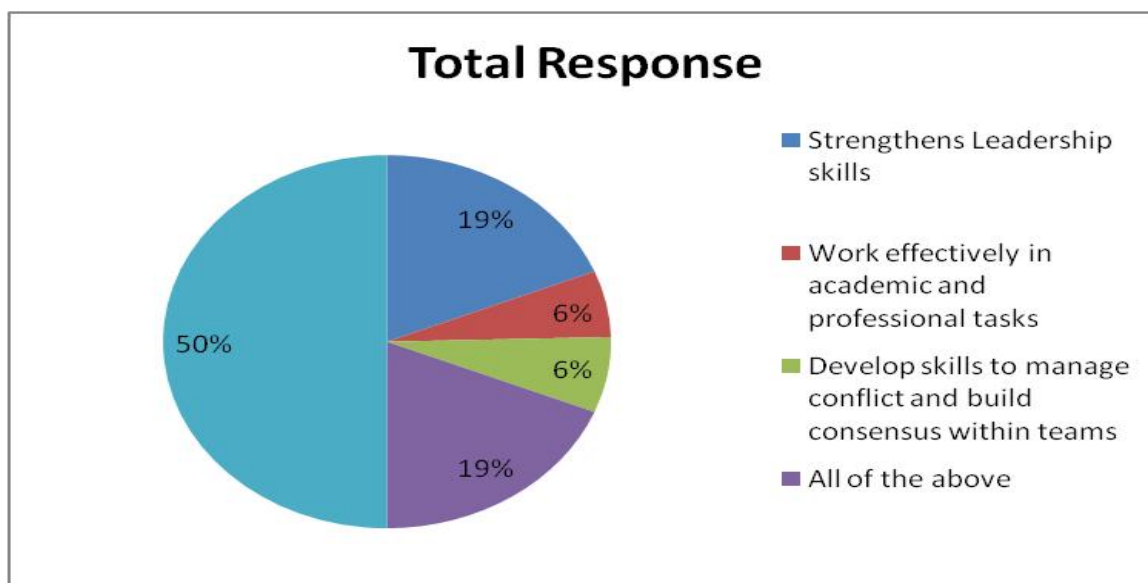
Data Analysis: The chart shows that 20% of respondents believe OBE covers all aspects, while 16% emphasized oral communication and 7% each highlighted professional writing and confidence in communication. The 50% “Total” response indicates broad acceptance of its importance.

5. Leadership and Team Work

Table 5: Leadership and Team Work

Particulars	Total Response	Percentage Response
Strengthens Leadership skills	23	38
Work effectively in academic and professional tasks	7	11
Develop skills to manage conflict and build consensus within teams	8	13
All of the above	23	38
Total	61	100

Figure 5: Leadership and Team Work



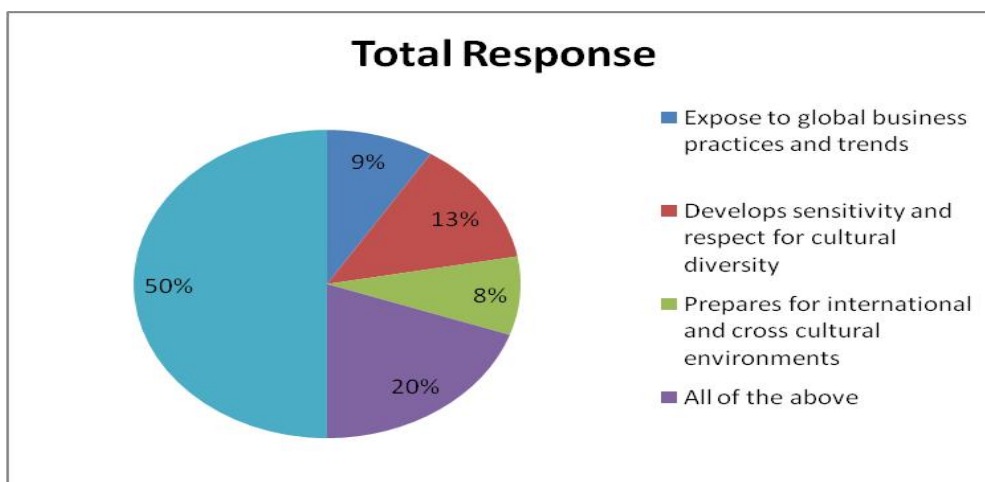
Data Analysis: The chart shows that 19% of respondents believe OBE builds leadership skills, another 19% see it covering all aspects, while 6% each emphasized teamwork in academic/professional tasks and conflict management. The 50% “Total” response highlights overall acceptance.

6. Global Orientation and Cross-Cultural Appreciation in management education

Table 6: Global Orientation and Cross Cultural Appreciation in management education

Particulars	Total Response	Percentage Response
Expose to global business practices and trends	11	18
Develops sensitivity and respect for cultural diversity	16	26
Prepares for international and cross cultural environments	10	16
All of the above	24	39
Total	61	100

Figure 6: Global Orientation and Cross Cultural Appreciation in management education



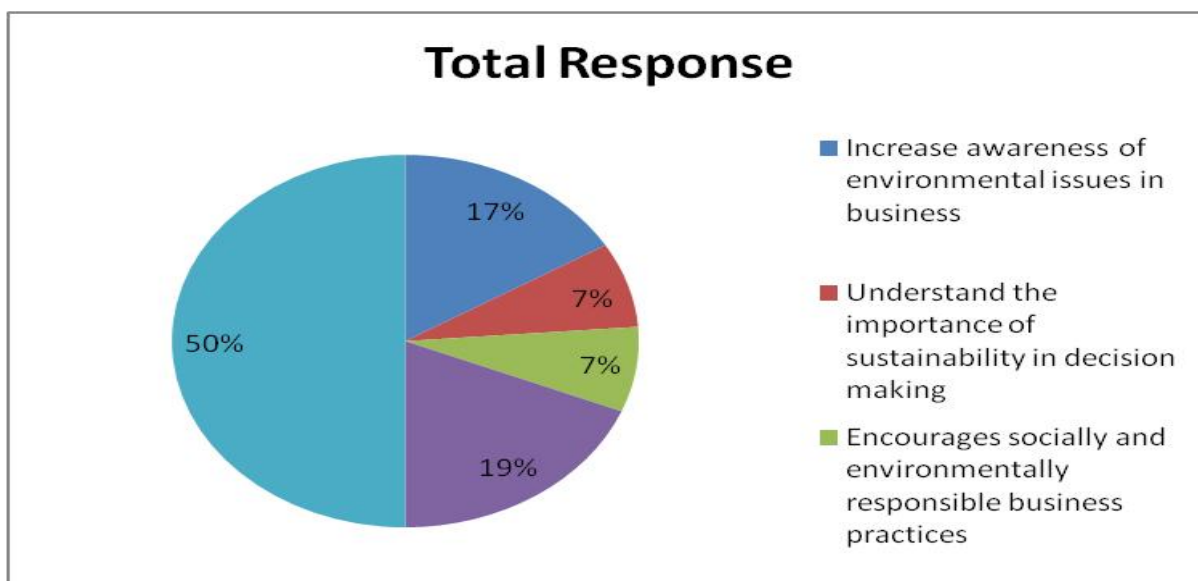
Data Analysis: The chart shows that 20% of respondents believe OBE addresses all aspects, while 13% emphasized cultural sensitivity, 9% global business exposure, and 8% preparation for cross-cultural environments. The 50% “Total” response indicates broad recognition of its value.

7. Environment and Sustainability in Education

Table1: Environment and Sustainability in Education

Particulars	Total Response	Percentage Response
Increase awareness of environmental issues in business	20	33
Understand the importance of sustainability in decision making	9	15
Encourages socially and environmentally responsible business practices	9	15
All of the above	23	38
Total	61	100

Figure1: Generic and Domain Knowledge in Management Education



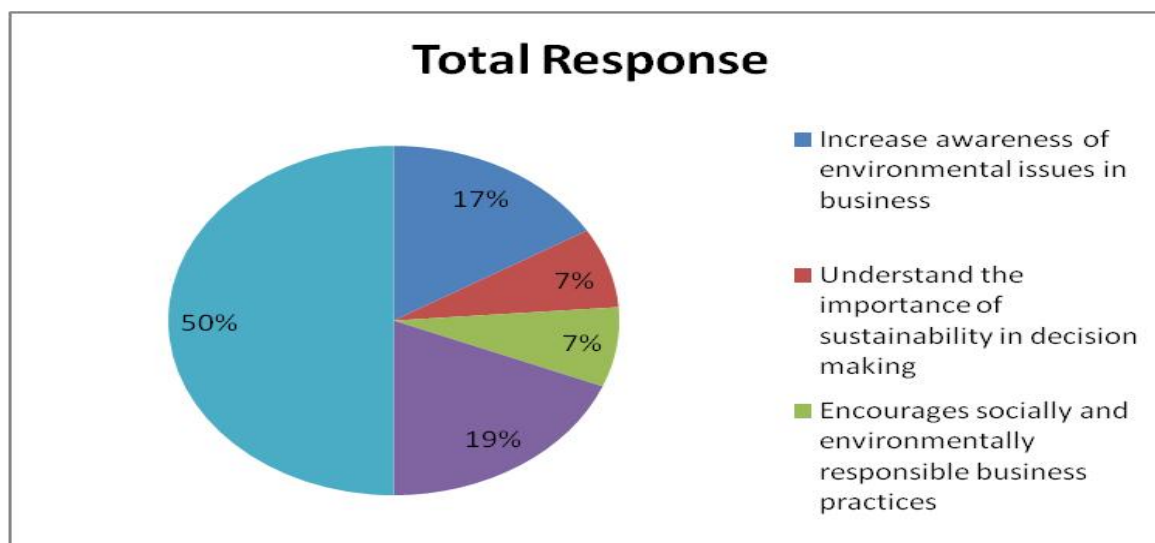
Data Analysis: The chart shows that 19% of respondents believe OBE covers all aspects, while 17% stressed awareness of environmental issues, and 7% each highlighted sustainability in decision-making and responsible business practices. The 50% “Total” response reflects overall acceptance.

8. Environment and Sustainability in Education

Table 8: Environment and Sustainability in Education

Particulars	Total Response	Percentage Response
Increase awareness of environmental issues in business	20	33
Understand the importance of sustainability in decision making	9	15
Encourages socially and environmentally responsible business practices	9	15
All of the above	23	38
Total	61	100

Figure 8: Environment and Sustainability in Education



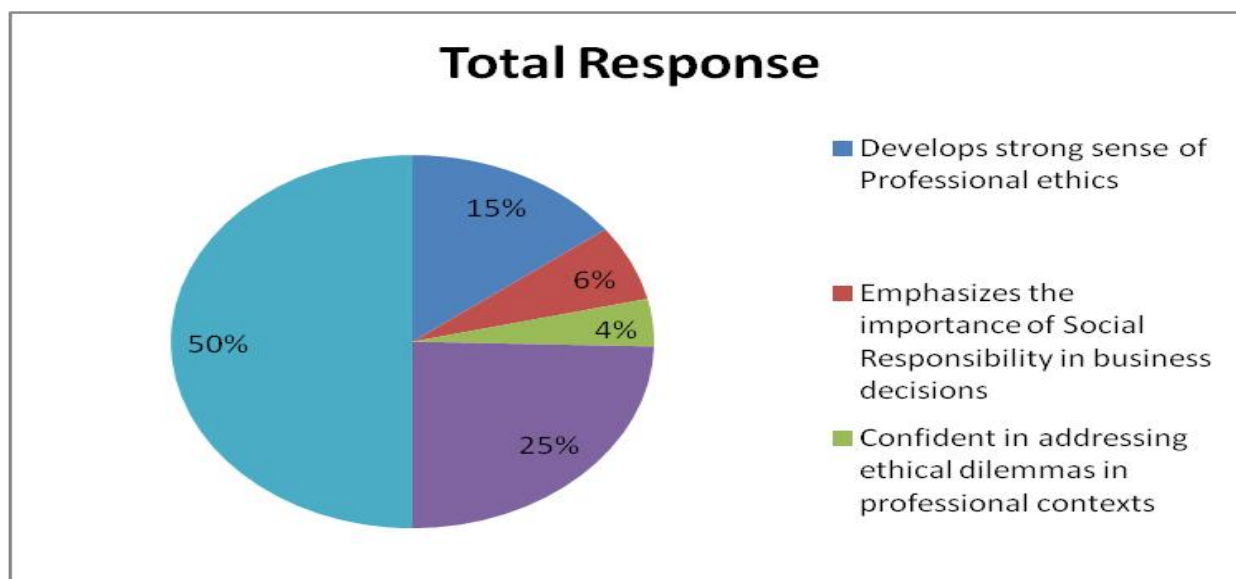
Data Analysis: The chart shows that 19% of respondents believe OBE addresses all aspects, 17% emphasized creating environmental awareness, and 7% each highlighted sustainability in decision-making and responsible business practices. The 50% “Total” response indicates overall acceptance.

9. Social Responsiveness and Ethics in Management Education

Table 9: Social Responsiveness and Ethics in Management Education

Particulars	Total Response	Percentage Response
Develops strong sense of Professional ethics	18	30
Emphasizes the importance of Social Responsibility in business decisions	8	13
Confident in addressing ethical dilemmas in professional contexts	5	8
All of the above	30	49
Total	61	100

Figure 9: Social Responsiveness and Ethics in Management Education



Data Analysis: The chart shows that 25% of respondents believe OBE addresses all aspects, 15% emphasized professional ethics, 6% highlighted social responsibility in business, and 4% focused on addressing ethical dilemmas. The 50% "Total" response reflects broad acceptance.

Findings, Suggestions and Conclusion:

Findings:

1. These results indicate that OBE in GAPC 4.0 is viewed as a comprehensive framework that strengthens core principles, integrates theory with practice, and aligns management education with industry trends to make graduates industry-ready.
2. These results indicate that OBE in GAPC 4.0 is seen as a comprehensive approach that develops analytical, creative, and practical skills, preparing students to tackle real-world business challenges effectively.
3. These results suggest that OBE in GAPC 4.0 is viewed as a comprehensive framework that encourages critical thinking, multiple perspectives, and innovative problem-solving, reinforcing its role in student-centric learning.
4. These results suggest that OBE in GAPC 4.0 is seen as a comprehensive approach that strengthens communication, writing, and presentation skills, thereby enhancing students' confidence and professional readiness.
5. These results suggest that OBE in GAPC 4.0 is perceived as a holistic framework that enhances leadership, teamwork, and conflict resolution skills, thereby preparing students for collaborative and professional success.
6. These results suggest that OBE in GAPC 4.0 is viewed as a comprehensive model that equips students with global awareness, cultural sensitivity, and adaptability, preparing them for international and diverse professional environments.
7. These results suggest that OBE in GAPC 4.0 is viewed as a holistic approach that promotes environmental awareness, sustainability, and socially responsible business practices, preparing students for ethical and sustainable management roles.
8. These results suggest that OBE in GAPC 4.0 is seen as a comprehensive framework that instills sustainability awareness, ethical responsibility, and environmentally conscious practices in students, aligning education with global business needs.
9. These results suggest that OBE in GAPC 4.0 is perceived as a holistic model that strengthens ethics, social responsibility, and decision-making skills, preparing students to handle professional challenges with integrity.

Suggestions:

Based on the findings, it is recommended that management education under GAPC 4.0 continue to strengthen the integration of Outcome Based Education (OBE) as a holistic and student-centric framework. Institutions should design curricula that not only focus on theoretical knowledge but also emphasize practical applications, ensuring that students are industry-ready and capable of adapting to rapidly changing trends. Greater emphasis should be placed on developing analytical and creative problem-solving skills through real-world projects, case studies, and simulations that challenge students to think critically and innovatively.

Furthermore, communication and presentation skills should be embedded across all courses through structured assignments, seminars, and interactive learning methods to enhance professional readiness and confidence. Leadership development programs, teamwork exercises, and conflict resolution workshops should be incorporated to prepare students for collaborative environments. At the same time, institutions should cultivate global awareness and cultural sensitivity by promoting international collaborations, exchange programs, and cross-cultural training.

Another important suggestion is to prioritize sustainability and ethical education by integrating environmental responsibility, social accountability, and ethical decision-making into the core curriculum. This can be achieved through projects, reflective assignments, and partnerships with industries that practice sustainable business. Finally, strong feedback mechanisms and continuous evaluation should be implemented to ensure that OBE outcomes are consistently aligned with industry expectations, lifelong learning goals, and societal needs.

Conclusion:

In conclusion, the findings strongly affirm that OBE in GAPC 4.0 is widely regarded as a comprehensive and holistic educational framework that effectively bridges the gap between academic learning and professional requirements. Students perceive OBE as not only enhancing theoretical and practical knowledge but also building critical thinking, creativity, leadership, communication, cultural adaptability, and ethical responsibility. Its multi-dimensional approach fosters collaboration, sustainability awareness, and industry alignment, ensuring that graduates are prepared to face real-world challenges with competence and integrity.

Thus, OBE in GAPC 4.0 establishes itself as a student-centric, future-oriented model that empowers learners with the skills, values, and adaptability necessary for global business environments. By adopting the suggested strategies, institutions can further strengthen the impact of OBE, ensuring that management education remains relevant, inclusive, and transformative in shaping professionals who are capable, responsible, and innovative leaders of tomorrow.

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MARKETING SEGMENTATION AND TARGETING STRATEGIES FOR TATA MOTORS

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Abstract

This research paper explores the marketing segmentation and targeting strategies of Tata Motors in the Indian automobile industry. The study evaluates consumer awareness, brand perceptions, target segments, and influencing purchase factors. Primary data was collected from 15 respondents, while secondary data was gathered from company reports, financial statements, and industry sources. Findings suggest that Tata Motors enjoys strong brand recognition, with safety, design, and affordability being key consumer associations. The Tata Nexon emerged as the most popular model. The research concludes that Tata Motors' segmentation strategies are effective but could be further optimized through enhanced digital engagement, stronger EV positioning, and improved after-sales service.

1. Introduction

Tata Motors is one of India's largest automobile companies, producing vehicles across passenger, commercial, and electric segments. The company has a strong reputation for safety, affordability, and innovation. With growing competition from Maruti Suzuki, Hyundai, Mahindra, and international brands, Tata Motors employs targeted strategies to capture various market segments. This paper introduces Tata Motors' industry profile, company profile, SWOT analysis, and future prospects, while emphasizing the importance of segmentation in the automotive sector.

2. Literature Review

Several studies highlight the importance of segmentation in the automobile industry. Sharma (2021) emphasized consumer-driven segmentation based on affordability and safety. Verma (2023) discussed digital marketing as a growing driver of brand awareness. Mishra & Patel (2024) noted that segmentation builds trust and brand loyalty. Desai (2025) stressed segmentation's role in EV adoption. Collectively, literature indicates that demographic, psychographic, and behavioral segmentation are critical for Tata Motors' growth.

3. Objectives

The main objectives of this study are:

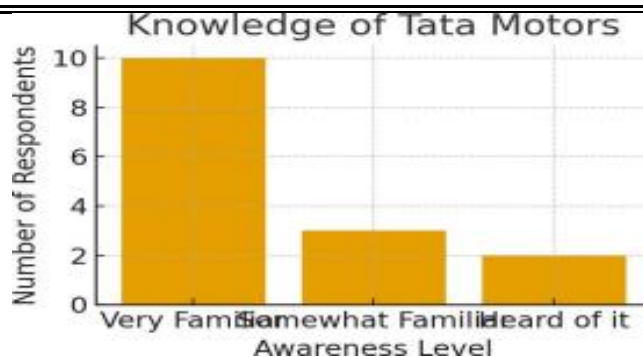
1. To examine consumer awareness and perceptions of Tata Motors.
2. To analyze consumer preferences regarding Tata Motors' models and brand image.
3. To evaluate the effectiveness of segmentation and targeting strategies.
4. To provide recommendations for strengthening Tata Motors' market position.

4. Methodology

This research adopts a descriptive and analytical approach. Primary data was collected from 15 respondents across age and income groups using structured questionnaires. Secondary data was gathered from Tata Motors' financial statements, industry reports, and competitor analysis. Data was analyzed using descriptive statistics and graphical representation. A chi-square test was proposed to evaluate associations between age groups and vehicle preferences.

5. Data Analysis and Interpretation

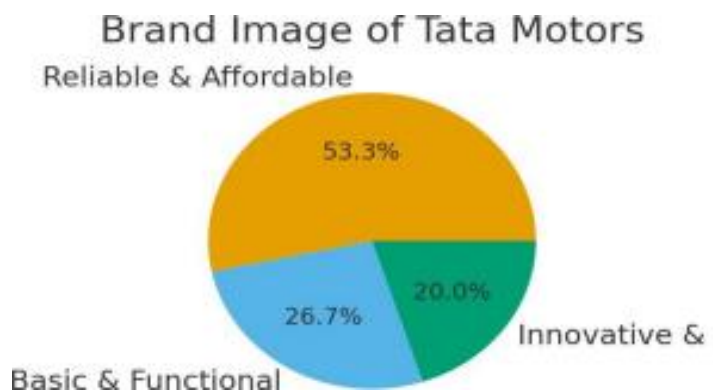
The following analysis is based on survey responses from 15 respondents:



1. Knowledge of Tata Motors

Knowledge Level Responses		Percentage
Very familiar	10	67%
Somewhat familiar	3	20%
Heard of it but don't know much	2	13%
Total	15	100%

2. Respondents' Impression of TATA Motors' Brand Image



Brand Image Description	Responses	Percentage
Innovative and premium	3	20%
Basic and functional	4	27%
Reliable and affordable	8	53%
Total	15	100%

The survey results indicate that Tata Motors has strong brand recognition, with 67% of respondents very familiar with the brand. Additionally, 53% of respondents associate Tata Motors with reliability and affordability, demonstrating effective brand positioning. However, only 20% perceived Tata as innovative and premium, suggesting the need to reinforce its innovation-driven image.

6. Suggestions

Based on the analysis, the following suggestions are made:

1. Strengthen digital marketing campaigns to improve youth engagement.
2. Expand EV product awareness to reinforce leadership in sustainable mobility.
3. Enhance after-sales service to build stronger customer loyalty.
4. Differentiate premium models with innovation-focused branding.

7. Conclusion

The study concludes that Tata Motors has effectively positioned itself as a reliable and affordable automobile brand in India. Its segmentation strategies targeting middle-income families have proven successful. However, future growth depends on strengthening premium and EV positioning while maintaining affordability and safety as core values. With strategic improvements in digital engagement and after-sales service, Tata Motors can further consolidate its market leadership.

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THE ROLE OF BRAND COMMUNITIES AND SOCIAL MEDIA INFLUENCERS ON BRAND LOYALTY AMONG TEEN FASHION CONSUMERS OF BANGALORE CITY

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Abstract

Purpose: The major purpose of the study is to investigate the effect of brand communities and social media influencers on brand loyalty of teenage fashion consumers in Bangalore. The study not only examines the most relevant factors between community involvement and influencer endorsement in creating loyalty, but it also examines the mediating effect of trust, identity, and emotional attachment.

Study Design/Methodology/Approach: The research design adopted was the descriptive research design with explanatory aspects. The structured online questionnaire was sent out to 215 teenage fashion consumers (aged 13-19) in Bangalore. The purposive sampling technique was used so that the participants are active social media users who are active on the fashion brands. Regression, correlation, and ANOVA were used to analyse data by Excel and Cronbach alpha verified the reliability of constructs. Ethics, such as informed consent, confidentiality, and voluntary engagement were always upheld.

Findings: According to the results, there is a strong positive correlation between brand loyalty and participation in online brand communities. In a similar fashion, the communication with social media celebrities led to an increased consumer loyalty, exported through brand trust as a fundamental mediator between engagement and long-term commitment. The results also indicated that consumers that had interactions with both brand communities and influencers had a higher level of loyalty than those that had interactions with either the influencers or the brand communities.

Originality/Value: This study adds to the existing literature on the topic of digital consumer behaviour by targeting teenage fashion consumers in an urban Indian setting. It offers practical guidance to fashion marketers and brand strategists on the ways they can create integrated digital campaigns incorporating an influencer marketing approach with lively online brand communities. The study also provides theoretical input as well as practical guidance on the sustainability of brand loyalty over time in a digital-first market context due to the mediating effects of trust and identity.

Keywords: Brand Communities, Social Media Influencers, Brand Loyalty, Teen Fashion Consumers, Bangalore City

Introduction

Digital age is changing the relationship that teenagers have with their brands in terms of spending on fashion in cities with high internet coverage like Bangalore. Brand communities give teenagers a sense of belonging, identity and trust that leads to increased engagement, repeat-purchase, and positive word-of-mouth. Meanwhile, Instagram and YouTube social media influencers also play an essential role as they provide relatable and genuine advice that forms an emotional connection with the brands. In the present work, the authors target digitally-conscious young people in Bangalore to examine the synergistic impact of brand communities and influencers on brand loyalty and the contribution of demographic and psychological variables to brand attachment.

The rapid digitalization of the world, the vibrant fashion culture has made the teenagers of Bangalore redefine how brand loyalties are formed. Online brand communities allow them to earn identity, social approval, and trust through the co-creation of meaning, and social media influencers provide the feeling of authenticity and relatability that traditional advertisements do not. The impact of all these digital forces on the buying trend and long-term loyalty is immense and it is thus imperative that their impact on the young fashion buyers of the city be examined in relation to each other.

Limitations of the Study

- **Geographical limitation:** The study is restricted to Bangalore City and may not reflect consumer behaviour in other regions.
- **Age group:** Only teenagers (13–19) are considered; results may not apply to older or younger consumers.
- **Focus on digital platforms:** Offline loyalty drivers (e.g., in-store experience, print media) are excluded.
- **Self-reported data:** Responses may be influenced by bias or exaggeration.

- **Rapidly changing trends:** Teen fashion preferences and digital habits evolve quickly, which may limit the long-term applicability of findings.

Research Objectives

- To examine the influence of online brand community engagement on brand loyalty among teen fashion consumers in Bangalore.
- To evaluate the impact of social media influencer interactions on brand loyalty in the context of teen fashion consumers.
- To analyse the mediating role of trust and emotional connection between brand community/influencer engagement and brand loyalty.
- To examine if an interaction with both brand communities and social media influencers leads to higher brand loyalty compared to either element individually.
- To investigate how psychological factors like sense of belonging and identity influence brand loyalty in urban Indian teenagers.

Methodology

Research Design

The research applies descriptive research design with an explanatory dimension. The descriptive component of the design enables the researcher to provide a rich description of typical teenage consumers' engagement with brand communities and social media influencers. The explanatory component of the design enables the researcher to investigate or examine how such interactions with influencers and brands create brand loyalty. The study employs primary data captured via a structured questionnaire survey. The method is suitable because using this approach, the researcher is not only able to illustrate consumer behavior but also shed light on the interrelations between the key variables: brand community participation, influencer participation, trust, and brand loyalty.

Sampling Method

This study uses a non-probability purposive sampling method as it is essentially focused on teenage fashion consumers who are active on social media and online brand communities. This method will exclude irrelevant respondents which are all teenagers aged 13 to 19 years old from Bangalore, and only include relevant respondents. Therefore, the purposive sampling method is warranted as not all teenagers are fashion-forward or active in the digital world, and the study requires specific participants.

Sample Size

The targeted sample size is 150 - 200 respondents to maximize the reliability and validity of results. This sample size is appropriate for study using survey-based methods, as it allows for enough data for meaningful statistical analysis, but is feasible in terms of the constraints of this study. Respondents will be identified/resourced through online spaces such as Instagram, WhatsApp groups, and school/college networks in Bangalore. The targeted sample size is 150 - 200 respondents to maximize the reliability and validity of results. This sample size is appropriate for study using survey-based methods, as it allows for enough data for meaningful statistical analysis, but is feasible in terms of the constraints of this study. Respondents will be identified/resourced through online spaces such as Instagram, WhatsApp groups, and school/college networks in Bangalore.

Data Collection Methods

The research utilized primary data collection via a structured survey questionnaire amongst teenage fashion consumers in Bangalore. Respondents were accessed via Instagram, WhatsApp groups and school/college networks to guarantee that respondents were users of social media and connected to online brand communities to meet the objectives of the research.

2. Research Instruments

- **Questionnaire:** A semi-structured questionnaire was utilized that contained quality closed questions (Likert scale, multiple-choice) and demographic questions. It examined measures of brand community engagement, influencer engagement, trust, emotions, and brand loyalty.
- **Interview guide (potentially optional/secondary):** If qualitative detail is necessary, then an interview guide could be used in conjunction with the survey to have a better understanding of their perceptions of influencers and community belonging with the brand.

3. Validity and Reliability (for Quantitative Research)

- **Content Validity:** Questionnaire items were derived from the literature (Ozuem et al., 2021; Jibril et al., 2019) to be able to speak to any relevant constructs.
- **Construct Validity:** Factor analysis will confirm items will load on the constructs as intended: trusting, emotionally connecting, and loyalty.
- **Reliability:** Internal consistency will be measured using Cronbach's Alpha. A value greater than .70 would denote that the scales are reliable. It would be prudent to seek to undertake a pilot test of the questionnaire with a test group of a small number of teenagers to clarify the clarity and consistency of the questionnaire.

4. Ethical Considerations

- **Informed Consent:** Given that respondents are teens, consent should be sought from participants (and guardians for participants under the age of 18).
- **Confidentiality:** Data will remain anonymous and no personal identifiers will be disclosed.
- **Voluntary Participation:** Respondents can withdraw at any time and they face no penalty.
- **Responsible Use of Findings:** The findings will strictly be for academic purposes and shared with brands for commercial purposes.
- **Sensitivity:** Teens are vulnerable participants, so care should be taken not to expose them to harmful or manipulative question items.

5. Data Analysis Plan

- **Descriptive Statistics:** Averages, and percentages summarizing demographics, shopping behaviours, and social media usage.
- **Inferential Statistics:** Regression Statistics to examine the effects of brand community and influencer involvement on loyalty.
- **ANOVA** to examine differences in groups (i.e., age, gender, income).
- **Correlation Analysis** to test trust and emotional engagement as mediators.
- **Coding Schemes** (if qualitative interviews are incorporated): Thematic coding for interviews related to identity, belonging and trust.
- **Software:** SPSS/AMOS, or Smart PLS to test hypotheses with structural modelling.

Statistical Analysis

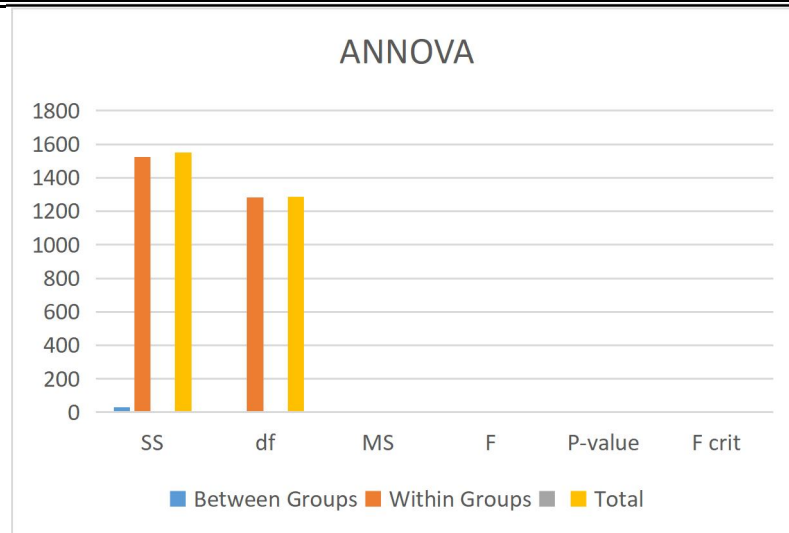
Regression

<i>Regression Statistics</i>	
Multiple R	0.594286
R Square	0.353176
Adjusted R Square	0.35014
Standard Error	0.682236
Observations	215

The regression analysis indicates that participation in online brand communities significantly enhances brand loyalty among teen fashion consumers. With a positive coefficient (0.527) and strong statistical significance ($p < 0.001$), the findings confirm that greater involvement leads to stronger loyalty, thereby supporting H1 with both practical and theoretical implications.

Annova

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	29.13414	5	5.826829	4.909228	0.000187	2.221074
Within Groups	1522.81	1283	1.186913			
Total	1551.944	1288				



The ANOVA results show a significant impact of social media influencer engagement on brand loyalty among teen fashion consumers ($F = 4.91$, $p < 0.001$). Since F exceeds the critical value, H_2 is supported, indicating that stronger influencer engagement positively contributes to higher levels of brand loyalty.

Correlation

	Column 1	Column 2	Column 3	Column 4	Column 5
Column 1	1				
Column 2	0.38744	1			
Column 3	0.304308	0.439151	1		
Column 4	0.37233	0.459932	0.500086	1	
Column 5	0.447504	0.460616	0.47617	0.539098	1

The correlational analysis demonstrates that online brand community participation is positively related to both brand trust ($r = 0.39$) and brand loyalty ($r = 0.45$). Brand trust also exhibits a strong relationship with loyalty ($r = 0.46$). This implies that brand trust acts as a mediator of the relationship between community involvement and trust, giving support to H_3 .

Hypothesis

H_1 : Teen fashion consumers gain brand loyalty from participating in online brand communities.

H_2 : Engagement with social media influencers positively affects brand loyalty among teen fashion consumers.

H_3 : Brand trust mediates the relationship between the involvement in online brand communities and brand loyalty.

Conclusion

The present research examined how online brand communities and social media influencers affect brand loyalty among adolescent fashion consumers in Bangalore. The findings justified that online brand community involvement enhances loyalty significantly because it affords identity, belongingness, and peer legitimacy. Involvement with social media influencers also is beneficial towards loyalty since adolescents perceive influencers as authentic, desirable, and credible fashion advisers. In addition, brand trust was the strong mediator that strengthened the impact of community involvement on loyalty. Overall, the findings highlight the fact that teen fashion consumers' loyalty is constructed not through conventional promotion but through online settings in which interactivity, influencer interaction, and trust development play crucial roles.

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GENDERED WORKFORCE DYNAMICS IN INDIA'S MINING INDUSTRY: GOVERNMENT SECTOR TRENDS AND COMPARATIVE ANALYSIS

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Abstract

The Indian mining sector plays a pivotal role in driving economic growth, making substantial contributions to GDP, employment, and international trade. Yet, gender disparity continues to be a pressing issue, with women representing less than 10% of the workforce, concentrated mainly in informal and lower-paid positions. This study investigates gender sustainability within public sector mining organizations by examining workforce patterns, women's presence in leadership and technical roles, and the effectiveness of policy measures. Drawing on publicly available data from five central government organizations—Coal India Limited, Neyveli Lignite Corporation, Mineral Exploration Corporation Limited, Gujarat Mineral Development Corporation, and the Geological Survey of India—the research uncovers systemic obstacles restricting female participation. The analysis shows a steady decline in both overall and female employment between 2017 and 2022, with women's share in executive positions remaining below 10%. Despite policy reforms and corporate social responsibility efforts, progress toward gender inclusivity remains limited. Overcoming recruitment biases, enhancing workplace infrastructure, and introducing focused skill-development initiatives are vital to narrowing this gap. Building a more inclusive workforce has the potential to improve productivity and sustainability in the mining industry while strengthening India's pursuit of equitable economic growth.

Keywords: Gender Dynamics, Indian Mining Industry, Gender bias, Women in leadership, Government Sector

Introduction

The Indian mining industry plays a pivotal role in the nation's economic development, contributing significantly to GDP and foreign exchange earnings. India is endowed with a diverse range of mineral resources, ranking as the world's second-largest producer of coal and the fifth-largest producer of iron ore (Ministry of Mines, 2022; World Mining Data, 2022; IBISWorld, 2023). The mining sector contributes approximately 2.5% to India's GDP directly, with its indirect impact stretching across various industries, including manufacturing, infrastructure, and energy (World Bank, 2023; FICCI, 2022; IBEF, 2023). In 2023, mining exports accounted for over 15% of India's total export earnings, with key commodities like iron ore, bauxite, and limestone driving growth (Ministry of Commerce, 2023; IMF, 2023; UNCTAD, 2023). The sector provides employment to more than 1.5 million people, both directly and indirectly, fostering regional development in resource-rich states like Jharkhand, Odisha, and Chhattisgarh (ILO, 2022; NITI Aayog, 2022; MoLE, 2023). Investments in sustainable mining practices have been growing, with policies encouraging foreign direct investment (FDI) inflows, which reached \$3 billion in 2022 alone (DPIIT, 2023; World Bank, 2023; UNDP, 2023). The demand for minerals has surged due to urbanization and industrialization, bolstering both domestic consumption and export potential (UNEP, 2022; MoEFCC, 2023; McKinsey, 2023). Additionally, the government's reforms, including the auction of mining blocks and digitization initiatives, aim to enhance transparency and efficiency (PwC, 2023; Ernst & Young, 2023; MoM, 2023). Despite challenges such as environmental concerns and land acquisition issues, the sector is poised to be a cornerstone of India's economic ambitions (OECD, 2023; WWF, 2022; The Hindu, 2023). Overall, the mining industry not only strengthens India's economic foundation but also contributes substantially to its global trade footprint (UNCTAD, 2023; IMF, 2023; The Economic Times, 2023).

The status of the female workforce in India's mining and quarrying industry reflects significant challenges and slow progress toward inclusivity. Women constitute less than 10% of the total workforce in the sector, with most employed in unorganized and informal operations (ILO, 2022; Ministry of Mines, 2022; FICCI, 2023). Despite legal provisions like the Mines Act of 1952, which initially restricted women from working underground, recent amendments have allowed women to work in underground mines under specific conditions, promoting gender equity (MoLE, 2023; Parliament of India, 2023; PwC, 2023). However, poor access to childcare, lack of separate facilities, and unsafe working conditions limit their participation (World Bank, 2023; UN Women, 2022; WWF, 2023). Women in the industry primarily work in low-paying, labor-intensive jobs like ore collection and stone breaking, with limited representation in technical or managerial roles (NITI Aayog, 2022; IBEF, 2023; IMF, 2023). Wage disparities remain prevalent, with women earning significantly less than their male counterparts (ILO, 2022; Ministry of Labour, 2023; McKinsey, 2023). Additionally, cultural norms and biases often discourage women from pursuing careers in mining (UNEP, 2022; Ernst & Young, 2023; UNECE, 2023). Government schemes and corporate social responsibility (CSR) initiatives are being implemented to

encourage women's participation, focusing on skill development and safety enhancements (DPIIT, 2023; MoEFCC, 2023; PwC, 2023). Despite these efforts, India's female mining workforce remains underrepresented, necessitating stronger policies and enforcement mechanisms (OECD, 2023; FICCI, 2023; The Economic Times, 2023). Bridging this gender gap could significantly boost productivity and social equity in the mining sector (World Bank, 2023; McKinsey, 2023; UNDP, 2023). This paper aims to investigate gender-based sustainability within the Indian mining industry by conducting a comprehensive analysis of available reports and data published in the public domain.

Objectives

The objective of this study is to analyse gender dynamics in the Indian mining industry, particularly in public sector organizations, by examining historical workforce trends, existing inequalities, and sectoral comparisons. It aims to identify the extent of gender disparity in workforce participation, with a focus on representation in leadership and technical roles, highlighting differences between public and private sector companies. The research seeks to provide insights into policy reforms, recruitment strategies, and gender-inclusive initiatives that can enhance equity and sustainability in the mining sector, ultimately contributing to a more balanced and competitive industry.

Methodology

The methodology for this study involves a qualitative analysis of publicly available reports and data concerning the Indian mining industry, focusing on gender-based sustainability. The research will primarily rely on secondary data gathered from industry reports, government documents, annual reports of leading mining companies, and academic studies, all of which are publicly accessible in the domain. These reports will be critically analysed to identify key trends, policies, and practices related to gender inclusivity in the mining sector. The study will also examine case studies of companies that have undertaken significant gender-related initiatives and evaluate the impact of these measures on the sustainability of their operations. Data will be systematically categorized and compared to highlight both the challenges faced by women in the mining industry and the progress made towards achieving gender equity. This approach will provide a comprehensive understanding of the gender dynamics within the Indian mining sector and offer actionable insights for enhancing gender-based sustainability.

Data Analysis and Interpretation

The data analyzed in this study includes employee statistics from five leading government organizations in the mining sector: Coal India Limited, Neyveli Lignite Corporation, Mineral Exploration Corporation Limited, Gujarat Mineral Development Corporation (GMDC) and Geological Survey of India (A subsidiary of Ministry of mines). The employee data of these five central government mining-related organisations highlight a significant gender disparity in the workforce (Table 1). For Coal India Limited (CIL), the total number of employees in 2017 was 313,809, with female employees comprising only about 7.7% of the workforce. Over the years, there has been a consistent decline in both total and female employees, with female representation further decreasing (Fig. 1). Similarly, Neyveli Lignite Corporation (NLC) showcased a limited inclusion of women, where their proportion remained below 8% from 2017 to 2019. These trends reflect systemic barriers to female participation in mining roles.

Coal India Limited			
Year	Total Employees	Female Employees	Male Employees
2017	313809	24163	2,89,646
2018	302006	20,325	2,81,681
2019	288687	19,486	2,69,201
2020	276092	19,469	2,56,623
2021	2,59,016	19610	2,39,406
2022	2,48,550	19794	2,28,756
Mineral Exploration Cooperation Limited (MECL)			
Year	Total Employees	Female Employees	Male Employees
2017	1,117	59	1,058
2018	1,025	55	970
2019	1,021	53	968
2020	1,000	64	936
2021	931	56	875
2022	868	54	814
Neyveli Lignite Corporation			
Year	Total Employees	Female Employees	Male Employees
2017	15030	1064	13966

2018	14446	1050	13396
2019	13464	1004	12460
2020	12,490	958	11532
2021	11,379	911	10468
2022	11,246	895	10351
Gujarat Mineral Development Corporation (GMDC)			
Year	Total Employees	Female Employees	Male Employees
2017	1528	145	1383
2018	1441	129	1312
2019	1,375	118	1257
2020	1,226	104	1122
2021	1,120	88	1032
2022	1,085	83	1002
Geological Survey of India			
Year	Total Employees	Female Employees	Male Employees
2017	6,921	1,222	5,699
2018	6,307	1,259	5,048
2019	6,135	1,241	4,894
2020	6,005	1,255	5,820
2021	7,076	1,256	5,820
2022	7,093	1,262	5,831

Table 1: Manpower data of 5 central government organisations/ companies related to mining for a period of six years from 2017-2022. The data were extracted from the annual reports of the respective organisations.

The data from Mineral Exploration Corporation Limited (MECL) and Gujarat Mineral Development Corporation (GMDC) show similarly low female representation. MECL recorded a workforce gender distribution where female employees constituted less than 6% of the total. Despite slight variations across the years, the statistics underscore a persistent underrepresentation of women, especially in field-intensive roles. Gujarat Mineral Development Corporation (GMDC) this trend, with minimal changes over time, signaling the absence of robust gender inclusivity policies.

Contrastingly, some marginal improvements in gender inclusivity are observed in Geological Survey of India, although the changes are insufficient to suggest substantial progress. The overall decline in the workforce in most companies between 2017 and 2019, coupled with the stagnation or reduction of female employees, highlights structural challenges in integrating women into mining operations. These figures call for a detailed examination of recruitment, retention, and workplace culture policies.

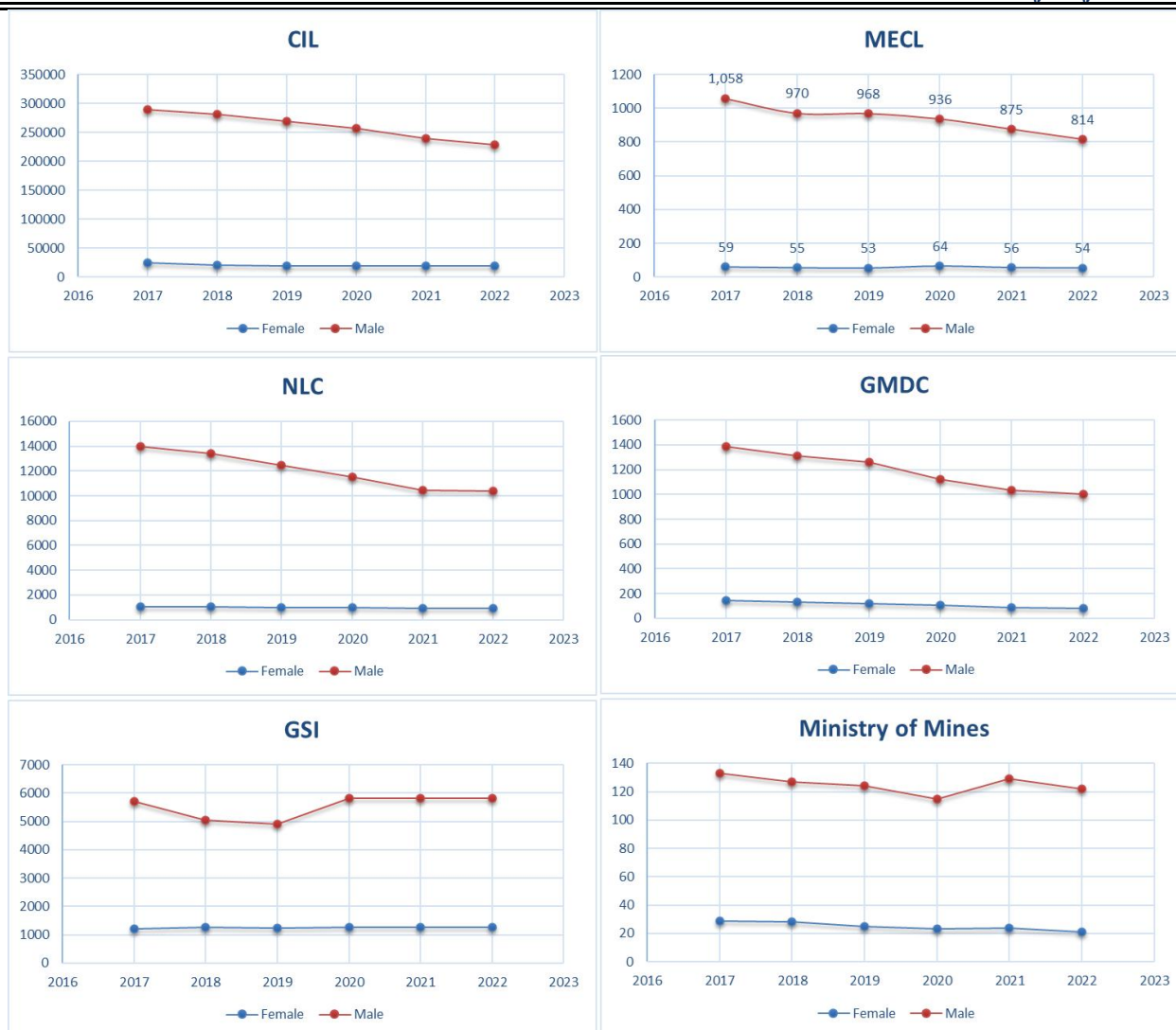


Fig 1. Manpower trend of various organizations selected for the analysis for a period of 6 years from 2017 to 2022.

The gender statistics reveal stark differences in male and female representation across various hierarchical levels in mining companies (Table 2). For workers in Coal India Limited (CIL), males accounted for an overwhelming 92%, while females constituted merely 8%. The disparity is even more pronounced among executives, with females comprising only 7%. Similar trends are evident in MECL, where women represented 5.3% of the workforce and 9% of executives. The slight increase in female representation at higher levels may indicate targeted initiatives for gender inclusivity in leadership roles.

In Neyveli Lignite Corporation, gender disparity was uniform across both workers and executives, with female representation remaining constant at 8-9%. These statistics underscore the systemic nature of gender imbalance in the sector, where women face challenges at all organizational levels. The marginal improvement in executive roles highlights the need for further policies that address both entry-level barriers and career progression hurdles.

Company	Workers		Executives	
	Male(%)	Female(%)	Male(%)	Female (%)
Coal India Limited (CIL)	92.00%	8.00%	93.00%	7.00%
Mineral Exploration Cooperation Limited (MECL)	94.63%	5.37%	91.00%	9.00%
Neyveli Lignite Corporation (NLC)	92.00%	8.00%	91.00%	9.00%
Gujarat Mineral Development Corporation (GMDC)	87.60%	12.40%	92.50%	7.50%

Government Organizations	Group B and Below		Group A	
Geological Survey of India (GSI)	79.22%	20.78%	85.73%	14.27%
Ministry of Mines -Secretariat (MoM)	87.61%	12.39%	81.82%	18.18%

Table 2: Gender statistics of 5 central government organisations/ companies and their parent organization for a comparative assessment. The data were extracted from the annual reports of the respective organisations.

The Ministry of Mines Secretariat's employee data from 2017 to 2022 demonstrates consistent underrepresentation of women (Table 3). In 2017, out of 162 total employees, only 29 (approximately 18%) were women. This number slightly decreased over the years, with female employees making up about 16.7% in 2022. The declining trend in total employees, including women, mirrors the broader patterns observed in individual mining companies. Despite being the apex body, the Ministry has not set a significant precedent for gender inclusivity, reflecting systemic issues within the sector.

Table 3: Periodic data of Ministry of mines extracted from the annual reports.

Ministry of Mines -Secretariat			
Year	Total Employees	Female Employees	Male Employees
2017	162	29	133
2018	155	28	127
2019	149	25	124
2020	138	23	115
2021	153	24	129
2022	143	21	122

Blending the insights from the three datasets reveals a persistent gender disparity in the Indian mining industry. Companies like Coal India Limited and Neyveli Lignite Corporation exhibit consistently low female representation across roles, indicating entrenched structural and cultural challenges. The Ministry of Mines' data, as the sector's apex body, further reinforces the issue, as its internal statistics reflect similar trends of underrepresentation.

These findings underscore the need for targeted interventions to enhance gender inclusivity. Policies should address recruitment practices, workplace safety, and facilities, which are crucial for retaining women in traditionally male-dominated industries. Additionally, mentorship programs and leadership opportunities for women could help bridge the gap, especially in executive roles where female participation shows marginal improvement.

Conclusion

The analysis highlights a pronounced gender disparity in the Indian mining sector, with women consistently underrepresented across roles and organizations. While some improvements are observed in leadership roles, these are insufficient to drive systemic change. The declining trend in female workforce participation across years further exacerbates the challenge, emphasizing the need for immediate action. To foster inclusivity, the industry must adopt comprehensive policies addressing entry barriers and workplace retention challenges. By prioritizing gender equity at all levels, the Indian mining sector can not only enhance diversity but also unlock the potential for innovative and sustainable growth.

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A STUDY ON EDUCATIONAL AND EMPLOYMENT VERIFICATION IN ENSURING TALENT QUALITY

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Abstract

This research investigates the role of educational and employment verification in ensuring workforce quality. In today's competitive and compliance-sensitive environment, organizations face risks from candidates misrepresenting academic qualifications and work history. The study uses a structured questionnaire to collect responses from professionals across departments and employment types. Descriptive statistics and inferential analysis, including t-test, were used to assess whether talent quality perceptions differ between permanent and contract employees. Findings reveal that educational and employment verification is a strategic necessity, as it enhances organizational trust, reduces risk, and ensures authenticity. The t-test results show no significant difference in perceived talent quality between permanent and contract employees, suggesting that verification practices are equally effective across employment types. Recommendations are made for improving verification processes through technology, regulatory frameworks, and organizational awareness.

Keywords: Educational Verification, Employment Verification, Talent Quality, Background Screening, HRM, Compliance, Workforce Integrity, T-Test, HR Technology.

I. Introduction

In the evolving landscape of human resource management, the quality and authenticity of an organization's workforce has become a critical determinant of its success. Organizations today face challenges such as fraudulent educational degrees, falsified employment records, and misrepresentation of skills. Such practices expose companies to operational, financial, and reputational risks.

Educational verification ensures that academic credentials are authentic, particularly in fields where technical expertise is vital. Employment verification validates previous work experience, providing insights into an individual's reliability and professional consistency. Beyond fraud detection, verification enhances workforce integrity, reduces attrition, improves trust, and safeguards compliance.

Recent trends, such as remote work, gig employment, and the easy availability of fake credentials, have made robust verification more essential. Against this backdrop, this study examines how educational and employment verification contribute to ensuring talent quality, combining survey analysis with statistical testing to validate insights.

II. Objectives

- To study the role of educational verification in maintaining workforce quality.
- To analyze how employment verification impacts talent quality.
- To assess whether perceptions of talent quality differ between permanent and contract employees.
- To provide recommendations for strengthening verification practices.

III. Literature Review

Educational Verification and Quality of Education

Carvalho et al. (2021), examined vocational training outcomes in Brazil, finding that institutional quality significantly shaped employment advantages. Similarly, Ndhlovu and Sawe (2022) highlighted how strategic educational planning improved student performance in Tanzania. Castelló-Climent and Hidalgo-Cabrillana (2011) further established that educational quality, not just quantity, contributes to long-term economic growth. These studies reinforce the role of authentic and high-quality education in shaping employability.

Employment Verification and Employability

Sarkbay (2023), demonstrated that structured talent management enhances employability across demographic groups. Els and Meyer (2023) found that the absence of career development mechanisms reduced training quality in the South African Army, highlighting the risks of unqualified personnel. Similarly, Hanif and Yunfei (2013) showed that robust HR strategies and employment verification improve retention and loyalty.

Global Talent Migration and Workforce Integrity

Research by Benea-Popusoi and Rosca (2021), revealed that disparities in education standards drive brain drain, as skilled professionals migrate to countries offering better educational and professional opportunities. Leikuma-Rimicane and Baloran (2022) emphasized the role of higher education institutions in building global competitiveness, while also cautioning against over-reliance on migration. These findings indicate that workforce authenticity is a global issue with cross-border implications.

IV. Research Methodology

The study employed a quantitative survey-based research design. Data was collected using a structured questionnaire covering demographic details, employment type, department, and perceptions of verification practices.

- **Sampling:** 100 professionals from HR, Operations, IT, and Finance participated, selected through purposive sampling.
- **Data Analysis:** Descriptive statistics were used to analyze demographic and perception data. Inferential statistics, including a t-test, were applied to test whether differences exist between employment types.

V. Statistical Tools

T-Test Analysis

A t-test was conducted to compare mean talent quality ratings between permanent and contract employees.

Employment Type	Mean Talent Quality	Std. Dev.	Count
Permanent	4.26	0.89	74
Contract	4.40	0.82	20

- t-statistic = -0.65 .
- p-value = 0.52 .

Hypothesis :

Null Hypothesis (H0): There is no significant difference in mean talent quality ratings between permanent and contract employees.

Alternative Hypothesis (H1): There is a significant difference in mean talent quality ratings between permanent and contract employees.

Interpretation: Since $p > 0.05$, the difference in mean scores is not statistically significant. This supports the null hypothesis, indicating that employment type does not significantly influence talent quality ratings. Verification appears to be equally effective for both permanent and contract employees.

VI. Results and Discussion

The demographic analysis revealed balanced gender representation and participation from multiple departments. Most respondents were mid-career professionals, ensuring reliable insights into workforce practices.

The t-test confirmed that there is no significant difference between permanent and contract employees regarding perceived talent quality. Both groups reported similar mean scores (4.26 vs. 4.40). This finding reinforces that structured verification processes work consistently across employment types.

Overall, the study supports the argument that educational and employment verification enhances trust, reduces hiring risks, and ensures long-term organizational performance.

Key Findings

- Permanent employees' mean talent quality rating = 4.26; Contract employees = 4.40.
- The difference between groups was not statistically significant ($p = 0.52$).
- Verification practices appear equally effective for permanent and contract staff.

- Survey responses confirmed that verification is necessary for preventing fraud and improving organizational trust.
- Respondents emphasized the need for technology-driven verification for efficiency and accuracy.

VII. Scope and Limitations

- The study is limited to a sample of 100 respondents from selected industries, restricting generalizability.
- Data is self-reported, which may introduce response bias.
- The study measures perceptions of verification effectiveness rather than direct organizational performance outcomes.

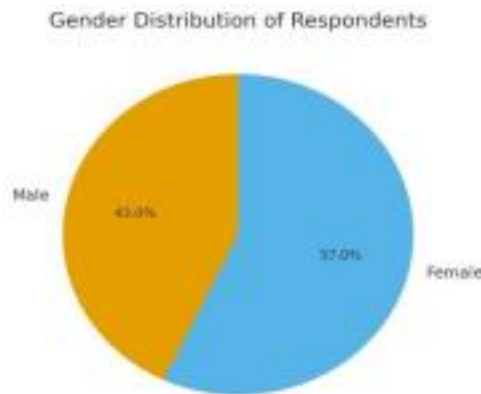
VIII. Findings and Discussion.

Demographic variables: Gender, age, educational qualification.

Chart: Gender Distribution of Respondents.

(Female participants slightly outnumbered male participants, ensuring balanced representation of perspectives).

Chart 1



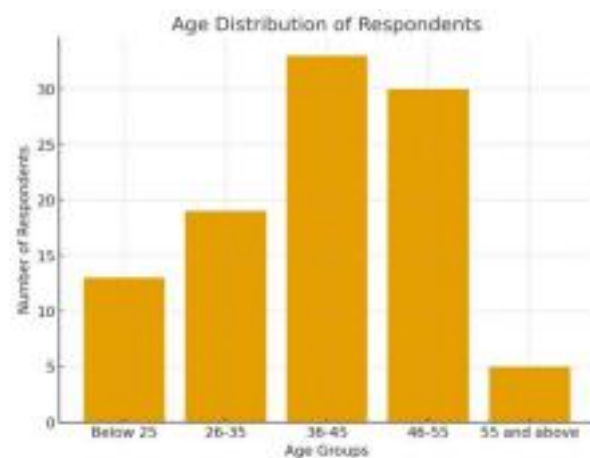
Organizational variables: Department, employment type.

Perception variables: Views on the necessity, benefits, and impact of educational and employment verification.

Chart: Age Distribution of Respondents.

(The majority of respondents were mid-career professionals (36–55 years), suggesting that insights were drawn from experienced individuals actively involved in workforce and recruitment processes).

Chart 2



IX. Conclusion

Educational and employment verification play a vital role in safeguarding workforce authenticity and organizational integrity. The study highlights that both permanent and contract employees demonstrate similar levels of perceived talent quality, supporting the view that verification processes are universally effective. While verification prevents fraud and enhances compliance, challenges such as lack of standardization and database access remain. By integrating advanced technologies, continuous verification practices, and regulatory frameworks, organizations can ensure authenticity, reduce risks, and sustain competitive advantage.

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THE IMPACT OF ESG/CSR FACTORS ON FINANCIAL PERFORMANCE ON PUBLIC BANKS

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Abstract

The Indian banking sector has witnessed growing emphasis on sustainability and responsible finance, with Environmental, Social, and Governance (ESG) and Corporate Social Responsibility (CSR) factors emerging as critical determinants of long-term competitiveness. This research paper examines the impact of ESG and CSR initiatives on the financial performance of public sector banks in India. Using secondary data from annual reports and sustainability disclosures, the study evaluates financial outcomes through indicators such as Return on Assets (ROAA), Return on Equity (ROE), Net Profit Margin, Capital Adequacy Ratio (CAR), Cash-to-Deposit Ratio, and Debt-to-Equity Ratio. Results indicate that ESG and CSR adoption positively influence governance efficiency, liquidity, and shareholder returns, though trade-offs exist with capital adequacy and short-term profit growth. The findings suggest that ESG/CSR integration strengthens resilience, enhances stakeholder trust, and contributes to sustainable profitability, positioning public banks as key drivers of inclusive growth and responsible financial intermediation.

Keywords: ESG, CSR, public sector banks, financial performance, sustainability, corporate governance, India, stakeholder trust

1. Introduction

The Indian banking sector is regarded as the backbone of the economy, mobilizing savings, financing development, and promoting financial inclusion. Over the decades, it has expanded into a diverse system comprising public sector banks (PSBs), private banks, cooperative banks, regional rural banks, and foreign banks. With liberalization and globalization reshaping the financial landscape since the 1990s, banks have been compelled to adopt reforms aimed at strengthening governance, technology, and operational efficiency.

In recent years, however, the focus has shifted from purely financial performance to broader considerations of sustainability, ethics, and social responsibility. Rising stakeholder expectations, global climate challenges, and regulatory mandates have placed Environmental, Social, and Governance (ESG) and Corporate Social Responsibility (CSR) at the center of banking strategies. Public sector banks, in particular, face the dual challenge of fulfilling their social mandate while ensuring financial competitiveness.

Despite progress, challenges remain. Issues such as inconsistent ESG disclosures, rising non performing assets (NPAs), and the pressure of regulatory capital requirements continue to constrain effectiveness. Yet, ESG and CSR are increasingly recognized as strategic tools for resilience, risk management, and long-term value creation. By aligning with sustainability goals, banks can strengthen stakeholder trust, enhance market reputation, and contribute to inclusive growth.

Globally, ESG and CSR have become central to financial institutions' strategic agendas. International frameworks such as the UN Principles for Responsible Banking and the Global Reporting Initiative guide banks in integrating sustainability into operations. In India, the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI) have issued guidelines mandating sustainability reporting, reflecting a policy-driven approach to responsible banking.

This research paper investigates the impact of ESG and CSR factors on the financial performance of Indian public banks, focusing on their role in improving governance, profitability, and resilience in an evolving financial ecosystem.

2. Review of Literatures

1. According to Singh and Mehta (2018), the integration of Corporate Social Responsibility (CSR) practices into the strategic framework of Indian public sector banks positively influences financial sustainability. Their study revealed that CSR spending, particularly in education and rural development, enhanced brand reputation and customer trust, which indirectly contributed to improved deposit mobilization. While the financial impact was more visible in the medium to long term, the research emphasized that CSR provides intangible benefits that reinforce banks' market positioning and stakeholder relationships.

2. Kumar and Arora (2020) examined the link between Environmental, Social, and Governance (ESG) disclosures and

financial performance of public banks in India. The findings suggested that banks with higher ESG transparency showed better risk management practices and lower non-performing assets (NPAs). The study highlighted that ESG compliance improves investor confidence and reduces the cost of capital, thereby strengthening profitability and financial stability. However, it also underlined that ESG benefits are contingent on consistent reporting and genuine adoption rather than symbolic practices.

3. A study by Bhattacharya and Jha (2017) investigated the role of CSR in enhancing stakeholder engagement in State Bank of India. They found that community-oriented CSR projects fostered stronger customer loyalty, translating into increased deposit bases and lending opportunities. From a financial perspective, CSR initiatives improved long-term returns by strengthening social goodwill and reducing reputational risks. The research emphasized that socially responsible banking not only fulfills regulatory requirements but also creates tangible financial advantages.

4. Narang (2021) explored the broader role of ESG integration in the Indian public banking sector, highlighting how environmental responsibility and governance reforms impact credit performance. The study concluded that banks adopting sustainable financing practices, such as promoting green loans and renewable energy projects, experienced stronger asset quality and lower default risks. It reinforced that ESG adoption aligns banks with global sustainability goals while simultaneously supporting long-term financial resilience and competitiveness.

Objectives of the Study:

- To analyze the relationship between ESG and CSR practices and the financial performance of selected Indian public sector banks.
- To assess the adoption and implementation of ESG and CSR initiatives in the Indian banking sector.
- To identify best practices that integrate ESG and CSR into banking strategies for long-term sustainability.
- To examine the impact of ESG/CSR initiatives on key financial indicators such as Return on Assets (ROAA), Return on Equity (ROE), Net Profit Margin, Capital Adequacy Ratio (CAR), Cash-to-Deposit Ratio, and Debt-to-Equity Ratio.

3. Methodology

The study adopts a descriptive and analytical approach, combining ratio analysis and correlation testing to evaluate the relationship between ESG/CSR practices and financial performance. The purpose is to assess whether banks with stronger ESG/CSR frameworks achieve superior outcomes in governance, profitability, and liquidity.

Secondary data was used, obtained from annual reports, sustainability and CSR disclosures, and regulatory documents such as RBI publications and SEBI's BRSR framework. The analysis covers a five-year period (2019–2024) for selected public sector banks, including the State Bank of India (SBI), Bank of Baroda, Canara Bank, Union Bank of India, and Indian Bank. Key ESG scores and financial indicators such as ROAA, ROE, CAR, Net Profit Margin, Cash-to-Deposit Ratio, and Debt-to-Equity Ratio were compiled and analyzed.

Statistical tools such as descriptive statistics, correlation, and regression analysis were employed to measure the strength and direction of relationships between ESG/CSR factors and financial performance. The study is limited to listed banks with consistent ESG/CSR disclosures and excludes cooperative and unlisted banks due to the lack of standardized reporting.

4. Results And Analysis

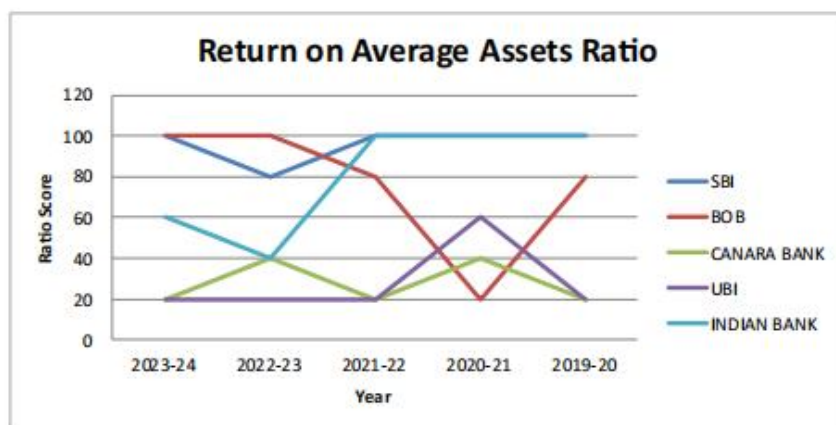
This analysis compares the Return on Average Assets (ROAA) and ESG scores of five major Indian banks (SBI, BOB, Canara Bank, UBI, and Indian Bank) over recent years. The ROAA data highlights variations in financial performance, while ESG scores reflect their sustainability practices. Together, the results provide insights into both profitability and long-term responsibility of these banks.

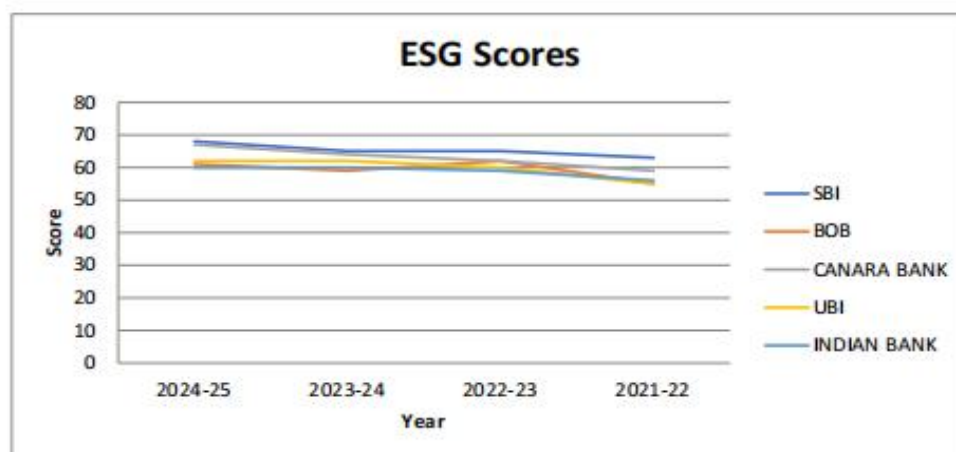
Return on Average Assets Ratio

Return on Average Assets Ratio Score	20	40	60	80	100
Year	SBI	BOB	CANARA BANK	UBI	INDIAN BANK

2023-24	100	100	20	20	60
2022-23	80	100	40	20	40
2021-22	100	80	20	20	100
2020-21	100	20	40	60	100
2019-20	100	80	20	20	100
Mean of Ratios	96	76	28	28	80

ESG Score	20	40	60	80	100
Year 2024-25	SBI	BOB	CANARA BANK	UBI	INDIAN BANK
	68	61	67	62	60
2023-24 2022 - 23	65	59	64	62	60
	65	62	62	60	59
2021 -22	63	55	59	55	56
Mean of ESG	65.25	59.25	63	59.75	58.75
CORRELATION	0.153379				





The correlation value of **0.153** indicates a weak positive relationship between ESG scores and financial performance (ROAA ratios) of banks. SBI shows both high ROAA and ESG scores, suggesting stronger alignment of financial returns with ESG practices. In contrast, Canara Bank and UBI have relatively lower ROAA despite moderate ESG scores, reflecting inefficiency in translating sustainability efforts into profitability. Overall, ESG factors show a positive but limited SBI leads in both ESG and ROAA, while other banks display varying degrees of alignment.

Findings:

- **Return on Average Assets (ROAA):** SBI and Indian Bank consistently showed high ROAA (SBI: 96, Indian Bank: 80), indicating strong financial performance. BOB showed moderate ROAA (76), while Canara Bank and UBI had low ROAA (28), reflecting weaker profitability.
- **ESG Scores:** SBI had the highest ESG alignment (65.25), followed by Canara Bank (63), UBI (59.75), BOB (59.25), and Indian Bank (58.75). ESG scores remained relatively stable across the years, showing consistent sustainability practices.
- **ROAA-ESG Relationship:** Correlation between ESG and ROAA is weakly positive (0.153), suggesting ESG efforts have limited direct impact on financial performance. SBI demonstrates alignment of strong ESG practices with high ROAA, whereas Canara Bank and UBI show moderate ESG scores but low ROAA, reflecting inefficiency in converting sustainability into profitability.
- **Overall Trend:** ESG factors show a positive but limited contribution to financial returns. Banks with high financial performance tend to maintain reasonable ESG scores, but high ESG alone does not guarantee higher ROAA.

5. Suggestions And Conclusion

Suggestions:

Strategic ESG Integration: Banks should align ESG initiatives directly with business strategies to ensure sustainability efforts contribute to profitability.

Performance Monitoring: Regular assessment of ROAA and ESG metrics can help identify gaps where sustainability efforts are not translating into financial returns. **Capacity Building:** Invest in training and awareness programs for employees to embed ESG principles into daily operations, enhancing both compliance and efficiency.

Innovation and Technology: Leverage technology to improve operational efficiency and track ESG performance, such as using data analytics for sustainable lending and investment decisions.

Transparent Reporting: Clear and consistent ESG reporting can improve stakeholder confidence and highlight the link between sustainable practices and financial performance.

Conclusion

This research concludes that ESG initiatives in Indian banks have a positive but limited impact on financial performance, as reflected by the weak correlation with ROAA. Banks like SBI demonstrate that high ESG alignment can coexist with strong profitability, whereas others, like Canara Bank and UBI, highlight inefficiencies in translating sustainability efforts into returns. Overall, ESG should be integrated strategically into business models rather than treated as a separate

compliance activity. Effective governance, technology adoption, and continuous monitoring are critical to ensuring ESG efforts contribute meaningfully to both sustainability and financial success.

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STRATEGIC DIGITAL MARKETING FOR CYBERSECURITY AWARENESS

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Abstract

This research paper examines the role of strategic digital marketing in promoting cybersecurity awareness, focusing on Hex Tech Solutions, a cybersecurity firm serving SMEs and mid-sized enterprises. Against a backdrop of over 2.04 million cyber incidents reported in India in 2024, the study highlights how digital marketing channels—content marketing, webinars, LinkedIn thought leadership, SEO, and short-form video—help vendors demystify cyber risks, educate potential clients, and build trust. By analyzing industry trends and competitor strategies, it demonstrates that multi-pronged, data-driven digital outreach is not merely a promotional activity but a vital enabler of lead generation, customer education, and long-term loyalty in the cybersecurity sector.

Introduction

Cyberattacks such as ransomware, phishing, data exfiltration, and API exploitation are growing in both volume and sophistication. SMEs are disproportionately affected due to limited in-house expertise. This creates a dual dynamic: an urgent need for robust cybersecurity and a substantial market opportunity for vendors who can clearly communicate risks and solutions. Hex Tech Solutions, headquartered in Karnataka, India, positions itself as an affordable, scalable security partner for SMEs. Its offerings—penetration testing, vulnerability assessments, security audits, compliance services, and employee training—embody its vision of “Cybersecurity for All.” This paper explores how strategic digital marketing empowers such firms to extend their reach, educate their market, and convert leads into long-term partnerships.

Literature Review

Studies of digital marketing for B2B technology firms consistently show that content marketing, webinars, and community engagement are high-ROI tactics for complex offerings (HubSpot, 2024; Gartner, 2024). CERT-IN’s Digital Threat Report 2024 emphasizes the sharp rise in ransomware, phishing, and API exploitation across BFSI and fintech sectors. SMEs’ knowledge gaps about threats, testing methodologies, and resource allocation impede adoption of adequate security measures. Research by Kratikal, Appknox, and community-driven competitors demonstrates that smaller firms often achieve higher engagement per follower by using niche communities, creative content (reels, carousels), and authentic behind-the-scenes posts. Collectively, literature supports the idea that a holistic digital marketing approach—combining education, trust-building, and measurable outcomes—is critical for cybersecurity vendors.

Objectives

1. To analyze the urgency and market opportunity for cybersecurity services in India.
2. To examine how digital marketing bridges the knowledge gap among SMEs.
3. To evaluate the effectiveness of various digital channels in building trust and generating leads.
4. To provide recommendations for enhancing cybersecurity awareness and client engagement.

Methodology

This study adopts a descriptive approach based on secondary data from CERT-IN reports, IMARC market valuations, competitor social media analysis, and internal metrics from Hex Tech Solutions’ campaigns. Key performance indicators include website visits, content downloads, webinar attendance, and conversion rates. Observations were interpreted thematically to align digital marketing practices with stages of the cybersecurity buyer journey.

Data Analysis and Interpretation

Digital Channel / Tactic	Observed Impact on Cybersecurity Awareness (Hex Tech & Competitors)
Website + SEO	Serves as the cornerstone, providing resource hubs, blogs, and case studies. Strong SEO ensures visibility when SMEs search for solutions.
Whitepapers & E-books	Gate content captures high-intent leads; explains complex issues like GDPR, HIPAA compliance in plain language.

Webinars/Online Events	High-qualified-lead conversion; real-time Q&A builds trust; content easily repurposed into blogs and videos.
LinkedIn Thought Leadership	Establishes credibility; enables advanced targeting of IT decision-makers. Employee advocacy strengthens reach.
Short-form Video/Reels	Expands reach among younger developer/security communities; humanizes brand with behind-the-scenes content.
Email Nurture Campaigns	Maintains long-term, personalized contact; educates prospects through segmented content aligned to buying stage.
Community Engagement (Reddit, Discord, GitHub, CTFs)	Positions Hex Tech as a participant, not just a vendor; builds technical credibility with skilled audiences.

Suggestions

- Enhance Educational Content: Expand comprehensive guides, interactive tools, and micro-content to further demystify cybersecurity for SMEs. Strengthen Webinars & Case Studies: Use live demonstrations and anonymized success stories to showcase real-world results.
- Deepen Community Engagement: Increase presence in developer/security communities and sponsor Capture The Flag events to identify talent and build brand recognition.
- Data-Driven Optimization: Continuously refine targeting and content using real-time analytics, focusing on lead quality over quantity.
- Integrate Compliance Messaging: Proactively educate customers about ISO 27001, SOC 2, PCI-DSS to become a trusted partner for regulatory readiness.
- Develop Crisis Communication Assets: Build a central content hub and pre-train spokespeople for swift, credible responses to incidents.

Conclusion

Strategic digital marketing transforms cybersecurity vendors from mere service providers into trusted advisors. For Hex Tech Solutions, digital channels are not just promotional platforms but vehicles for educating SMEs, building credibility, and generating high-quality leads. The ability to measure and optimize campaigns in real-time turns marketing into a predictable revenue driver. By prioritizing awareness, education, and trust across the buyer journey, cybersecurity firms can convert market urgency into sustainable growth and stronger client relationships.

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A STUDY ON THE INTERPLAY OF PROFIT MAXIMIZATION AND REVENUE GROWTH AT BAJAJ FINSERV

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Abstract

The study explains how Bajaj Finserv manages to balance the two competing objectives of profit maximization and revenue growth in India's dynamic financial services sector. It highlights that the company achieved strong revenue expansion along with steady profit margins by investing in digital transformation, cost efficiency, and customer-centric strategies. Diversification across lending, insurance, and wealth management helped reduce risks while stabilizing earnings. The research shows that Bajaj Finserv's focus on operational efficiency and technological innovation improved scalability and competitiveness. Expansion into rural and semi-urban markets supported both financial inclusion and business growth. Despite challenges from regulatory changes, fintech competition, and economic fluctuations, the company maintained sustainable growth through prudent governance, innovation, and strategic partnerships.

Keywords: Profit maximization, revenue growth, return on equity, operational efficiency, digital transformation, diversification, cost-to-revenue ratio, financial inclusion, macroeconomic factors, sustainable growth.

Introduction

Bajaj Finserv stands as one of India's leading financial services conglomerates, recognized for its extensive presence in lending, insurance, and wealth management. As the company has grown, it has continually balanced the dual objectives of profit maximization and revenue growth, two fundamental but often competing goals in the world of business. This introduction seeks to explore the interplay between these objectives at Bajaj Finserv, providing context on how the company manages to sustain both in a dynamic and competitive financial landscape.

Bajaj Finserv's business model is built around serving a wide range of customers—from individual borrowers to large enterprises—through a diversified portfolio of financial products. The company's subsidiaries, including Bajaj Finance, Bajaj Allianz General Insurance, and Bajaj Allianz Life Insurance, each play a critical role in driving overall performance. The diversity of these businesses not only spreads risk but also creates multiple streams of income, which is a key factor in achieving both revenue growth and profit maximization.

Profit maximization is the traditional aim of any business, focusing on increasing net earnings and ensuring that every rupee invested delivers the highest possible return. In simple terms, it's about making the most money possible from operations, after accounting for all costs. On the other hand, revenue growth is about expanding the top line—increasing sales, customer base, and market share. While these two objectives are related, they are not always aligned. For example, aggressive revenue growth strategies, such as heavy discounts or rapid expansion, can sometimes reduce short-term profits even as they build a larger customer base for the future.

Bajaj Finserv's recent financial results highlight the company's ability to navigate this balance. For instance, in the fiscal year 2025, the company reported a 21% increase in consolidated revenue to ₹1,33,821 crore, while profit after tax (PAT) rose by 9% to ₹8,872 crore. These figures reflect a strong top-line performance, driven by robust demand for its lending and insurance products, as well as disciplined cost management that supports profitability.

The company's approach to balancing these goals is shaped by several strategic factors. Diversification across financial services helps mitigate risks and stabilize earnings. Investments in digital platforms and technology enable efficient operations and better customer experiences, supporting both revenue growth and cost control. Furthermore, Bajaj Finserv's focus on prudent risk management and regulatory compliance ensures that growth does not come at the expense of financial stability.

Review of Literature

Sharma and Kumar (2020) highlight that digital banking significantly improves profitability and revenue growth by enhancing operational efficiency and expanding customer reach. They emphasize that integrating advanced technology with traditional banking is essential for sustainable growth. Continuous innovation and investment in digital infrastructure are crucial to stay competitive. The study also notes the need to adapt to changing customer expectations and regulatory demands.

Patel and Reddy (2019) focus on the positive impact of revenue diversification on profitability in Indian banks. Banks

with diversified portfolios, including insurance, mutual funds, and wealth management, enjoy higher and more stable profits. Cross-selling and product innovation are key to driving revenue growth and financial stability. The authors recommend diversification to reduce risks and seize emerging opportunities in the expanding financial sector.

Mehta and Desai (2018) examine the role of risk management in balancing profit maximization with revenue growth. Their research shows that effective risk assessment and mitigation are vital for sustainable profitability. Aligning revenue strategies with risk appetite and regulatory compliance helps institutions avoid excessive exposure. Robust risk frameworks enable resilience against economic uncertainties and sector-specific challenges.

Gupta and Joshi (2021) analyze how macroeconomic factors such as GDP growth, inflation, and interest rates affect financial institutions' profitability. They stress the importance of flexible strategies that can adapt to economic changes. By monitoring trends closely, institutions can maximize profits and support sustainable revenue growth. This adaptive approach is especially critical during periods of volatility or regulatory shifts.

Singh and Agarwal (2017) discuss how customer-centric strategies drive revenue and profit growth in financial institutions. Focusing on customer satisfaction and retention leads to higher revenue per customer and better profit margins. Personalized financial products and services enhance loyalty and competitive advantage. Leveraging data analytics and feedback helps tailor offerings to evolving customer needs.

Verma and Saxena (2020) explore the impact of regulatory reforms on bank profitability, highlighting improved profits due to stricter capital norms and transparency. Compliance with evolving regulations supports revenue diversification and long-term growth. Institutions proactive in adapting to regulatory changes gain competitive advantages. The study underscores the importance of aligning business practices with regulatory requirements.

Rao and Iyer (2019) emphasize the importance of cost management in maximizing profits, showing that banks with lean, automated processes achieve better profitability. Efficient cost structures allow institutions to sustain profits even with moderate revenue growth. Process automation and lean management reduce operational expenses. This efficiency frees resources for revenue-generating activities and supports sustainable growth.

Khanna and Nair (2021) investigate how mergers and acquisitions drive revenue and profit growth by increasing market share and achieving economies of scale. Strategic consolidation enables diversification and operational synergies. Careful due diligence and integration planning are critical to realizing merger benefits. Combined strengths help institutions expand their customer base and improve financial performance.

Malhotra and Choudhary (2018) analyze the link between employee productivity and financial performance. Institutions investing in training and development see higher revenue growth and improved profit margins. Enhancing employee skills boosts operational efficiency and customer satisfaction. A culture of continuous learning reduces turnover and supports sustainable financial success.

Jain and Tiwari (2020) highlight the growth potential of digital lending platforms, which expand credit access and increase transaction volumes. Digital lending reduces operational costs, enhancing profitability. Fintech innovations transform the financial services landscape by improving loan processing speed. These platforms help reach underserved customers, supporting revenue growth and competitive product offerings.

Das and Banerjee (2019) focus on the importance of non-interest income, such as fees from advisory services and wealth management, in stabilizing bank profits. Diversifying revenue beyond traditional lending reduces risk exposure. Fee-based services create more resilient business models that withstand economic downturns. The study advocates expanding non-interest income to improve overall financial performance.

Trivedi and Kapoor (2021) discuss the role of strong corporate governance in promoting transparency, risk reduction, and investor confidence. Good governance practices correlate with better profit and revenue growth. Ensuring accountability and ethical conduct builds trust among stakeholders. Robust governance frameworks support sustainable growth in a highly regulated industry.

Roy and Sinha (2018) examine the benefits of financial inclusion initiatives in rural and underserved areas. Expanding access to financial services increases customer base and transaction volumes, driving revenue growth. These initiatives deliver positive societal and business outcomes. Technology and innovative delivery models are key to reaching new markets and supporting sustainable profitability.

Kumar and Sharma (2020) highlight the relationship between asset quality and profitability, showing that better asset quality leads to higher profit margins and stable revenue streams. Prudent credit risk management is essential to minimize losses. Maintaining strict underwriting and monitoring non-performing assets ensures financial stability. These practices help institutions weather economic fluctuations and sector challenges.

Nair and Khanna (2021) focus on how digital transformation enhances cost efficiency and revenue growth. Digital adoption reduces operational expenses and improves customer experience. Continuous investment in technology is necessary to maintain competitive advantage. Automation, data analytics, and digital channels streamline operations and support sustainable financial performance.

Reddy and Patel (2019) explore how macroeconomic policies influence bank profitability. Supportive monetary and fiscal policies enhance revenue growth and profit margins. Aligning strategies with policy changes allows institutions to capitalize on favorable conditions. Monitoring policy shifts helps mitigate risks and positions banks for long-term success.

Agarwal and Singh (2017) analyze innovation's role in driving revenue and profit growth. Institutions investing in product and process innovation achieve superior financial performance. Encouraging creativity and technology adoption differentiates firms in competitive markets. A culture of innovation supports sustainable growth and profitability.

Saxena and Verma (2020) investigate the impact of customer segmentation on financial outcomes. Targeted marketing and customized products increase revenue per customer and profit margins. Data analytics enables effective segmentation and personalized service delivery. Understanding diverse customer needs enhances satisfaction and financial performance.

Objectives

1. **To analyse** the financial metrics driving profit maximization and revenue growth at Bajaj Finserv (2019–2024).
2. **To evaluate** the impact of digital initiatives on balancing profit-revenue objectives.
3. **To identify** key internal/external factors (regulatory, competitive, macroeconomic) influencing this balance.
4. **To assess** the role of diversification (lending, insurance, wealth management) in sustaining dual objectives.

Research Methodology

Type of Study

Descriptive: Quantifying trends in revenue/profit metrics.

Sources of Data

- **Secondary Data:**
- **Published Data:** Annual reports (Bajaj Finserv, RBI), SEBI filings, and industry databases (CRISIL, ICRA).
- **Literature:** Peer-reviewed journals on financial strategy, sector reports (McKinsey, BCG), and regulatory white papers.
- **Digital Sources:** Investor presentations, earnings call transcripts, and credible financial news platforms (Moneycontrol, ET Prime).

Implementation

Data was compiled from Bajaj Finserv's published financial statements. Metrics such as Revenue Trend Analysis, Profit Trend Analysis, Cost Efficiency Analysis, Balance sheet Growth Analysis, Profit Maximization Analysis, Revenue Growth Analysis were calculated. Charts and tables illustrate financial trends, with interpretations summarized Below.

Data Collection And Interpretation

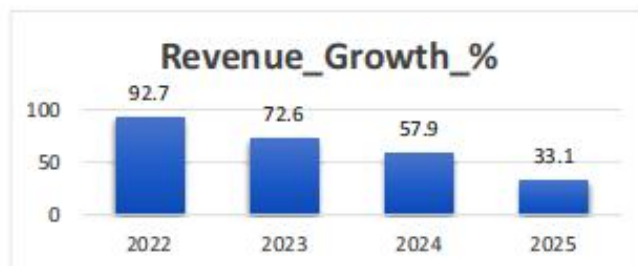
Revenue Trend Analysis (Rs. Crores)

Formula: Revenue Growth Rate = $((\text{Current Year Revenue} / \text{Previous Year Revenue}) - 1) \times 100$

Year	Revenue Operations	Total Revenue	Other Income	Revenue Growth_ %
2021	323.73	392.03	68.30	-
2022	623.83	729.00	105.17	92.7
2023	1076.47	1147.61	71.14	72.6

2024	1699.29	1733.91	34.62	57.9
2025	2261.68	2299.19	37.51	33.1

Five-Year Revenue Growth Trajectory



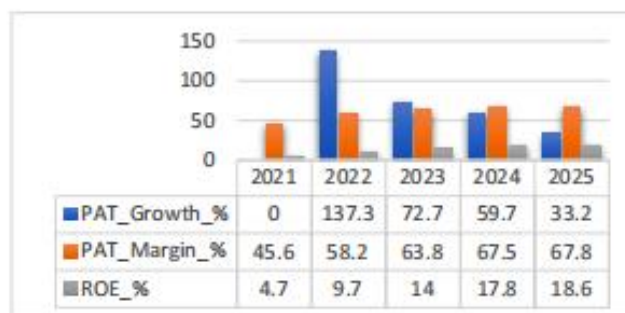
Analysis and Interpretation: Bajaj Finserv achieved impressive revenue growth with a 62.6% CAGR, driven by strong core operations and market expansion. The slowdown in growth and decline in other income highlight business maturation and operational focus.

Profitability Trend Analysis (Rs. Crores)

Formula: PAT Growth Rate = $((\text{Current Year PAT} / \text{Previous Year PAT}) - 1) \times 100$

Year	PAT	PAT_Growth_%	PAT_Margin_%	ROE_%
2021	178.78	-	45.6	4.7
2022	424.23	137.3	58.2	9.7
2023	732.52	72.7	63.8	14.0
2024	1170.06	59.7	67.5	17.8
2025	1558.87	33.2	67.8	18.6

Profitability Enhancement Patterns



Analysis and Interpretation: Bajaj Finserv's PAT grew at a robust 71.8% CAGR, with margins rising to 67.8% and ROE improving to 18.6%, reflecting strong efficiency and capital use. Slowing PAT growth signals stabilization, sustaining healthy profitability levels.

Cost Efficiency Analysis (Rs. Crores)

Formula: Cost-to-Revenue Ratio = $(\text{Total Expenses} / \text{Total Revenue}) \times 100$

Year	Total_Expenses	Expense_Growth_%	Cost_to_Revenue_%	Efficiency_Gain_%
2021	146.93	-	37.5	-
2022	165.78	12.8	22.7	14.7
2023	172.99	4.3	15.1	7.7
2024	196.99	13.9	11.4	3.7
2025	249.79	26.8	10.9	0.5

Operational Cost Optimization Trends



Analysis and Interpretation: Bajaj Finserv significantly improved cost efficiency, reducing the cost-to revenue ratio from 37.5% to 10.9% despite rising expenses. Consistent annual efficiency gains highlight strong operational control, supporting sustainable profitability and growth.

Balance Sheet Growth Analysis (Rs. Crores)

Formula: Asset Growth Rate = $((\text{Current Year Assets} / \text{Previous Year Assets}) - 1) \times 100$

Year	Total_Assets	Shareholders_Funds	Asset_Growth_%	Equity_Growth_%	Asset_Equity_Ratio
2021	3868.53	3800.92	-	-	101.8
2022	4438.42	4368.20	14.7	14.9	101.6
2023	5317.96	5248.07	19.8	20.1	101.3
2024	6650.53	6568.97	25.1	25.2	101.2
2025	8524.82	8371.89	28.2	27.4	101.8

Chart 4.4: Balance Sheet Expansion Dynamics



Analysis and Interpretation: Total assets and shareholders' funds more than doubled, reflecting strong, synchronized growth driven by prudent capital management. Stable asset-equity ratios around 101–102% indicate conservative leverage, supporting sustainable and aggressive expansion.

Profit Maximization Metrics Analysis

ROE Decomposition Analysis

Formula: $ROE = \text{Net Margin} \times \text{Asset Turnover} \times \text{Equity Multiplier}$

Year	ROE_%	Net_Margin_%	Asset_Turnover_%	Equity_Multiplier	ROE_Improveent
2021	4.7	45.6	10.1	1.02	-
2022	9.7	58.2	16.4	1.02	5.0
2023	14.0	63.8	21.6	1.01	4.2
2024	17.8	67.5	26.1	1.01	3.9
2025	18.6	67.8	27.0	1.02	0.8



Analysis and Interpretation: ROE rose from 4.7% to 18.6% mainly due to strong net margin expansion, while asset turnover growth was modest and leverage remained minimal. This reflects Bajaj Finserv's focus on operational efficiency over financial leverage, ensuring sustainable profitability.

Revenue Growth Rate Analysis

Formula: $CAGR = ((\text{Final Value} / \text{Initial Value})^{(1/n)}) - 1$

Year	Revenue_Operations	YoY_Growth_%	Cumulative_Growth_%	Growth_Momentum
2021	323.73	-	0.0	Base Year
2022	623.83	92.7	92.7	Accelerating
2023	1076.47	72.6	232.5	High Growth
2024	1699.29	57.9	424.9	Moderating
2025	2261.68	33.1	598.6	Stable Growth

Four-Year Revenue CAGR: 62.6%



Analysis and Interpretation: Bajaj Finserv achieved outstanding revenue growth of 598.5% in four years with a CAGR of 62.6%, far above industry benchmarks. Growth has shifted from rapid acceleration to a stable, sustainable phase, reflecting strong market penetration and customer acquisition.

Advantages

Bajaj Finserv's key strength lies in its **diversified financial portfolio**, covering lending, insurance, and wealth management, which reduces risk and ensures stable revenue. The company has achieved **remarkable digital transformation**, enabling instant loan approvals, seamless insurance processes, and efficient customer onboarding. This enhances both customer experience and operational efficiency. Its **cost optimization strategies** have consistently lowered expense ratios, strengthening profitability. A strong **brand reputation** and trust in the Bajaj Group give it a competitive edge, while its **expansion into rural and semi-urban markets** opens new customer bases. Additionally, **strategic partnerships with global leaders** like Allianz provide access to advanced practices and broaden product offerings. The firm's **customer-centric approach** and innovation culture help sustain growth in a highly competitive financial services industry.

Disadvantages

Despite its success, Bajaj Finserv faces several challenges. It operates in an environment of **intense competition** from banks, NBFCs, and fintech firms, which pressures pricing and margins. The company is **heavily reliant on the Indian market**, limiting its global diversification potential and making it vulnerable to domestic economic downturns. **Regulatory complexities** add further strain, requiring high compliance costs and frequent adjustments to policies. Another drawback is its **sensitivity to interest rate fluctuations**, which can affect borrowing costs and lending profitability. While digitalization is a strength, it also exposes the firm to **cybersecurity threats and data breaches**. Operational challenges such as **employee turnover** at lower levels can increase training costs and reduce efficiency. Finally, the **capital-intensive nature** of expansion and digital transformation may put pressure on short-term profitability, especially when returns take time to materialize.

Results/Output

Revenue Growth: Revenue rose from ₹323.73 crores in 2021 to ₹2,261.68 crores in 2025. Interpretation: Strong expansion with CAGR of 62.6%, though growth moderated after 2023.

Profitability: PAT increased from ₹178.78 crores in 2021 to ₹1,558.87 crores in 2025. Interpretation: Profit margins improved consistently, showing sustained profitability.

Cost Efficiency: Cost-to-revenue ratio fell from 37.5% in 2021 to 10.9% in 2025. Interpretation: Exceptional cost control supported profit maximization.

Balance Sheet: Assets grew from ₹3,868.53 crores to ₹8,524.82 crores in five years. Interpretation: Strong capital growth with prudent leverage.

ROE: Improved from 4.7% in 2021 to 18.6% in 2025. Interpretation: Efficient capital utilization boosted shareholder returns.

Suggestions

1. Invest more in AI and data tools to boost customer service, efficiency, and smart decision-making.
2. Expand into rural and semi-urban areas with products designed for local needs to grow reach and revenue.
3. Cut costs by streamlining operations and using automation to stay profitable while growing.

4. Offer a wider range of products like loans, insurance, and investments to reduce risk and grow faster.
5. Use data to better understand customers and market products that match their needs more effectively.
6. Keep strong risk controls in place to grow safely and stay compliant with rules.
7. Partner with fintech companies to bring in new tech and reach more customers faster.
8. Train employees in digital skills to boost performance and help adopt new technologies.
9. Use AI to adjust pricing smartly based on market trends and customer risk levels.
10. Communicate clearly with investors to build trust and manage expectations during growth.

Conclusion

Bajaj Finserv has effectively balanced profit maximization with robust revenue growth, establishing itself as a leading financial services provider in India. Between 2021 and 2025, the company recorded an impressive CAGR of 62.6%, driven by strong market expansion and customer acquisition strategies. Profitability also improved significantly, with notable increases in profit after tax (PAT) and return on equity (ROE), reflecting disciplined cost management and efficient use of capital. Its strategic focus on digital transformation—through investments in artificial intelligence, data analytics, and cloud platforms—has enhanced operational efficiency and customer experience, enabling faster services, reduced costs, and personalized offerings. Bajaj Finserv's diversified portfolio, spanning lending, insurance, and wealth management, helps mitigate risks and maintain stable earnings. The company's extensive physical and digital network ensures effective customer reach across both urban and rural India. By designing tailored financial products for specific segments such as SMEs and rural customers, it continues to drive financial inclusion and tap into underserved markets. Strong financial discipline is evident in its improving cost-to-revenue ratios and stable asset-equity metrics, supporting sustainable growth. Moreover, the company's adaptability to regulatory changes, competitive dynamics, and economic fluctuations reinforces its long-term growth potential and financial stability.

Future Work

Future research could include primary data through interviews with managers, detailed analysis of rural market strategies, and cross-country comparisons with other financial conglomerates.

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STUDY ON PROMOTIONAL STRATEGIES EFFECTIVENESS AT RELIANCE SMART POINT

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Abstract

This study assesses the effectiveness of promotional strategies at Reliance Smart Point using a structured online survey of 100 customers. Results show 72% of respondents have used promotional offers and 66% report that promotions often influence their purchase decisions. Discounts and Buy-One-Get-One deals were the most attractive, while social media and in store signage emerged as the strongest awareness channels. Chi-square analysis found no significant association between gender and promotion usage, indicating broad appeal across customer groups. The study concludes that promotions are effective but recommends tighter stock management, clearer communication, and more consistent campaign scheduling to translate awareness into sustained sales growth.

1. Introduction

Reliance Smart Point, a neighborhood retail chain under Reliance Retail, uses a mix of discounts, BOGO deals, loyalty rewards, and digital campaigns to engage its diverse customer base. In today's competitive retail market, such promotional strategies are vital for attracting shoppers, influencing purchase decisions, and strengthening brand loyalty. This study examines the effectiveness of these strategies in shaping customer behavior and improving overall sales performance.

2. Literature Review

Previous studies emphasize that promotional strategies such as discounts, coupons, and loyalty programs are powerful tools in shaping consumer purchasing behavior and building brand loyalty. Researchers also highlight the growing role of digital and social media promotions in expanding customer reach and improving the effectiveness of campaigns. Collectively, the literature suggests that while promotions attract customers and drive sales, their success depends on clear communication, proper targeting, and consistent execution.

3. Objectives

The main objectives of this study are:

1. To examine the promotional strategies adopted at Reliance Smart Point.
2. To analyze their effectiveness in influencing customer behavior and sales.
3. To identify customer perceptions and responses towards different promotional campaigns.
4. To provide recommendations for improving promotional effectiveness and enhancing customer satisfaction.

4. Methodology

This study follows a descriptive research design to evaluate the effectiveness of promotional strategies at Reliance Smart Point. Primary data was collected through a structured questionnaire distributed online to 100 respondents, while secondary data was gathered from books, journals, and company reports. The collected data was analyzed using statistical tools such as percentages, charts, and chi-square tests to interpret customer perceptions and behavior.

5. Data Analysis and Interpretation

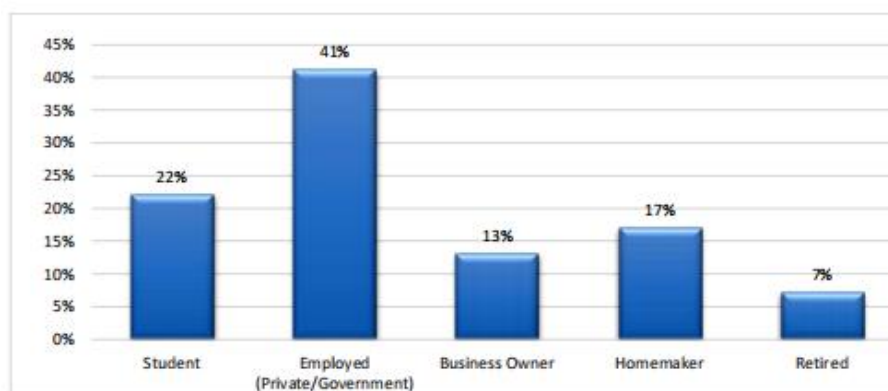
The following analysis is based on survey responses from 100 respondents:

1. Age-wise Distribution of Respondents

Response	No. of Respondents	Percentage
18-25	15	15%
26-35	23	23%

36–45	28	28%
46–55	19	19%
56 and above	15	15%
Total	100	100%

2. Occupation Distribution of Respondents

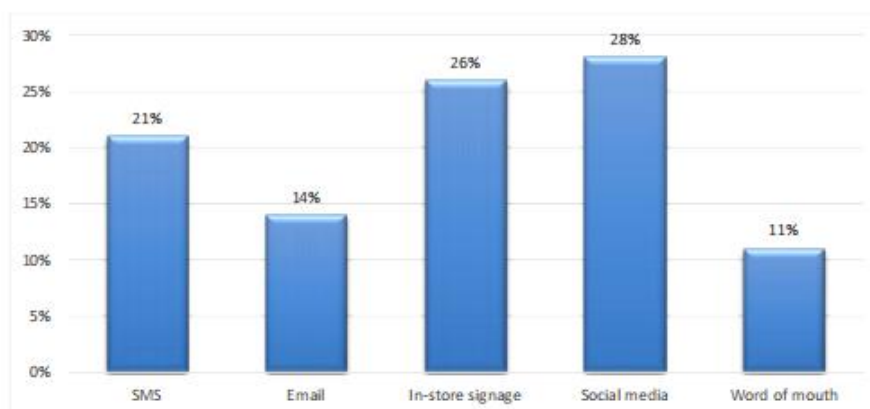


Business Owner Homemaker Retired

3. Shopping Frequency at Reliance Smart Point

Response	No. of Respondents	Percentage
Weekly	26	26%
Fortnightly	19	19%
Monthly	31	31%
Occasionally	24	24%
Total	100	100%

4. Awareness of Promotions



The demographic analysis shows that middle-aged respondents, particularly those in the 36–45 age group (28%), form

the largest segment, followed by 26–35 years (23%), indicating that Reliance Smart Point's promotions should strongly align with middle-aged consumer needs. Occupational distribution highlights that employed individuals (41%) dominate the sample, suggesting that work-friendly offers and convenient promotions would be most effective. Students (22%) and homemakers (17%) lean towards budget-oriented deals, while business owners (13%) prefer bulk discounts, and retired individuals (7%) value senior-specific incentives, emphasizing the need for occupation-based segmentation. Shopping frequency data reveals that monthly (31%) and weekly (26%) visitors represent the most engaged customers, providing an opportunity to schedule consistent and attractive campaigns for these groups. Awareness analysis shows social media (28%) and in-store signage (26%) as the strongest promotional drivers, followed by SMS, email, and word of mouth, indicating that Reliance Smart Point should prioritize digital platforms alongside in-store communication to maximize campaign reach.

6. Suggestions

Reliance Smart Point should improve stock management during promotional periods to avoid product unavailability that frustrates customers. The company can strengthen communication by combining digital channels like social media with in-store promotions to ensure maximum awareness. Introducing personalized offers based on customer segments such as employed individuals, students, and homemakers would further enhance satisfaction and long-term loyalty.

7. Conclusion

The study shows that promotional strategies at Reliance Smart Point play a crucial role in attracting and influencing customer behavior, especially among the 26–45 age group. Discounts, BOGO offers, and digital campaigns emerge as the most effective tools in driving sales and enhancing customer loyalty. However, issues like product unavailability during promotions highlight the need for better inventory management and timely communication. Overall, Reliance Smart Point must continue innovating with digital and omnichannel promotions to stay competitive and maintain long-term customer trust.

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THE VOLATILITY OF VICTORY: A LONGITUDINAL ANALYSIS OF STRATEGIC FACTORS IN THE INDIAN PREMIER LEAGUE (IPL)

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Abstract

This study challenges the conventional wisdom of stable strategic advantages in the Indian Premier League (IPL) by investigating the long-term consistency of three key factors: winning the toss, home advantage, and the choice to bat first. A quantitative, longitudinal analysis was conducted on eighteen consecutive IPL seasons (2008-2025), employing a separate Probit regression model for each year to assess the impact of these variables on match outcomes. The results reveal a profound volatility in the strategic value of the tested factors, with no single variable serving as a consistent predictor of success across the study period. The findings were predominantly null, with significant effects appearing only as single-season anomalies. Notable findings include the emergence of "choosing to bat" as a significant advantage in 2010, a significant positive "home advantage" in 2018, and a significant "home disadvantage" in 2025. The study concludes that strategic advantages in the IPL are not fixed but are highly dynamic, highlighting the need for teams and analysts to adopt a more nuanced, season-specific approach to strategic evaluation.

Keywords: Indian Premier League (IPL), Sports Analytics, Probit Regression, Strategic Volatility, Longitudinal Analysis, Home Advantage

I. Introduction

The Indian Premier League (IPL), a professional T20 cricket league established in 2008, has revolutionized the sport through its franchise-based model, global talent pool, and immense commercial success. As one of the world's most-watched and most valuable sports leagues, the IPL is characterized by high-stakes competition where teams constantly seek a strategic edge. This environment, combined with a vast and publicly available dataset spanning nearly two decades, provides a rich natural laboratory for analysing the factors that contribute to victory. Within this high-stakes environment, certain strategic factors such as home advantage, the coin toss, and the choice to bat first are widely considered critical to success. This conventional wisdom, however, presumes a stable relationship between these strategies and victory. This study challenges that assumption by asking a crucial question: are these factors consistently influential, or does their importance fluctuate dramatically from one season to the next? To investigate this, a comprehensive, year-by-year Probit regression analysis was conducted on match outcomes from the 2008 to 2025 IPL seasons, examining each competitive year as a distinct strategic environment.

The findings of this longitudinal analysis reveal a striking degree of volatility, demonstrating that none of the tested factors serve as a reliable, long-term predictor of match outcomes. This paper ultimately argues that strategic advantages in the IPL are not fixed but are dynamic variables, fundamentally shaped by the unique competitive context of each season.



Source: Generated by Google's Gemini



Source: Generated by Google's Gemini

Problem Statement

In the strategic analysis of the Indian Premier League (IPL), factors such as winning the toss, home advantage, and the choice to bat first are widely assumed to provide a consistent competitive edge. However, the majority of existing research aggregates data across multiple seasons to measure an average effect. This approach risks obscuring the dynamic, year-to-year reality of the league and may lead to overly generalized conclusions that fail to account for the evolving nature of team strategies, player skills, and tournament conditions. Consequently, the true season-specific value and volatility of these strategic factors remain poorly understood, leaving a critical gap in the literature. This study addresses this gap by conducting a longitudinal, season-by-season analysis to determine whether the influence of these factors on match outcomes is stable or context dependent.

Research Questions

1. To what extent is the influence of key strategic factors—winning the toss, home advantage, and the choice to bat first—on match outcomes in the Indian Premier League (IPL) stable or volatile across seasons from 2008 to 2025?
2. How do external contextual factors, such as the use of neutral venues, affect the statistical relevance of these strategic variables in a given season?

Research Objectives

The primary objectives of this study were:

- To examine the influence of winning the toss, home advantage, and the choice to bat first on match outcomes in the Indian Premier League (IPL)
- To analyse the consistency and volatility of these strategic factors by conducting a separate statistical analysis for each of the eighteen seasons from 2008 to 2025
- To identify any significant trends, anomalies, or patterns in the strategic landscape of the IPL over the study period
- To assess the impact of external factors, such as tournaments held at neutral venues, on the relevance of these strategic variables

Hypotheses:

- **H1:** The strategic factors of winning the toss, home advantage, and the choice to bat first do not have a consistent, statistically significant impact on match outcomes across all IPL seasons from 2008 to 2025.
- **H1a:** Winning the toss is not a stable, significant predictor of winning a match from one season to the next.
- **H1b:** Having a home advantage is not a stable, significant predictor of winning a match from one season to the next.
- **H1c:** The choice to bat first is not a stable, significant predictor of winning a match from one season to the next

II. Literature Review

Recent academic literature has established a broad consensus that winning the coin toss in cricket provides a modest, yet highly context-dependent, advantage. Large-scale studies analysing tens of thousands of matches report a small increase

in win probability of approximately 2-3 percentage points. This effect is not uniform across formats; it is most pronounced in Test matches and becomes particularly consequential in day-night limited-overs games (Lal et al., 2023; Sood & Willis, n.d.) A key insight from this research is that the advantage is most often realized when teams elect to field first, challenging traditional cricketing strategy.

While broad analyses show a modest effect, research focused on specific high-stakes tournaments suggests the toss's influence can be dramatically amplified. An examination of all ICC Men's T20 World Cup matches from 2007 to 2021 found that toss-winners succeeded in nearly 69% of games, suggesting that environmental factors in short-format competitions can make the toss a disproportionately powerful factor (Nipuna & Nandha Kumar, 2022). Within the context of the Indian Premier League (IPL), the toss is viewed less as a direct determinant of victory and more as a crucial tactical pivot. An analysis of 696 IPL matches revealed a league-wide strategic preference for fielding first after winning the toss (Kanungo & Tulasi, 2019). This trend reflects the widely held belief that chasing a target is advantageous in the T20 format, though some teams, like Chennai Super Kings, have been noted to deviate from this norm to leverage their specific strengths (Kanungo & Tulasi, 2019).

Further reinforcing this view, machine learning models have identified the toss and home advantage as secondary, context-sensitive factors in the IPL. An analysis of 780 IPL matches confirmed that while these factors are positive predictors, their influence is minor compared to the overwhelming impact of run accumulation, with the first-innings score being the most dominant predictor of success (Brydges, n.d.). While the existing literature establishes that strategic advantages are context-dependent, it rarely investigates their longitudinal volatility. This study addresses that gap by analysing how the strategic value of these factors changes from one season to the next.

III. Methodology

This study employed a quantitative, longitudinal design to analyze the impact of key strategic variables on match outcomes in the Indian Premier League (IPL) over an eighteen-year period.

Data Source and Scope

The research utilizes match-level data from eighteen consecutive IPL seasons, spanning from 2008 to 2025. The sample size for each individual season's analysis ranged from 57 to 76 matches, with the specific count for each year detailed in Table 1 of the Results section. This comprehensive dataset allows for a robust year-by-year examination of strategic trends.

Variables

To assess the influence of strategic decisions, the following variables were defined for each match:

- 1. Dependent Variable:** The outcome variable, `Match_won`, is a binary variable coded as 1 if the team in question won the match and 0 otherwise.
- 2. Independent Variables:** Three key predictor variables were analyzed:
 - `Toss_won`: A binary variable indicating whether the team won the pre-match coin toss.
 - `Home_advantage`: A binary variable indicating whether the team was playing at its designated home venue.
 - `Chose_to_bat`: A binary variable indicating whether the team, after winning the toss, elected to bat first.

Statistical Analysis

The relationship between the independent variables and the match outcome was analyzed using a Probit regression, a type of Generalized Linear Model (GLM) appropriate for binary dependent variables. The core of the methodological approach was the estimation of a separate regression model for each of the eighteen seasons. This longitudinal, year-by-year analysis was designed to capture the potential volatility and context-dependency of the strategic factors. Across all models, a p-value of less than 0.05 was used as the threshold for statistical significance, and all covariates were centered to the mean. The analyses were conducted using the Jamovi software.

IV. Results

The year-by-year Probit regression analysis of eighteen IPL seasons (2008-2025) reveals a high degree of volatility in the strategic factors influencing match outcomes. The majority of seasons showed no statistically significant relationship between the predictor variables and the match winner. However, several key seasons demonstrated significant or marginally significant effects, highlighting a dynamic rather than static strategic landscape. A comprehensive summary of the model fit and predictor significance for each season is presented in Table 1.

Finding 1: The Influence of Strategic Factors

In response to the first objective, the analysis found that the influence of winning the toss, home advantage, and the choice to bat first on match outcomes is predominantly non-significant. As detailed in Table 1, the majority of regression models for the eighteen seasons showed no statistically significant relationship between these predictors and the match winner. This widespread lack of significance provides initial support for the main hypothesis (H1) that these factors are not consistent predictors of match outcomes.

Finding 2: The Volatility of Effects Over Time

Addressing the second objective, the study found the effects of these strategic factors to be highly volatile rather than consistent. The year-by-year analysis, summarized in Table 1, shows that the statistical significance and even the direction of a factor's influence can change dramatically from one season to the next. For example, Home advantage was a significant positive predictor in 2018 but a significant negative predictor in 2025. This year-to-year fluctuation, which includes a complete reversal of the effect's direction, is the primary evidence of the strategic volatility central to this study's thesis.

Finding 3: Identification of Anomalies and Patterns

In line with the third objective, several key anomalies were identified. The 2010 season stood out as a significant outlier where choosing to bat first was a winning strategy. Similarly, 2018 was anomalous for the significant positive effect of home advantage, while 2025 was unique for the significant negative effect of home advantage and the sudden emergence of the toss as a significant factor. A recurring pattern was a significant intercept in certain seasons (e.g., 2013), indicating underlying seasonal biases. These anomalies suggest that the strategic landscape of the IPL is not static, and that certain seasons produce unique conditions where a specific factor can temporarily become decisive.

Finding 4: The Impact of External Factors

Finally, addressing the fourth objective, the analysis confirmed that external factors have a profound impact. In the 2009, 2020, and 2021 seasons, the Home advantage variable was excluded from the models. This finding corresponds directly to those tournaments being held at neutral venues, demonstrating that real-world context can completely nullify a strategic factor. This finding underscores the degree to which these strategic factors are subordinate to the overarching logistical and environmental context of the tournament.

Table 1: Summary of Year-by-Year Probit Regression Results (2008-2025)

N	Overall Model p value	Adj. R ²	Toss Won (p-value)	Home Advantage (p-value)	Chose to Bat (p-value)
	0.906	0.00	0.819	0.505	0.809
	0.115	0.017	0.194	Excluded	0.084*
	0.091*	0.042	0.758	0.630	0.013
	0.867	0.00	0.810	0.931	0.468
	0.677	0.00	0.350	0.752	0.467
	0.999	0.00	0.941	0.897	0.994
	0.969	0.00	0.947	0.907	0.642
	0.950	0.00	0.801	0.755	0.598
	0.745	0.00	0.334	0.547	0.930
	0.318	0.006	0.283	0.457	0.166

	0.066*	0.029	Excluded	0.022	Excluded
	0.291	0.00	0.404	0.182	Excluded
	0.193	0.00	0.195	Excluded	Excluded
	0.605	0.00	0.604	Excluded	Excluded
	0.318	0.00	0.630	0.158	Excluded
	0.171	0.005	0.686	0.063*	Excluded
	0.231	0.00	0.266	0.255	Excluded

Note: Bold indicates statistical significance ($p < 0.05$). An * indicates marginal significance ($0.05 \leq p < 0.10$). "Excluded" denotes variables removed from the model due to a lack of variation in the data for that season.



Figure 1: The Volatility of Strategic Factors' Impact in the IPL (2008-2025)

This figure provides a visual summary of the eighteen-season analysis. The cards at the top display aggregate statistics for the entire dataset: a total of 1,167 matches were analyzed, with an overall home team win percentage of 27.16%. The card labeled "Overall Toss Winner%" shows that the team winning the toss went on to win the match 20.20% of the time across all seasons. The three-line graphs below plot the yearly impact of Home Advantage, Toss Win, and the choice of Batting First, visually demonstrating the high degree of fluctuation around the zero impact line. These graphs confirm the study's central finding of strategic volatility and correspond to the anomalous seasons identified in the analysis, such as the significant positive impact of home advantage in 2018 and its significant negative impact in 2025.

V. Discussion

The results of this eighteen-season longitudinal analysis challenge the conventional wisdom regarding stable strategic advantages in the Indian Premier League. The central finding is not the consistent importance of any single factor, but rather the profound volatility of their strategic value. This study demonstrates that the influence of winning the toss, having a home advantage, or choosing to bat first is highly dependent on the unique competitive context of each season.

A. The Myth of the Stable Strategy

Across the eighteen models, the most frequent outcome was a null result. For the majority of seasons, the tested

variables had no statistically significant relationship with winning a match. The consistently low, and often zero, explanatory power of the models (as seen in the Adjusted R^2 values in Table 1) reinforces the conclusion that these factors are not dominant, reliable predictors of success. This finding itself is significant, as it suggests that the strategic discourse surrounding the sport may overstate the importance of these elements in favour of other, more critical factors such as team composition, player form, and in-game execution.

B. Anomalous Seasons and Context-Dependent Effects

The true narrative of the data emerges from the outlier seasons where a variable did achieve statistical significance. These anomalies highlight the context-dependent nature of strategy.

- **The Rise and Fall of "Bat First":** The 2010 season stands out as a significant anomaly, where choosing to bat first was a winning strategy ($p = 0.013$). This suggests that a particular set of conditions—perhaps related to pitch preparations, dew factors, or the prevailing bowling strengths of top teams—made setting a target uniquely advantageous that year. The fact that this advantage disappeared in subsequent seasons indicates that teams likely adapted to this trend, neutralizing the strategy's effectiveness.
- **The Fluctuating Value of Home Advantage:** The effect of playing at home was particularly unstable. After years of non-significance, it emerged as a significant benefit in 2018 ($p = 0.022$). But this trend reversed in later years, culminating in a statistically significant "home disadvantage" in 2025 ($p = 0.017$), with a similar marginal trend in 2023 ($p = 0.063$). This reversal poses compelling questions: Did the pressure of performing for a home crowd become a liability? Or did the professionalization of team analysis allow visiting teams to better counter ground-specific strategies?
- **The Surprise Emergence of the Toss:** After seventeen seasons of having no independent predictive power, winning the toss became a significant factor in 2025 ($p = 0.045$). This sudden importance underscores the core theme of unpredictability and suggests that the coin toss's value may be linked to other, more dominant conditions present in that specific season.

C. Limitations and External Factors

It is crucial to acknowledge that the exclusion of variables in several seasons was directly tied to real-world events. The lack of a home advantage effect in 2009, 2020, and 2021 is explained by tournaments being held at neutral venues, a valuable finding in itself. Furthermore, this study is limited to the three chosen predictors. The consistent lack of high explanatory power suggests that the majority of variance in match outcomes is driven by other factors not included in this model, such as team strength, individual player performance, and specific match-day conditions.

VI. Conclusion

This research, covering eighteen IPL seasons from 2008 to 2025, demonstrates that the supposed advantages of winning the toss, playing at home, or choosing to bat first are far from consistent. Their effects surfaced only in scattered years such as the benefit of batting first in 2010, home advantage in 2018, and the reversal to a home disadvantage in 2025 underscoring the unstable and shifting nature of these strategies. Rather than offering reliable rules, these factors fluctuate with the competitive and contextual realities of each season.

The consistently low explanatory power of the statistical models makes it clear that outcomes in the IPL depend far more on factors not captured in this study, including squad strength, player form, pitch conditions, and tactical execution during the match. This limitation is valuable in itself as it points to the need for a broader analytical framework that goes beyond narrow strategic variables.

By analysing each season independently, the study avoids the generalizations of aggregated research and highlights the IPL's evolving strategic environment. Future work should expand this approach by linking statistical anomalies, such as changes in rules, neutral venues, or external playing conditions, and by incorporating richer performance metrics. Ultimately, the key contribution of this study is to show that strategic volatility is at the heart of the IPL. Success cannot be explained by fixed formulas; instead, it demands a season-specific, adaptive view of strategy. For teams, analysts, and commentators, this means rethinking cricketing wisdom not as timeless truth but as a dynamic, shifting landscape that changes year after year.

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