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PROBLEMS FACED BY PASSENGERS TOWARDS TRANSPORTATION SERVICES IN MADURAI DISTRICT

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ABSTRACT
Transportation is a vital component of urban development and accessibility. In Madurai district, transportation services play a critical role in daily commuter activities, economic progress, and regional connectivity. However, passengers frequently face a range of challenges, including inadequate frequency, poor maintenance of vehicles, overcrowding, lack of punctuality, safety issues, and insufficient last-mile connectivity. This study investigates the multifaceted problems faced by passengers using both qualitative and quantitative data from surveys and interviews conducted across different transport hubs in Madurai. The findings highlight significant dissatisfaction with service quality, infrastructure, and policy implementation. The study applies descriptive statistics and thematic analysis to identify key issues and provide insights for policymakers and transportation authorities. Recommendations include enhancing fleet maintenance, introducing passenger feedback mechanisms, and adopting technology for real-time monitoring. The study contributes to existing literature by addressing region-specific challenges and provides a foundation for improving transport systems in Tier-II cities like Madurai.

Keywords:
Passenger Satisfaction, Urban Mobility, Transportation Issues, Madurai District

INTRODUCTION

Transportation services are a critical component of any region's infrastructure, playing a pivotal role in the socio-economic development of the area. In the context of Madurai District, a culturally and economically significant city in Tamil Nadu, transportation services have a direct impact on daily life, commerce, education, healthcare, and tourism. With increasing urbanization, population growth, and vehicular density, the demand for reliable, safe, affordable, and efficient transport has escalated substantially.

Despite various developments in the transport sector, many passengers in Madurai continue to face persistent challenges. These include issues such as inadequate public transport coverage in rural areas, irregular bus schedules, overcrowding, poor road conditions, lack of last-mile connectivity, absence of digital ticketing facilities, and poor sanitation and safety standards in buses and terminals. Additionally, traffic congestion, high fares of private operators, and insufficient grievance redressal mechanisms further exacerbate the situation for daily commuters.

This study aims to explore and analyze the various problems faced by passengers while using transportation services in Madurai District. It seeks to understand the nature, extent, and impact of these issues on passengers' travel experience. By collecting data from different segments of the population including students, workers, senior citizens, and rural commuters, the research intends to offer a comprehensive perspective on transportation challenges and provide recommendations for improvement.

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LITERATURE REVIEW

Public transportation in India faces multifaceted challenges, particularly in urban and semi-urban settings. Bhattacharyya (2018) outlines the fundamental hurdles Indian cities face, including congestion, outdated infrastructure, and the lack of integrated transport systems. Complementing this, Chatterjee and Verma (2019) highlight how passenger perceptions in Tier-II cities are largely shaped by irregular service, lack of cleanliness, and poor information dissemination. Ghosh and Roy (2020) examine the commuter experience, revealing a direct link between inadequate infrastructure and negative commuter sentiment. Service quality remains a recurring theme, as discussed by Jain and Srivastava (2021), who identify dimensions such as punctuality, staff behavior, and vehicle condition as core concerns. Similarly, Kumar and Anbanandam (2020) emphasize the importance of measuring service quality to identify performance gaps and address customer dissatisfaction.

The geographical focus on South Indian districts by Mehta and Singh (2022) reveals region-specific concerns such as route accessibility and frequency of services. Mishra (2021) elaborates on urban overcrowding and suggests a pressing need for better transport planning to alleviate pressure on existing systems. Technological integration is another aspect receiving attention; Narayanan and Prakash (2019) discuss how Information and Communication Technology (ICT) can enhance service tracking, passenger engagement, and operational efficiency. Patil and Khedekar (2019) further stress the gap between expected and perceived service among bus users, emphasizing the need for service redesign.

Sustainability in public transport is analyzed by Rajan (2020), who advocates for eco-friendly initiatives in mid-sized cities where growth is rapid but unregulated. Regionally, Ramesh and Dinesh (2021) offer a case-based understanding of Madurai’s transportation challenges, focusing on traffic congestion, limited bus stops, and underutilized infrastructure. Ramya (2022) brings to light safety and accessibility issues, especially for women, elderly, and persons with disabilities, indicating a lack of inclusive planning. Gender-based analysis by Rathi and Sharma (2023) corroborates this, citing harassment, lack of women-only services, and fear of travel during non-peak hours.

Ravi (2020) introduces the critical concept of last-mile connectivity, asserting its importance for increasing public transport adoption. Infrastructure inadequacies across Indian cities are also documented by Sahu and Bansal (2020), who point to broken roads, insufficient bus bays, and poor lighting as major deterrents. Cleanliness and service reliability are considered by Sharma and Gupta (2021), who note a significant decline in commuter trust due to unclean vehicles and inconsistent schedules. Shinde (2023) relates public transport stress to mental and physical exhaustion among Tamil Nadu’s urban populations, urging a people-centric planning approach. Singh and Iyer (2019) apply the SERVQUAL model to analyze gaps in five dimensions: tangibility, reliability, responsiveness, assurance, and empathy in bus services. Additionally, Srinivasan and Kumar (2022) conduct a review of passenger feedback mechanisms, suggesting a strong need for real-time, data-driven feedback loops to improve services. Finally, Thomas and Jacob (2020) explore the dynamics of transport efficiency in small cities, underscoring the potential of smart scheduling, fleet modernization, and stakeholder engagement in elevating service standards.

RESEARCH GAP

Most existing studies focus on metropolitan regions and neglect the transportation challenges in Tier-II cities like Madurai. Additionally, comprehensive insights into passenger-centric issues such as comfort, safety, and accessibility are lacking. There is also limited literature combining statistical and qualitative assessments in this regional context.

RESEARCH OBJECTIVES

1. To identify the major problems faced by passengers in Madurai's transportation services.
2. To assess passenger satisfaction levels regarding public transport quality.
3. To suggest actionable recommendations for improving transportation services in the district.

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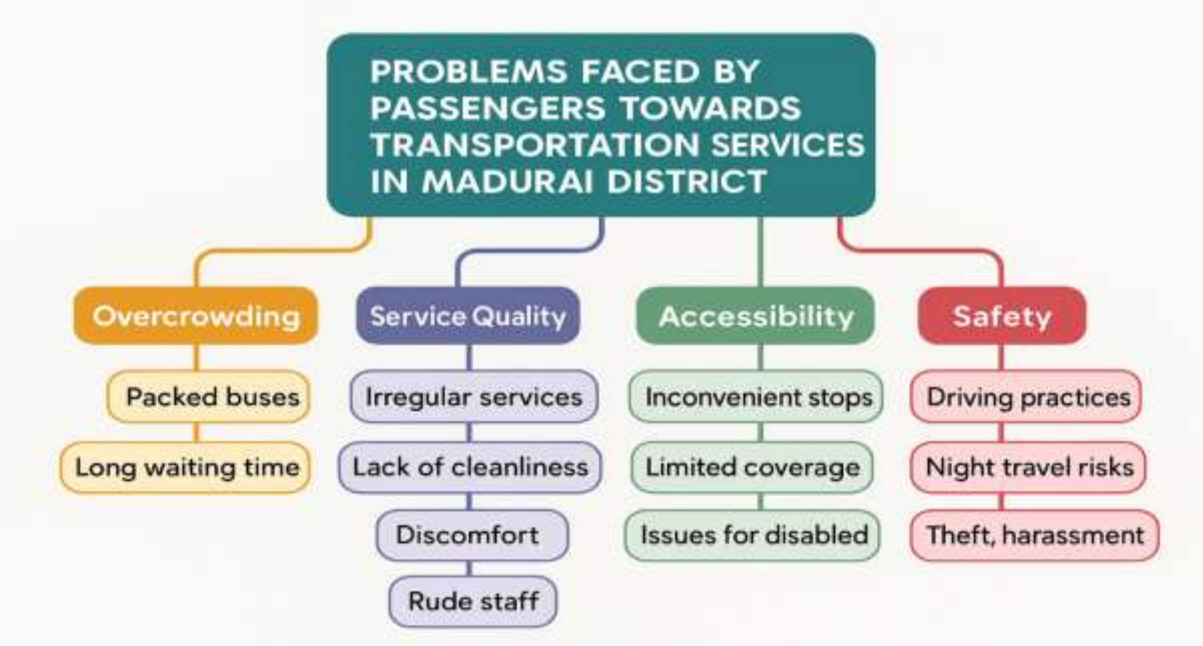
FRAMEWORK



The diagram provides a comprehensive visual representation of the critical challenges experienced by passengers utilizing transportation services in Madurai District. It systematically categorizes these challenges into four primary domains Overcrowding, Service Quality, Accessibility, and Safety each highlighting the breadth and depth of passenger concerns.

1. Overcrowding

This category underscores the pressure exerted on public transport systems, particularly during peak hours. Packed buses are a frequent complaint, often resulting in standing passengers, lack of ventilation, and personal discomfort. This is compounded by long waiting times, which frustrate passengers and result in inefficiencies, especially for daily commuters such as students and office workers. These issues signal the urgent need for an increased number of vehicles, optimized scheduling, and better demand management strategies.

2. Service Quality

Under service quality, the diagram captures a spectrum of dissatisfaction related to operational inefficiencies. Irregular services, such as delayed or unpredictable bus arrivals, erode public confidence and reliability. Lack of cleanliness in both vehicles and terminals contributes to an unpleasant commuting experience and poses health risks. Passengers also report discomfort, including poorly maintained seats, insufficient ventilation, and lack of hygiene. Moreover, rude or untrained staff further diminish user satisfaction, revealing gaps in customer service training and oversight. Overall, these factors point toward the necessity for standardized service protocols and quality assurance mechanisms.

3. Accessibility

Accessibility issues highlight structural and systemic shortcomings that hinder inclusive mobility. Inconvenient stops those located far from residential areas or without proper shelters pose barriers for the elderly, women, and children. Limited route coverage implies that several areas, especially rural or peripheral zones, remain underserved, forcing residents to rely on costlier alternatives. Additionally, inadequate facilities for the disabled, such as lack of ramps or priority seating, reflect poor compliance with universal design principles. This dimension of the problem reveals that transportation infrastructure is not sufficiently inclusive or equitable, demanding policy reforms and redesign of service layouts.

4. Safety

Safety remains a critical concern that directly impacts the willingness of individuals, particularly women and vulnerable groups, to use public transportation. Unsafe driving practices, including overspeeding, abrupt stops, and overloading, endanger both passengers and pedestrians. The risks associated with night travel, such as poor lighting, limited vehicle availability, and absence of security personnel, discourage travel after dark. Furthermore, theft and harassment, often unreported due to lack of mechanisms or fear of retaliation,

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threaten personal security. These problems highlight the need for stronger enforcement of traffic laws, installation of surveillance systems, and establishment of passenger grievance redressal mechanisms.

In sum, the framework portrayed in the diagram encapsulates the multidimensional and interlinked nature of transportation-related problems faced by passengers in Madurai District. Each category not only outlines current deficiencies but also indicates priority areas for intervention ranging from increased fleet deployment and staff training to infrastructure upgrades and safety enforcement. The representation makes it clear that addressing these challenges requires a coordinated policy approach involving local government, transport authorities, urban planners, and civil society stakeholders. Holistic and sustained improvements in these areas are essential not only for enhancing the commuting experience but also for promoting sustainable and inclusive urban mobility in Madurai.

RESEARCH METHODOLOGY

The present study employs a descriptive research design to explore the problems faced by passengers with respect to transportation services in the Madurai District. Primary data was collected through structured questionnaires from 514 respondents, alongside interviews with commuters, and supported by secondary data from government reports. The total population of the Madurai District stands at 3,038,252, and using the standard sampling formula, the minimum required sample size was calculated as 384. However, to ensure sampling adequacy and minimize errors, an additional 30% of the calculated sample size—equating to 130 respondents was included, resulting in a total sample size of 514 passengers. A stratified random sampling technique was adopted to ensure representation across different sub-groups within the population. The data collected was analyzed using SPSS for statistical analysis, while qualitative responses were examined using thematic coding techniques. The study specifically focused on urban and peri-urban areas of the Madurai District to capture a comprehensive understanding of the region's transportation challenges.

Analysis & Discussion

Demographic Profile of the Respondents:-

In order to understand the demographic profile of the passengers, percentage analysis was used to identify the personal information like gender, age, marital status, residential status, education. The Table 1.1 shows the demographic profile of the respondents.

Table 1.1 Demographic profiles of the Respondents

Demographic Profile	Options	Frequency	Percent
Gender	Male	320	62.3
	Female	194	37.7
	Total	514	100
Age	Less than 30 years	113	22
	31 to 40 years	183	35.6
	41 to 50 years	167	32.5
	51 to 60 years	37	7.2
	Above 60 years	14	2.7
	Total	514	100
Marital status	Married	426	82.9
	Unmarried	45	8.8
	Widowed	43	8.3
	Total	514	100
Educational Qualification	Master Degree	61	11.9
	Degree	118	23
	Diploma/ ITI	95	18.5
	Illiterate	215	41.8
	Others	25	4.8
	Total	514	100

Source: Primary Data

- **Gender:** Among 514 respondents considered for the study, 320 respondents (62.3%) are male and 197 respondents (37.7%) are females.

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- **Age**: Age is one of the most important factors for a human being and age also serves as a yard stick to participate or discontinue in any occupation or profession. Among 514 respondents considered for the study; 113 respondents (22%) were less than 30 years, 183 respondents (35.6%) were in the age group of 31 to 40 years, 167 respondents (32.%)were in the age group of 41 to 50 years, 37 respondents (7.2%) belongs to the age group between 51 to 60 years and 14 respondents (2.7%) were above 60 years. Thus, majority of the passengers contacted are in the age group of 30 to 40 years.
- **Marital status:** Among 514 respondents considered for the study, 426 respondents (82.9%) are married, 45 respondents (8.8%) are not married and 43 respondents (8.3%) are divorced. Hence, majority of the respondents contacted for the study are married**.**
- **Educational Qualification:** Among 514 respondents considered for the study, 61 respondents (11.9%) are qualified with Master Degree, 118 respondents (23%) have completed their degree, 95 respondents (19%) are qualified with diploma/ ITI, 215 respondents (41.8%) are illiterates and 25 respondents (4.8%) are categorized as belonging to other group. The other category includes Secondary school leaving certificate or Higher secondary certificate.

1.5.2 Association between the demographic profile of the respondents and their duration of the journey:

Chi- square analysis is generally used to find the association between two categorical variables. It tests whether or not a statistically significant association exists between a dependent and an independent variable. Here, chi-square analysis is used to find the association between the demographic profile of the passengers and their duration of the journey. The Table 1.2 represents the association between the demographic profile of the passengers and their duration of the journey.

H_0: There is no significant association between demographic profile of the respondents and their duration of the journey.

Table 1.2 Association between the demographic profile of the respondents and their duration of the journey

Demographic Factor	Chi-Square Value	Sig.Value
Gender	1.451	0.003
Age	0.845	0.000
Marital Status	1.389	0.001
Educational Qualification	2.456	0.005
Monthly Income	1.789	0.001
Monthly Savings	2.371	0.000

Source: Primary Data

It is observed from the above Table that, the chi square value for the variable, ‘ Gender’ is 1.451, ‘Age’ is 0.845, Marital status is 1.389, Educational Qualification is 2.456, Monthly Income is 1.789 and Monthly savings is 2.371 and the significant value for all the variables is 0.000. It implies that there is a significant association between the demographic profile of the respondents and their duration of the journey.

1.5.3 Relationship between Income and Savings of the passengers - Correspondence Analysis:

Correspondence analysis is a statistical technique that helps to knowledge about the categorical variables and shows the dimensions or association of the categorical variables to each other. The Monthly Income and savings are the main sources for doing any business. The correspondence analysis is used to club the group of variables.

Hypothesis Ho: There is no significant relationship between Annual Income of the passengers and savings of the passengers.

Table 1.3 Relationship between Income and Savings of the passengers

Correspondence Table						
Monthly Income	**Level of Savings**					
	Less than 10000	**10000-15000**	**15000-20000**	**20000-25000**	**Above Rs.50000**	**Active Margin**
Less than 20000	267	1	0	0	0	268
Rs.20000 to 30000	0	140	0	0	0	140

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Rs. 30000 to 40000	0	0	45	0	0	45
Rs.40000 to Rs.50000	0	0	0	45	0	45
Above Rs.50000	0	0	0	0	16	16
Active Margin	267	141	45	31	16	514

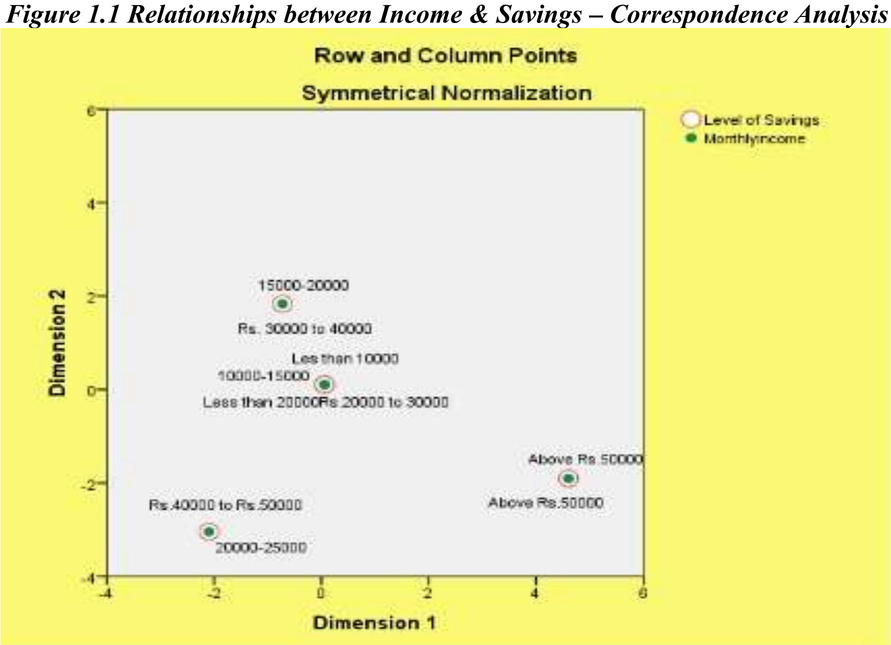
Source: Primary data

Table 1.4 Correspondence Analysis

Dimension	Singular Value	Inertia	Chi Square	Sig.	Proportion of Inertia		Confidence Singular Value	
					Accounted for	Cumulative	Standard Deviation	Correlation 2
1	.381	.145	27.186	.001	.694	.694	.092	.296
2	.253	.064			.306	1.000	.112	
Total		.209			1.000	1.000		
a. 8 degrees of freedom								

Source: Primary data

Figure 1.1 Relationships between Income & Savings – Correspondence Analysis



The correspondence diagram illustrates that people who have higher level of income group and their respective saving is high. People who have low level of income group and their respective saving is low. The significant level is less than .05 i.e. sig values is 0.01. Therefore null hypothesis is rejected and the alternative hypothesis is accepted. There is significant relationship between Income and savings.

1.5.4 Preference of bus in passenger overcrowded in peak hours of travel:

Preference of bus in passenger overcrowded in peak hours of travel given in below table 1.5.

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Table 1.5 Preference of bus in passenger overcrowded in peak hours of travel – Descriptive Statistics

S.No	Preference	Frequency	Percentage
1	Always	289	56
2	Sometimes	141	27
3	Rarely	84	17
Total		514	100

Source: Primary data

Out of 514 respondents that the preference of bus in passenger overcrowded in peak hours of travel 56% of the respondents were said that always overcrowded in peak hours of travel, 27% of the respondents were said that sometimes overcrowded in peak hours of travel and 17% of the respondents were said that rarely overcrowded in peak hours of travel. Therefore, majority of the respondents were said that always said that preference of bus in passenger overcrowded in peak hours of travel.

1.5.5 Problems faced by passenger towards transportation services – Garret Ranking Method:

Passengers have faced different problems namely uncleanness, Discourtesy of the crew, Pilferage of change by the Conductor, Improper maintenance, Over Crowding, Low speed, Very old buses Henry Garrett's ranking method is employed to ascertain the important problems faced by passengers. Sample passengers are asked to rank the important problems according to their order of priority with the help of Henry Garrett Ranking percentage score. The ranking are then converted into percentage and total scores are obtained by referring to the standard recommended by Henry Garrett. The details of important problems faced by passengers and Garrett score along with ranking are displayed in the following table 1.6

Table 1.6 Important problems faced by passenger towards transportation services

S.No	Problems	Total Score	Average	Rank
1	Uncleanness	5672	58.91	2
2	Discourtesy of the crew	2541	29.51	7
3	Pilferage of change by the Conductor	2852	31.42	6
4	Improper maintenance	4852	51.54	3
5	Over Crowding	6342	62.54	1
6	Low speed	4381	48.93	4
7	Very old buses	3564	35.61	5

Source: Primary Data

The Table 1.6 shows the ranks assigned by the important problems faced by passenger towards transportation services. From the estimated Garrett mean score and rank, it is revealed that the important problems faced by passenger towards transportation services are Overcrowding [mean: 62.54; rank:1], Uncleanness [mean:58.91; rank:2], Improper Maintenance [mean: 51.54; rank:3] and Low speed [mean: 48.93; rank:4]. They are having the highest mean score for the most important problems faced by passenger towards transportation services.

For the factors Very old buses [mean:35.61; rank:5], Pilferage of change by the conductor [mean: 31.42; rank:6] and Discourtesy of the crew [mean: 29.51; rank:7] are moderately problems faced by transportation services. Hence it is observed that overcrowding is the most important problems faced by the passenger towards transportation services.

RESEARCH FINDINGS

The transportation services in the region face several persistent challenges that significantly impact commuter satisfaction. A majority of passengers report frequent delays and inconsistent transport schedules,

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causing inconvenience and uncertainty in daily travel. Overcrowding, particularly during peak hours, remains a major concern, often leading to discomfort and safety issues. Furthermore, the infrastructure in semi-urban areas, including bus stops and shelters, is inadequate and poorly maintained, offering little protection or convenience to commuters. The absence of effective feedback mechanisms means that passenger grievances often go unaddressed, leading to frustration and a lack of trust in the system. Additionally, despite the growing need for modernization, digital ticketing systems and real-time bus tracking technologies remain underutilized, limiting the efficiency and transparency of public transport operations.

DISCUSSION

The study on the Problems Faced by Passengers about Transportation Services in Madurai District reveals several critical issues affecting commuter satisfaction and mobility in the region. One of the most prominent concerns among passengers is the irregularity and unpredictability of public transport schedules, especially in suburban and rural areas of Madurai. Buses and shared auto-rickshaws often do not adhere to fixed timetables, causing inconvenience and long waiting times for daily commuters. Overcrowding during peak hours is another major problem, particularly in city buses, leading to discomfort, safety concerns, and even discouraging use of public transport among elderly passengers and women. Poor maintenance of vehicles, including broken seats, inadequate ventilation, and unclean interiors, further exacerbates the problem, reflecting a lack of attention to passenger comfort and hygiene. Moreover, limited frequency and connectivity to interior villages and newly developed residential areas hamper accessibility, forcing many to rely on expensive private options.

Passengers also reported dissatisfaction with driver behavior and customer service, citing instances of rude interactions, overcharging by auto-rickshaws, and negligence toward differently-abled individuals. Inadequate infrastructure, such as poorly maintained bus stops, absence of shelters, lack of proper signage, and minimal real-time information systems, adds to the discomfort. Seasonal challenges like waterlogging during monsoon and increased temperatures in summer worsen the commuting experience in the absence of climate-resilient transport facilities. Furthermore, safety concerns, especially for women traveling at night, persist due to poor lighting and lack of security personnel in certain areas. Collectively, these issues highlight the pressing need for integrated, user-centric reforms in the transportation system of Madurai District, including improved scheduling, vehicle upgrades, infrastructure development, and policy-level interventions focused on safety, inclusivity, and accessibility.

RECOMMENDATIONS

Based on the analysis of transportation challenges faced by passengers in Madurai District, several key recommendations can be proposed to enhance the overall quality, reliability, and accessibility of transport services. Firstly, improving the frequency and punctuality of public buses is essential, especially during peak hours, to reduce overcrowding and long waiting times. The authorities should consider introducing real-time tracking systems and mobile applications to help passengers plan their travel more efficiently. Upgrading the physical infrastructure, such as bus stands, shelters, seating arrangements, lighting, and sanitation facilities, can improve the passenger experience, particularly for women, the elderly, and differently-abled individuals.

Additionally, there is a pressing need to increase the coverage of transport services to rural and underserved areas, ensuring last-mile connectivity through shared auto services, minibuses, or e-rickshaws. Ensuring the safety and security of passengers should be prioritized by installing surveillance cameras in buses and terminals, deploying transport marshals, and conducting regular driver behavior training programs. To address grievances, a dedicated passenger feedback and complaint redressal mechanism must be implemented across platforms. Furthermore, integrating multimodal transport options such as bus, auto-rickshaw, and cab services with unified ticketing systems can offer seamless travel experiences. Environmental concerns can be addressed by promoting the use of electric vehicles and adopting green transport policies. These comprehensive steps, if executed with proper planning and stakeholder collaboration, can significantly improve the satisfaction levels and trust of passengers in Madurai's transportation services.

SCOPE FOR FUTURE RESEARCH

To enhance the overall quality and accessibility of transportation services in Madurai District, future initiatives must focus on a multi-dimensional, technology-driven, and inclusive approach. Firstly, policymakers and urban planners should prioritize the development of a more integrated public transport network by

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strengthening intermodal connectivity between buses, autos, e-rickshaws, and potential metro or rail systems. Investment in real-time tracking systems, digital ticketing platforms, and mobile apps for scheduling and feedback can significantly improve service reliability, transparency, and passenger convenience. Additionally, special attention must be given to addressing the needs of vulnerable populations such as the elderly, women, students, and persons with disabilities by ensuring adequate safety measures, affordable fares, and barrier-free access.

Infrastructure modernization such as building well-maintained bus shelters, dedicated lanes for public vehicles, and smart traffic signals should be coupled with stringent enforcement of service quality standards. Regular surveys, community consultations, and public-private partnerships (PPPs) can also play a vital role in making transport systems more responsive and sustainable. Finally, embracing green transportation solutions like electric buses and non-motorized transport infrastructure (e.g., pedestrian paths and bicycle lanes) will support environmental sustainability while addressing urban congestion. These directions will help transform Madurai's transportation landscape into an efficient, safe, and commuter-friendly system in the years to come.

CONCLUSION

The study on the problems faced by passengers towards transportation services in Madurai District reveals that, while transportation forms the backbone of daily mobility, it is currently riddled with several shortcomings that affect commuters' convenience, safety, and satisfaction. Key issues identified include irregular services, overcrowding, poor maintenance of vehicles, lack of real-time information systems, and inadequate infrastructure in bus stands and routes, especially in rural and semi-urban areas.

Moreover, the rising cost of travel, limited accessibility for differently-abled passengers, and absence of a robust transport management system contribute to the growing dissatisfaction among the public. These issues not only hinder daily commuting but also impact economic productivity and quality of life.

To address these concerns, there is an urgent need for policy interventions and strategic improvements, such as upgrading the public transport fleet, implementing smart transport solutions, enhancing route planning, improving road infrastructure, and ensuring better coordination between transport authorities and local governance. With focused efforts and community participation, Madurai District can move towards developing a more passenger-friendly, efficient, and sustainable transportation system.

Future studies can include comparative analyses across different Tier-II cities, focus on the impact of smart mobility initiatives, or explore gender-specific safety concerns in public transportation.

LIMITATIONS

The study is primarily limited to analyzing passenger perspectives within the geographical boundary of Madurai District, which may not reflect the experiences or opinions of passengers in other regions with different infrastructural, socio-economic, or cultural conditions. Additionally, the research does not account for seasonal variations in traffic patterns, such as fluctuations due to festivals, school holidays, or weather conditions, which could significantly influence transportation usage and satisfaction. Another limitation lies in the representativeness of the data, as the sample may not comprehensively include individuals from rural areas or those who rely on private modes of transport, potentially overlooking critical insights related to accessibility, affordability, and service quality in less urbanized or privately serviced zones. These limitations suggest that the findings, while informative, should be interpreted with caution when generalizing beyond the immediate study context.

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