

A Study of Accessibility Needs for Disabled Commuters in Public Transportation Terminals

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Abstract:

The importance of accessibility cannot be overstated, particularly in navigating both internal and external environments in daily life. Unfortunately, many public transport terminals lack sufficient design and amenities to meet accessibility needs, which is a serious concern that must be addressed to ensure convenience for all. People with disabilities are widely acknowledged to have fewer opportunities and a lower quality of life than those without disabilities. When combined with poor accessibility, disabled individuals encounter additional challenges and difficulties when using public transportation. As a result, it is increasingly imperative to address disability issues when utilizing public transportation facilities.

Keywords: accessibility, disabilities, imperative, transportation

1. Introduction:

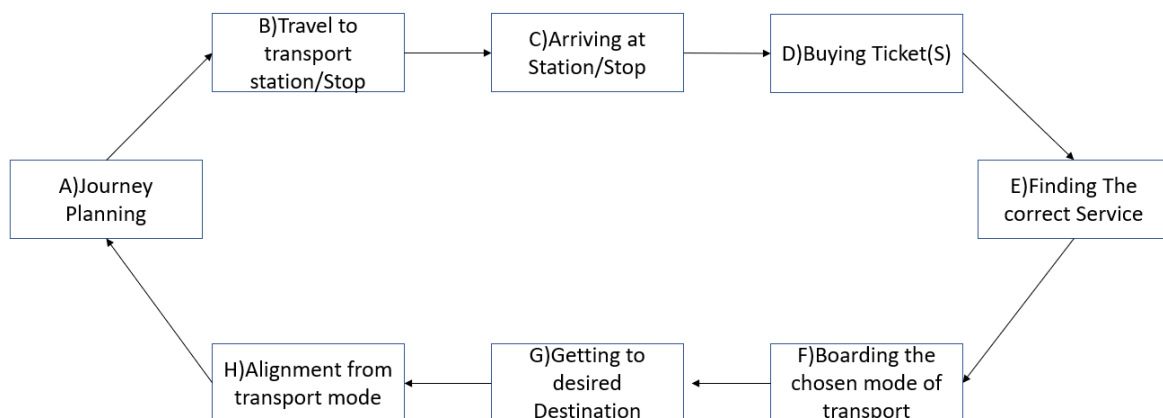
The United Nations (2007) recognizes the importance of providing equal access to facilities and services for everyone without limitation. Without such accessibility, people with disabilities are excluded from participating in society on an equitable level. Henry (2009) states that a lack of accessible public transport terminals prohibits disabled individuals from having full freedom of movement - thus highlighting how unaccommodating today's-built environment can be towards those living with special needs or conditions. Griffin (2000) suggests that the simplest way to increase the use of public transportation facilities is by creating safe, convenient, and comfortable pedestrian access. Due to the difficulties faced by the disabled in accessing the environment, there has been progress in identifying the factors affecting disabled accessibility to public transportation terminals. Haber and Blank (1992) found that current provisions are inadequate and not disabled-friendly, and there is an increasing awareness of the needs of disabled individuals in industrialized countries. Kennedy and Hesla (2008) argue that disabled people have not been treated as equals, and their limitations in accessibility to the built environment need further attention in society. There has been little research on discovering disabled accessibility in public transportation terminals. Therefore, this research aims to consider the design of infrastructure for disabled individuals, particularly in transport terminals, to make environments more responsive to individuals and groups with lower levels of environmental competence and ensure that everyone can access public transport terminal buildings. This study seeks to explore how the current legislative and standards landscape affects the accessibility of public transportation for those with disabilities. We'll dive into terminals' approaches, interiors, and infrastructure — all with an eye towards uncovering ways we can improve disabled accessibility at these locales. With this information

in hand our research should be able to provide valuable insights on making transport more accessible for everyone. The definition of disabled adopted in this study comes from the Code on Accessibility in The Built Environment by Harisson (2007), which defines disabled people as those who have a physical disability or impairment. Disabled individuals may be classified as ambulant disabled, wheelchair-bound, sensory disabled, or temporary disabled based on their physical environment.

2. Literature review:

The importance of accessibility in a transportation system that is efficient, sustainable, and of high quality has been increasingly recognized. According to Cullen (2006), all transport system users benefit from improved access to buses, trains, planes, trams, and ships. In order to accurately understand the accessibility of public transport terminals for individuals with disabilities, several factors need to be considered, including the entire journey cycle. A comprehensive understanding of the journey cycle is important for experiencing the entire journey and identifying the difficulties encountered by persons with disabilities. Figure 1 illustrates the standard journey cycle for individuals with disabilities. This study focuses on various aspects of the journey cycle, including the external environment to and from the terminal, purchasing tickets, identifying the correct service, waiting at the terminal, boarding and disembarking from the transportation mode, and reaching the desired destination.

Figure-1:The Journey Cycle. (Source: Assessment of Accessibility Standards for Disabled People in Land Based Public Transport Vehicles, Lafratta, 2008).



2.1. External environment:

In 2000, Cowan discussed how well-designed public spaces are part of a network of pedestrian routes that cater to the needs of all users, including the disabled and elderly. Bezzina and Spiteri (2005) emphasized that when designing buildings, it's crucial that everyone, including those with disabilities, can access and use the internal and external facilities. Smith (2006) concluded

that an accessible route should not have obstacles or hazards, making it easy for people with impaired mobility or vision to use. Lacey (2004) pointed out that accessible parking is an important consideration for disabled people who rely on cars as their main mode of transportation. Bezzina and Spiteri (2005) defined car parking and setting down as important activities at the beginning or end of journeys. Sawyer and Bright (2007) highlighted the importance of appropriately designed, constructed, and managed ramps for all users, particularly those using wheelchairs or walking aids. According to ADA (2004), at least one accessible route should be provided from accessible parking spaces and public transportation stops to the accessible building entrance. Cullen (2006) stressed the necessity of tactile surfaces for the safe movement of people who are blind or have low vision. Henry (2009) noted that providing ramps, suitable toilets, and handrails can enhance accessibility for persons with disabilities and that infrastructure for pedestrians should provide direct, continuous, safe, convenient, and attractive routes. Malhotra (2010) suggested that paths and sidewalks should be comprehensive and provide routes through residential areas.

2.2. Internal environment:

Griffin (2000) found that transit facility entrances should be fully accessible and fit well with the surrounding urban context and community. Similarly, Lacey (2004) emphasized the importance of ensuring that the main entrance(s) of new buildings are accessible. Providing seating throughout the terminal is crucial for disabled and elderly passengers who may find standing for long periods of time difficult or impossible (Lacey, 2004). Additionally, Cullen (2006) noted that some distances within terminals can be quite substantial, which underscores the importance of making the journey cycle as accessible as possible. Sawyer and Bright (2007) highlighted the need for accessible toilet facilities in buildings, with at least one toilet provided for wheelchair users at each location to determine the building's true accessibility for the disabled. Finally, Malhotra (2010) stressed the importance of priority seating for the disabled being located close to the driver and the entrance/exit of the vehicle to facilitate communication and minimize the distance required to board the public bus.

3. Methodology

The term research design pertains to the actual strategy for collecting and analyzing data (Shamsuri, 2005). Remenyi, William, Money, & Swartz (1998) asserted that numerous factors can be taken into account when selecting a suitable research methodology, with the topic and specific research question being the primary considerations. They also noted that a qualitative approach is more fitting when attempting to understand and explain a phenomenon rather than pinpoint external causes. On the other hand, Salkind (2003) emphasized that qualitative research is more favorable because it does not involve statistical analyses. Conversely, quantification can make observations more explicit and easier to understand by utilizing countable numbers (Shamsuri, 2004). As a result, this study adopted a quantitative approach. The research began by defining the study's population, which comprised disabled commuters in the Jersey Avenue and Newark - Pennsylvania Station areas who relied on public transportation to navigate Klang Valley. The sample size was then determined using an

appropriate statistical formula. A questionnaire was developed as an instrument for obtaining information on perceptions of public transportation terminal accessibility, which was administered separately in the two case study areas. The total sample size was 30 questionnaires, with the first 15 respondents representing the Jersey Avenue area and the latter half for the Newark - Pennsylvania Station area. After data collection, the results were compiled, edited, cleaned, and coded. The data collected from the questionnaire was analyzed and processed using the Statistical Package for Social Science (SPSS). Tables were created to present the results, and statistical analysis was carried out to examine the connection between infrastructure designs, the concept of universal design, and accessibility for disabled individuals.

4. Result and discussion:

According to the data presented in Table 1, female commuters outnumbered male commuters in both areas. Specifically, female commuters accounted for almost 75% of the total number of commuters, while male commuters only made up 27%. In terms of age, citizens between the ages of 56 and 64 years old were the largest group of respondents, comprising 30% of the total sample. Senior respondents who were 65 years old and above were the second-largest group, accounting for 20% of the sample. The remaining four age groups combined made up the remaining 49% of the total sample.

Table-1:demographic pattern Mean score.

Demographic Pattern	Percentage (%)
Gender	
Male	27
Female	73
Age	
28 and Below	13
29-37	13
38-46	13
47-55	10
56-64	30
65 and Above	20

Table 2 shows the results of the survey on the friendliness of the disabled facilities provided at public transportation terminals. The results revealed that platforms had the lowest rating among

all the infrastructure, followed by ramps, steps, and walkways. These basic infrastructures were not well-designed for disabled commuters in both case study areas. However, waiting for spots, toilets, and escalators was considered more friendly and received better ratings from disabled people. Overall, the common infrastructures listed before were generally more accommodating for both disabled and non-disabled people.

Table-2: current infrastructure provision Mean score.

Infrastructure	Mean Score (1-7)
	1-Very dissatisfied 7- Very satisfied
Parking	3.71
Steps	3.42
Ramps	3.29
Walkway	3.66
Tactile	3.89
Entrance	4.22
Waiting	4.69
Toilet	4.50
Signage	3.89
Escalator	4.20
Lifts	4.17
Platform	2.48

To gain a deeper understanding of accessibility for people with disabilities, a questionnaire was designed to assess the level of safety during the journey cycle for public transport commuters. Table 3 presents the respondents' perception of safety at different stages of the journey cycle. This was done to determine the level of satisfaction with the current facilities provided.

Table-3:Average rating for the degree of safety indicated during the journey cycle.

Travel Component	Mean Score (1-7)*
	1-Very unsafe
	7- Very safe

Moving to and from the terminal on foot.	3.00
Ticket Buying	3.90
Finding correct service	3.77
Boarding to the chosen public transport mode	2.03
In Vehicle	3.53
Audio system in vehicle	3.50
Alighting from transport mode	2.03

The information presented in Table 4 reveals that the majority of commuters are not satisfied with the current infrastructure, which aligns with the first objective of the study, which is to identify and emphasize the accessibility of spaces in the transport terminals. It was discovered that walking to and from the terminal, as well as boarding and disembarking from the selected public transport, are the most critical components that require attention. One potential implication of this finding is that disabled individuals who express higher dissatisfaction with the facilities provided are more likely to demonstrate a greater level of usefulness when utilizing such facilities. As a result, it is critical to prioritize the design of physical environments that take into account the needs of disabled individuals, particularly in the context of public transport accessibility.

Table-4:Percentage of respondents.

Disabled criteria	Percentage (%)
Ambulant Disabled	50
Wheelchair-Bound	5
Sensory Disabled	35
Temporary Disabled	10

Table 4 presents the distribution of respondents according to the type of disability they have. The data indicates that half of the total respondents are elderly ambulant disabled, while the second largest group is those with sensory disabilities, including visually and hearing impaired, at 35%. The survey also includes temporarily disabled individuals, such as those who are sick, accident victims, and pregnant women, making up 10% of the respondents, while the remaining respondents are wheelchair-bound disabled individuals.

5. Conclusion:

While many studies have examined disability, research focused on specific areas such as public transport terminals is lacking. Public transport serves as a critical link for communities, particularly those with low income. The results of Table 2 reveal that elderly individuals, many of whom are pensioners, were the largest group of disabled public transport commuters in the two areas studied. Wheelchair-bound disabled individuals believe that the current facilities could be improved to better accommodate their needs. The results suggest that significant efforts are needed by government bodies to redesign current facilities and make them more accommodating for the disabled community, promoting equality and accessibility among the wider community in the United States. This research highlights the importance of designing disabled-friendly facilities to enhance public buildings and promote a more inclusive society. Local authorities play an important role in setting standards for designing public facilities to ensure equal accessibility. The study also emphasizes the importance of proper planning and decision-making during the initial stages of infrastructure design for public transport terminals. Greater awareness of accessibility issues among designers and architects can help prevent the exclusion of certain individuals from public facilities. This conference should therefore recognize the importance of accessibility in the physical environment, particularly for individuals with disabilities.

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