

A STUDY ON PASSENGER SATISFACTION REGARDING THE SERVICE RENDERED BY TNSTC (TOWN BUSES) WITH SPECIAL REFERENCE TO KANYAKUMARI DISTRICT

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ABSTRACT

Passenger road transport is a key component of economic development and plays a vital role in ensuring customer satisfaction. In India, road transport is the most widely used mode, accounting for approximately 85% of passenger traffic and 60% of freight movement, primarily due to easy accessibility. The country has a vast and expanding road network, including national highways that connect major cities and tourist destinations. Tamil Nadu State Transport Corporation Limited (TNSTC), the world's largest bus corporation, operates intra- and intercity bus services across South India, offering affordable, comfortable, and timely transportation to the public. This study evaluates the performance of TNSTC in Kanyakumari and analyzes passenger satisfaction with its services. It is based on primary data collected from 150 respondents through structured questionnaires. Tools such as simple percentage, KruskalWallis and Mann Whitney U test were used for data interpretation. The study reveals that frequency of usage significantly affects satisfaction with TNSTC's time schedule, whereas age and gender have no notable impact. Most respondents are below 25, use alternative transport, and travel for personal reasons. It is recommended that TNSTC conduct regular feedback surveys among frequent users to improve schedule reliability and overall service quality.

Keywords: *Passenger satisfaction, Service quality, Road transport, and Transport Corporation Limited (TNSTC)*

1. INTRODUCTION:

At present, the Tamil Nadu State Transport Corporation (TNSTC) and the State Express Transport Corporation (SETC) have undertaken major modernization initiatives to improve public transportation across the state. Together with six other transport undertakings, they operate a combined fleet of approximately 20,260 buses, with around 18,728 buses in daily service.

To address the issue of aging vehicles, over 52% of the fleet is more than 15 years old, the state government has initiated a comprehensive replacement plan. This includes the procurement of 7,682 new buses, among which 552 Ultra-Low Entry (ULE) diesel non-AC buses, funded by the German Development Bank (KfW), feature advanced technologies such as automatic transmission and intelligent transport systems. Additionally, 150 new BS-VI diesel buses have been added to the SETC fleet, offering sleeper-cum-seating arrangements, individual charging ports, and enhanced safety features. TNSTC divisions have also received 135 BS-VI buses to replace worn-out vehicles.

In its push toward sustainability, Tamil Nadu is introducing 1,000 electric buses in Chennai under a Gross Cost Contract (GCC) model. The first batch of 120 electric buses is expected to be operational by early June 2025, marking a key move towards eco-friendly transport. These initiatives highlight the state's strong commitment to improving service quality, safety, and environmental sustainability in public transport, thereby contributing to overall economic and social development.

In the southern region, Tamil Nadu State Transport Corporation (Tirunelveli) Limited operates through its Nagercoil division, which includes 11 branches: Ranithootham I, II, III, Kanyakumari, Vivekanandapuram, Monday Market, Colachel, Thiruvattar, Marthandam, Kuzhithurai, and Chettikulam.

Transport plays a vital role in driving economic growth, acting as a catalyst for development by facilitating the movement of people and goods. In India, state transport undertakings operate over 3.5 lakh buses, serving more than 300 million people. Tamil Nadu alone operates 17,284 buses, catering to over 15 million passengers daily. The core mission of these undertakings is to provide economic, efficient, effective, and well-coordinated passenger road transport services throughout the state.

1.1 Road Transport In India:

India's road transport system plays a fundamental role in the country's economic growth, serving as the backbone for passenger and freight movement. In 2024, the nation maintained its position as having the largest road network globally, covering approximately 6.7 million kilometers. This network accommodates nearly 85% of passenger traffic and 64.5% of freight movement, making it indispensable to both daily life and industrial operations.

Although National Highways constitute only 2% of the entire road length, they handle about 40% of total road freight, reflecting their strategic importance. The National Highway network has expanded significantly in recent years, reflecting the government's infrastructure focus to improve mobility, reduce travel time, and boost regional development.

The 2023–24 fiscal year marked a record in highway construction, with 12,349 kilometers completed, showing a 20% increase over the previous year. This was driven by unprecedented capital investment of ₹3.01 lakh crore, which is over 5.7 times the expenditure from a decade earlier. These developments indicate robust progress in the road sector, both in terms of scale and financial commitment.

However, in the following fiscal year, the pace of development began to slow. Only 5,852 kilometers of highways were constructed up to December, and project awards saw a notable

decline from previous figures. Factors such as administrative delays and lack of a unified approval mechanism have been cited as reasons for this downturn.

To improve road safety, the government has focused on addressing accident-prone areas. A total of 13,795 black spots have been identified on National Highways. Remedial actions, both temporary and permanent, have been implemented on a large portion of these locations through engineering improvements and traffic calming strategies.

These initiatives underline the country's commitment to expanding and upgrading its road infrastructure while simultaneously prioritizing safety and sustainability in transport development.

2. REVIEW OF LITERATURE

[1] The study reveals that the servqual model is an effective tool for assessing service quality in public transportation. It highlights findings from Ghana, where availability and reliability were key satisfaction drivers . AI-based forecasting by Liyanage et al. improved service planning in Melbourne. Gender-based interior design preferences in Dhaka were explored using AHP by Sultana and team[2]. Rahatgaonkar and Mathankar found that measuring satisfaction helped MSRTC enhance passenger focus. study reveals that service quality, satisfaction, and attitude are key determinants of public transport usage in developing countries [3].

It highlights safety, reliability, comfort, affordability, and accessibility as the most influential factors shaping passenger perceptions. Many studies identified safety and security as especially critical, particularly for women passengers [4]. Service reliability, including waiting and invehicle time, significantly impacts user satisfaction and mode choice. The review emphasizes the need for tailored policies and improved service features to boost ridership in developing regions [5] . This study employs the Gradient Boosting Decision Trees (GBDT) algorithm, an ensemble learning technique, to identify key factors influencing passenger perception and satisfaction. The analysis is conducted in two distinct phases. In the initial phase, the most influential perceived factors are determined by selecting variables with the highest relative importance scores produced by the GBDT model[6]. Unlike many previous studies on public transport satisfaction that focus solely on either actual travel performance or user perception, this research integrates a more comprehensive approach [7].

The study reveals that passenger perception and satisfaction are shaped by factors like service quality, affordability, punctuality, and infrastructure. The research highlights that while public bus services are cost-effective, they often lag in comfort and maintenance compared to private operators [8]. The study found a significant gap between passenger expectations and service delivery. Factors such as inadequate shelters, delays, and poor facilities impact satisfaction levels. It emphasizes the need for both public and private transport sectors to enhance quality, safety, and customer orientation [9].

The Study reveals that service quality, especially tangibility, reliability, and frequency, significantly affects passenger satisfaction. The SERVQUAL model is widely used to measure these dimensions[10]. Urban context, demographic variables, and mode of transport influence

perception and loyalty. Cost, convenience, cleanliness, and safety are repeatedly identified as key factors. Understanding and addressing user expectations is crucial for enhancing public transportation services[11].

The primary objective of the study is to evaluate the performance of the Tamil Nadu State Transport Corporation (TNSTC) in the Kanyakumari district. Additionally, the study aims to analyze passenger satisfaction with various services provided by TNSTC, focusing on factors such as reliability, punctuality, comfort, and overall service quality [12]. This study is confined to assessing passenger satisfaction specifically within the rural transport services of Agastheeswaram taluk in Kanyakumari district. As a result, the findings may have limited applicability and may only be relevant to populations with similar demographic and regional characteristics. Moreover, the data was collected using an interview schedule administered to selected respondents, which inherently includes certain limitations such as response bias, misinterpretation of questions, and restricted depth of responses[13].

3. METHODOLOGY

The present study aims to examine the issues outlined in the research objectives and is a descriptive research conducted in Agastheeswaram Taluk. The sampling technique adopted is convenience sampling. Since the population is unknown, the sample size has been determined using Cochran's formula for an unknown population, resulting in a sample of 384 respondents. The study is based on primary data, which was collected through a structured questionnaire. For analysis purposes, the collected data was systematically classified to address the various objectives of the study using appropriate statistical tools. The tools employed for detailed analysis include simple percentage analysis, the Kruskal-Wallis test, and the Mann-Whitney U test.

3.1 Analysis And Interpretation

The demographic factor of each respondent is given in table 1 to analyze their interpretation.

Table 1: Demographic Factor of the respondent

| Demographic Factor | Group | Frequency | Percentage |
|---------------------------|------------------------|------------------|-------------------|
| Gender | Male | 112 | 29.2 |
| | Female | 272 | 70.8 |
| Age Group | below 25 | 114 | 29.7 |
| | 25-34 | 77 | 20.1 |
| | 35-44 | 98 | 25.5 |
| | 45-55 | 62 | 16.1 |
| | Above 55 | 33 | 8.6 |
| Occupation | Student | 61 | 15.9 |
| | Government Employees | 170 | 44.3 |
| | Private Employees | 103 | 26.8 |
| | Others | 50 | 13.0 |
| Income | Below 10000 | 72 | 18.8 |
| | 10000-25000 | 58 | 15.1 |
| | 26000-50000 | 120 | 31.3 |
| | Above 50000 | 134 | 34.9 |
| Usage | Daily | 178 | 46.4 |
| | Occasionally | 151 | 39.3 |
| | Rarely | 55 | 14.3 |
| Vehicle Owned | Do not own any vehicle | 197 | 51.3 |
| | Two wheelers | 162 | 42.2 |
| | Four wheelers | 25 | 6.5 |

3.2 Interpretation:

From the above table, it is observed that the demographic profile of the respondents reveals a diverse group across gender, age, occupation, income, usage habits, and vehicle ownership.

In terms of gender, the majority of respondents are female, comprising 70.8%, while males account for 29.2% of the sample. This indicates a strong female representation in the study.

When considering the age distribution, the highest proportion of respondents (29.7%) falls under the age group of below 25 years. This is followed by those aged 35–44 years (25.5%), 25–34 years (20.1%), 45–55 years (16.1%), and above 55 years (8.6%), showing a good spread across different age groups with a noticeable tilt toward the younger population

Regarding occupation, government employees represent the largest group at 44.3%, followed by private employees at 26.8%. Students make up 15.9%, while 13.0% are categorized under others. This suggests a predominance of working professionals in the respondent group, particularly from the public sector.

In terms of monthly income, a significant share of respondents (34.9%) earn above ₹50,000, followed by 31.3% earning between ₹26,000–₹50,000. Those earning below ₹10,000 and between ₹10,000–₹25,000 constitute 18.8% and 15.1% respectively, indicating a relatively affluent sample group.

Looking at usage behavior, nearly half of the respondents (46.4%) reported using the relevant service or product on a daily basis. Another 39.3% use it occasionally, while only 14.3% use it rarely, reflecting a high level of engagement among the participants.

With respect to vehicle ownership, a majority of respondents (51.3%) reported not owning any vehicle. Among those who do, 42.2% own two-wheelers and only 6.5% own four-wheelers, suggesting that two-wheelers are the most common mode of private transport among vehicle owners.

3.3 Hypothesis: 1

Kruskal Wallis Test:

H₀ : There is no significant difference among mean rank of age of the respondent and overall satisfaction with existing rendered by TNSTC.

H₁ : There is significant difference among mean rank of age of the respondent and overall satisfaction with existing service rendered by TNSTC.

Table 2: Age group and Overall Satisfaction with Existing Service Rendered by TNSTC

| Factor | Age | | | | | Chi square | P value |
|--|----------|--------|--------|--------|----------|------------|---------|
| | Below 25 | 25-34 | 35-44 | 45-55 | Above 55 | | |
| Overall satisfaction with existing service rendered by TNSTC | 190.50 | 183.48 | 201.26 | 189.48 | 200.12 | 1.418 | 0.841 |

Inference:

The table 2 presents the overall satisfaction levels with the existing services rendered by TNSTC across different age groups. The mean ranks indicate that respondents in the 35–44 age group is 201.26, and above 55 age group is 200.12, reported relatively higher satisfaction compared to other groups, while the lowest satisfaction was observed among the 25–34 age group is 183.48. Since the p-value is greater than the standard significance level of 0.05, the result is not statistically significant. This indicates that there is no significant difference in overall satisfaction with TNSTC services among the different age groups considered in the study.

Hypothesis 2

H₀: There is no significant difference among mean rank of usage of government bus with respect to time schedule maintained by Buses of TNSTC.

H₁: There is significant difference among mean rank of usage of government bus with respect to time schedule maintained by Buses of TNSTC.

Table : 3 Usage of government vehicle and Time schedule maintained by Buses of TNSTC.

| Factor | Usage | | | Chi square | P value |
|--|--------|------------------|--------|------------|---------|
| | Daily | Occasionall y | Rarely | | |
| Time Schedule maintained by Buses of TNSTC | 191.71 | 195.95 | 185.59 | 0.469 | 0.791 |

Inference:

The table 3 presents the satisfaction levels of respondents regarding the time schedule maintained by TNSTC buses, based on their frequency of usage. Respondents who use the service occasionally reported the highest level of satisfaction with a mean rank of 195.95, followed by daily users with a mean rank of 191.71. Those who rarely use the service had the lowest satisfaction, with a mean rank of 185.59. The test resulted in a value of 0.469, with a pvalue of 0.791. Since the p-value is greater than the standard significance level of 0.05, it can be concluded that there is no significant difference in the satisfaction levels regarding the time schedule of TNSTC buses among respondents with different usage frequencies.

Hypothesis 3

Mann Whitney U Test:

H₀: There is no significant difference between mean rank of male and female with respect to ticket pricing.

H₁: There is significant difference between mean rank of male and female with respect to ticket pricing.

Table 4: Gender and Ticket Pricing

| Factor | Mean Rank of Gender | | Z Value | P value |
|--|---------------------|--------|---------|---------|
| | Male | Female | | |
| Ticket pricing maintained by Buses of TNSSTC | 183.21 | 196.33 | 1.203 | 0.229 |

Inference:

The table 4 shows the perception of male and female respondents regarding the ticket pricing maintained by TNSSTC buses. The mean rank for females is 196.33, which is slightly higher than that of males, whose mean rank is 183.21. This suggests that female respondents are somewhat more satisfied with the ticket pricing compared to their male counterparts.

To examine whether this difference is statistically significant, the Mann-Whitney U test was performed. The Z value obtained is 1.203, and the corresponding p-value is 0.229. Since the pvalue is greater than the standard significance level of 0.05, it indicates that the difference in opinion between male and female respondents regarding ticket pricing is not significant.

4. FINDINGS

The study reveals a diverse respondent profile in terms of gender, age, occupation, income, usage, and vehicle ownership. The majority of respondents are female and fall under the age group below 25, with a significant portion being government employees and earning above ₹50,000 monthly. Most respondents use the TNSSTC service daily or occasionally, and over half do not own any vehicle. Satisfaction levels with TNSSTC services, such as overall service quality, time schedule, and ticket pricing, show some variation across demographic groups. However, statistical tests (Kruskal-Wallis and Mann-Whitney U) indicate that these differences are not significant, suggesting that perceptions are fairly consistent across age, usage frequency, and gender.

4.1 Suggestions

While overall satisfaction with TNSSTC services appears consistent across different demographic groups, there is still room for improvement to enhance the passenger experience. TNSSTC should prioritize improving adherence to time schedules, as even frequent users showed only moderate satisfaction in this area. Timely arrivals and departures are critical for building trust, especially among daily commuters. Although digital ticketing is already available, efforts can be made to increase awareness and usage. Additionally, periodic reviews of ticket pricing in relation to service quality and passenger expectations can help ensure

continued fairness and transparency. Lastly, incorporating passenger feedback mechanisms and acting upon them promptly can foster a sense of responsiveness and accountability, ultimately leading to higher satisfaction across all segments.

5.CONCLUSION

The study reveals that satisfaction with TNSTC services is generally consistent across different demographic groups, with no significant variation based on age, gender, or frequency of usage. However, aspects such as time schedule and service efficiency present opportunities for improvement. It is noteworthy that the Tamil Nadu government has introduced free travel for women in town buses, a commendable initiative that has likely contributed to the high proportion of female users and improved accessibility. To build on this progress, TNSTC should focus on enhancing punctuality, promoting the benefits of digital ticketing more widely, and incorporating regular passenger feedback to ensure that services continue to meet the diverse needs of the public effectively.

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