

Evaluating The Satisfaction of Two-Wheeler Taxi Users in Aizawl City's Public Transport System

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Abstract—This study examines customer satisfaction among two-wheeler taxi users in Aizawl city, Mizoram. It focuses on service attributes such as affordability, safety, convenience, and availability. The two-wheeler taxis introduced in the city have emerged as an essential mode of urban transport in Aizawl, addressing challenges posed by narrow, hilly roads and traffic congestion. A structured survey of 250 users was developed and conducted using a quantitative approach, collecting demographic data and satisfaction ratings on multiple service dimensions using a five-point Likert scale. The Customer Satisfaction Index (CSAT) and Net Promoter Score (NPS) were calculated to quantify satisfaction and loyalty that shows an insight into status of the service amongst users. Results indicate high satisfaction with product quality (87.86%) and ease of use (92.10%), while value for money (67.60%) and safety (67.20%) were identified as areas needing improvement. The NPS revealed strong customer loyalty, with 74.8% promoters. Registration data from 2016 to 2022 show a significant increase in two-wheeler taxi vehicles, reflecting growing demand aligned with positive user experiences. Despite overall favourable perceptions, addressing concerns around pricing and safety is critical for sustaining growth and enhancing service quality. This study provides vital insights for policymakers and service providers aiming to optimize two-wheeler taxi services, thereby improving urban mobility and meeting the evolving transportation needs of Aizawl's residents.

Keywords- Public Transport, Customer, Satisfaction, Two-wheeler, Index.

I. INTRODUCTION

As cities grow, integrating two-wheeler options into public transport strategies can improve accessibility and sustainability (Smith, 2020). Two-wheeler public transportation plays a crucial role in urban mobility, especially in densely populated cities where traffic congestion is a persistent challenge. It offers an affordable, efficient, and flexible mode of transport, enabling quicker commutes compared to larger vehicles. Two-wheelers, including motorcycles and scooters, are widely used for short to medium distances and provide last-mile connectivity, enhancing and enriching public transport systems. Their compact size allows easier navigation through narrow streets and heavy traffic, contributing to reduced travel time and fuel consumption.

In 1973, Aizawl saw the introduction of the Town Bus service, marking the first instance of mass transit in Mizoram for passenger transportation. The system grew in 1981 with the addition of taxi (cab) services.

More recently, in 2016, auto-rickshaws and two-wheeler taxi services were officially introduced to meet the increasing demand for last-mile connectivity and personalized transportation options (Directorate of Transport, Mizoram).

The introduction of two-wheeler taxi service in Aizawl city is to address the growing demand for efficient and affordable urban transportation for curbing road congestions. This has become one of an important part of the city's transport network offering quick connectivity and reduce travel time compared to the already existing other modes of public transport system.

Public transport users have needs and preferences, including reliability, convenience, safety, comfort, accessibility, and affordability, that affect their satisfaction with the services provided (Imam, R.2014). This paper aims to evaluate the satisfaction level of the two-wheeler taxi service users in Aizawl city by analysing customer satisfaction through a structured survey. Customer satisfaction is a strategic business development tool and has a profound direct impact on the service provider. Understanding customer satisfaction is essential for assessing the effectiveness, reliability, and overall quality of the service provided. To improve the service quality without customizing habitual travellers and satisfying commuters, transit agencies must take up performance measure (Thonggam, S & Singh, A.2024).

By gathering feedback directly from users, the study will identify key factors influencing satisfaction such as affordability, safety, convenience, and availability. This evaluation will provide valuable insights to improve service delivery and address any operational challenges by the judgement of the users. Moreover, assessing customer perspectives helps in enhancing the sustainability of the two-wheeler taxi service, ensuring it meets the evolving transportation needs of Aizawl's residents (Kumar & Singh. 2019).

II. STUDY AREA

Aizawl, the capital city of Mizoram, was established on February 25, 1890 has area of 129.9 square kilometers. When Mizoram was designated as a state in 1987, Aizawl became its capital (Britannica.com). The city is situated at an elevation ranging from approximately 950 to 1155 meters above sea level.

The study area is located between latitudes 23°39' and 23°48' N and longitudes 92°39' and 92°46' E. Aizawl is connected by road to Silchar (Assam) via National Highway 54, to Agartala (Tripura) via National Highway 44A, and to Imphal (Manipur) via National Highway 150.

The city is located on steep ridges, with urban development extending linearly along these ridge lines and a scarcity of flat land. These geographical characteristics significantly shape the design and evolution of its transportation system. In recent decades, Aizawl has undergone expanding urbanization, leading to higher rates of motor vehicle use and greater strain on its limited transport infrastructure.

The city has a population of 2,93,416 in 2011 Census (Mizoram Statistical Abstract, 2021) that is 26.74 % of the total population of Mizoram (10,97,206). Literacy rate of Aizawl city is 98.36 % higher than state average of 91.33 %. In Aizawl, Male literacy is around 98.52 % while female literacy rate is 98.21 %.

III. OBJECTIVES

1. To calculate and interpret the Customer Satisfaction Index (CSAT) and Net Promoter Score (NPS) for the two-wheeler taxi service in Aizawl.
2. To identify areas of strength and improvement in the two-wheeler taxi service based on customer perceptions and feedback
3. To analyze trends in the registration of two-wheeler taxis in Aizawl City and its correlation with customer satisfaction and service demand.

IV. METHODOLOGY

This study adopted a quantitative research approach to examine customer satisfaction among two-wheeler taxi users in Aizawl City. To gather relevant data, a structured survey was prepared using a questionnaire distributed through Google Forms. The survey targeted two-wheeler taxi users across the city, and a total of 250 respondents were randomly selected to ensure a diverse and representative sample in terms of demographic and socio-economic characteristics.

The questionnaire was divided into two sections. The first section collected demographic information such as gender, age, occupation, and annual family income to profile the users of the two-wheeler taxi service. The second section focused on customers' perceptions and satisfaction regarding multiple service attributes, including fares, accessibility, comfort, empathy, reliability, safety, driver behaviour, and tangibility. Respondents rated these attributes on a five-point Likert scale ranging from 1 (Strongly agree) to 5 (Strongly disagree), which allowed for the quantification of subjective feedback into measurable data.

A random sampling technique was used to select participants from the pool of two-wheeler taxi users, ensuring an unbiased representation of the population.

The chosen sample size of 250 was regarded sufficient to generate statistically meaningful results and provide insights that could be generalized to the wider user base.

Data analysis involved calculating the Customer Satisfaction Index (CSAT) by aggregating the number of positive responses (Agree and Strongly Agree), dividing by the total number of responses, and converting the result into a percentage for each attribute. Additionally, the Net Promoter Score (NPS) was computed to evaluate customer loyalty by classifying respondents into promoters and detractors based on their likelihood to recommend the service. The mean and standard deviation of satisfaction scores were also calculated to assess the overall level and variability of customer satisfaction. Participation was entirely voluntary, and respondents were free to withdraw from the survey at any time without any negative consequences.

V. DISCUSSION

Customer satisfaction in public transport is crucial for ensuring reliable, safe, and comfortable journeys. It promotes trust, increases ridership, supports sustainable mobility, and drives improvements in service quality, ultimately enhancing the overall urban travel experience for the community. "More" public transport does not automatically result in more satisfied customers (Margareta Friman and Markus Felleesson Karlstad University, Sweden).

The attributes of customer satisfaction in public transport typically include; punctuality, reliability, safety and security, cleanliness, comfort, accessibility, affordability, customer service, information, availability and frequency.

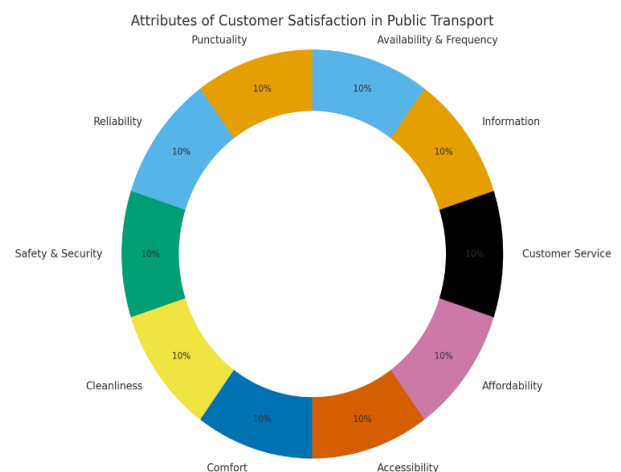


Figure 1: Attributes of Customer satisfaction in public transport.

These attributes in Fig.1 together play a significant role in shaping passengers' overall satisfaction with the service and greatly impact their likelihood and willingness to choose public transportation as a regular mode of travel.

Table 1. Gender of respondent

Gender	Frequency	Percentage	Cumulative Frequency
Male	123	49.2	49.2
Female	127	50.8	100
Total	250	100	

Understanding the demographic makeup of transit users is critical for designing inclusive and effective transportation policies (Martinez & Zhao, 2023). The demographic characteristics of the study sample included a nearly balanced gender distribution, with 49.2% of the respondents identifying as male and 50.8% as female. This indicates a fairly equal representation of both genders across the various age groups examined in the study. Research indicates that gender balance in study samples enhances the reliability of findings related to transport usage patterns (Smith & Johnson, 2020).

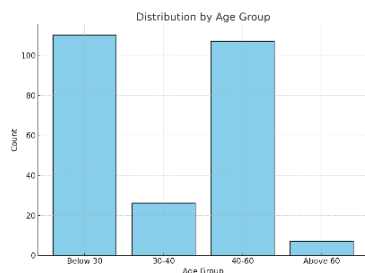


Figure 2: Age group of the respondents

The bar graph illustrates the age-wise distribution of two-wheeler taxi users from the survey. The majority belongs to year group below 30 years, i.e. 110 respondents and 107 respondents were in the age group between 40–60 years. This reflected that 86.8 percent of the total respondents were among the younger and middle-aged populations. Conversely, the age group between 30–40 group (26) demonstrates comparatively lower percentage and 7 persons in the age group above 60 shows minimal usage.

In terms of marital status, the data showed that the majority of participants, accounting for 58%, were unmarried, whereas the remaining 42% reported being married. This distribution provides insight into the personal backgrounds of the respondents within the study. Studies have shown that marital status can significantly influence commuting behaviors and transport mode choices (Lee et al., 2019)

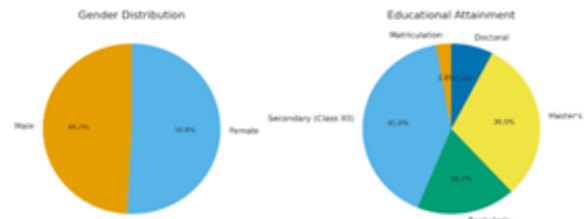


Figure 3: Gender and Education attainment of respondents.

Educational attainment among participants varied, with 40.8% having completed secondary education (Class XII), 18% holding a bachelor's degree, 30.4% possessing a -, and 30% reported an income exceeding ₹600,000. This distribution highlights the socioeconomic diversity within the sample population.

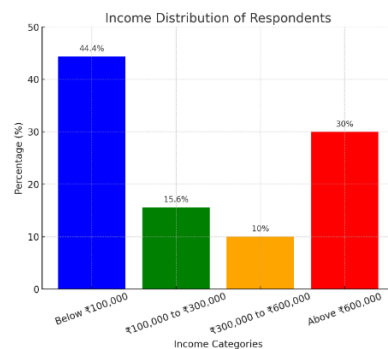


Figure 4: Annual Income of all respondents

Among the total sample of 250 respondents, 91.6% identified as regular users of two-wheeler taxi services, while only 8.4% reported having used the service on a prior occasion. Usage frequency varied, with 45.6% utilizing the service frequently, 38.4% on a daily basis, 9.6% rarely, and 7.6% occasionally. The primary motivations for using the two-wheeler taxi service included personal and family-related errands, commuting to workplaces, and traveling to educational institutions. Notably, 96% of respondents regarded the two-wheeler taxi service as highly beneficial for urban mobility and expressed their intention to continue using it in the future.

5.1 Customer Satisfaction Index

Researchers of consumer behaviour and marketing in developed countries have begun to make comprehensive studies on customer satisfaction during 1970's. Fornell and his colleagues in Michigan University helped Sweden build the first nation-level measurement system of customer satisfaction - Swedish Customer Satisfaction Barometer (SCSB) (Haaften,RV.2024). Following this introduction American Customer Satisfaction Index (ACSI) was launched in 1994. This measurement system developed in other parts of the world and are striving to build their own CSI systems.

Calculating the Customer Satisfaction Index is a straightforward process. It includes gathering customer feedback, analysing it, and then converting it into a numerical score that reflects overall satisfaction. The questions are carefully design for easy interpretation and analysis.

The study includes a total of 17 questions covering five key attributes: product quality, value for money, customer service, ease of use, and safety, with 3, 3, 4, 4, and 3 questions allocated to each attribute respectively. Each question uses a five-point rating scale ranging from strongly agree, agree, neutral, disagree, to strongly disagree. The satisfaction score for each attribute, as shown in Table 2, is calculated by summing the responses marked as strongly agree and agree, dividing this total by the number of questions for that attribute, and then multiplying by 100 to obtain a percentage score.

$$CSAT = \left(\frac{\text{Total Number of Satisfied Customers}}{\text{Total Number of Customers}} \right) \times 100$$

Table 2. Customer Satisfaction Score(CSAT)

Survey Attributes	CSAT score(%)
Product Quality	87.86
Vale for money	67.60
Customer services	75.90
Ease of Use	92.10
Safety	67.20

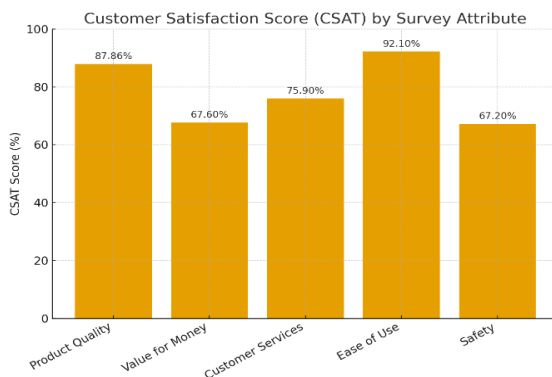


Figure 5: Customer Satisfaction Score (CSAT)

The Customer Satisfaction Score (CSAT) results reveal varied levels of satisfaction across different attributes of the product and service. Product Quality received a high score of 87.86%, indicating that customers are generally pleased with the quality of the product.

The product quality contains three questions on conveniency, feedback on the introduction of the service and general idea on how this service has impact on the users. This suggests that the product meets or exceeds customer expectations in terms of its core features and performance, which is a vital factor in customer retention and brand reputation.

Ease of Use scored the highest at 92.10%, reflecting that customers find the product very user-friendly and accessible. This parameter consists of four criteria that involves availability in needs and efficiency on the need to get to destinations.

This is a strong positive indicator, as ease of use often directly influences customer satisfaction and the likelihood of repeat purchases or recommendations. It shows that the design and functionality of the product are well-aligned with customer needs and preferences.

On the other hand, Value for Money and Safety scored notably lower, at 67.60% and 67.20% respectively. Value for money criteria includes three parameters on fares and fare consistency. Safety comprises three questions on driving style and the behaviour and reliability of the drivers. These lower scores highlight areas of concern. The relatively low Value for Money score suggests that customers may feel the product is somewhat overpriced or does not deliver enough perceived benefit relative to its cost. This could signal a need for pricing reassessment or enhanced communication about the product's benefits. Similarly, the safety score indicates that customers may have reservations or uncertainties about the product's safety features, which can affect overall trust and satisfaction. Addressing these concerns through product improvements or clearer safety information could be critical.

Customer Services has four questions on empathy, politeness, driving style and tangibility. This scored moderately at 75.90%, indicating that while many customers are satisfied with the service experience, there is still room for improvement. Since this score is derived from multiple service-related attributes, the company might consider identifying specific service touchpoints that need enhancement to provide more consistent and effective customer support.

In summary, the service demonstrates strong performance in product quality and usability, which are key drivers of customer satisfaction. However, improving perceptions around value for money, safety, and customer service will be essential to boosting overall satisfaction and customer loyalty. Targeted strategies to address these weaker areas could lead to a more balanced and favourable customer experience.

5.2 Net Promoter Score (NPS)

The survey includes a question focused on the Net Promoter Score (NPS) to evaluate customer loyalty and the likelihood that customers will recommend the company's product or service to others. Specifically, respondents were asked, "How likely are you to recommend our company/product/service to a friend or colleague?" The NPS methodology categorizes respondents into two groups: promoters and detractors. The NPS score is calculated by subtracting the percentage of detractors from the percentage of promoters.

Table 3: Promoters and Detractors of Two-wheeler service

Respondent	Total numbers	Percentage
Promoters	187	74.8
Detractors	63	25.2
Total	250	100

Respondent Distribution: Promoters vs Detractors

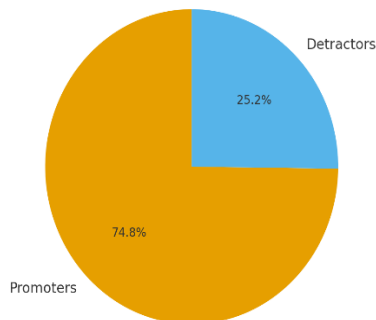


Figure 6: Promoters vs Detractors

According to Table 3 and fig. 6, which summarizes the promoters and detractors for the two-wheeler service, out of 250 respondents, 187 are classified as promoters, representing 74.8% of the sample, while 63 respondents, or 25.2%, are detractors. This indicates that a significant majority of customers are likely to recommend the service, reflecting strong customer loyalty and satisfaction. Customers who have a good experience with transit will probably use transit services again, while customers who experience problems with transit may not use transit services the next time. For this reason, improving service quality is important for customizing habitual travellers and for attracting new users (Eboli, L& Mazzulla, G.2009). The relatively lower proportion of detractors suggests that fewer customers are dissatisfied or unlikely to promote the service. Overall, these results suggest a positive customer perception and a healthy level of advocacy for the two-wheeler service.

5.4 Mean And Standard Deviation

Further, the overall satisfaction score can be tested on their average and deviation by simple mean and standard deviation in the following Table 3.

Table 4: Mean and Standard Deviation of CSAT score

Overall mean for CSAT score	78.86%
Overall SD for CSAT score	0.11458

The mean score of 78.86 represents the central tendency of overall customer satisfaction, indicating that, on average, customers are quite satisfied with the product or service, giving it a rating close to 79 out of 100.

In the context of customer satisfaction research, a mean around this level is generally seen as positive, suggesting that most customers have a favourable impression.

The standard deviation, which measures how much individual satisfaction scores vary around the mean, is about 0.11458 on a scale from 0 to 1, equivalent to roughly 11.46% when expressed as a percentage. This indicates that while many customers provided ratings near the average, there is a moderate spread of opinions—some customers rated their experience higher, while others rated it lower. Such variability is common in satisfaction surveys, as individual experiences and expectations often differ.

It's worth noting that a very low standard deviation would mean almost all customers have very similar satisfaction levels, which is uncommon in real-world data. Conversely, a very high standard deviation would suggest widely differing opinions, pointing to inconsistency in the quality of the product or service. The current standard deviation shows a good balance: the average score is reliable, yet there's enough variation to reflect that customers don't all share the exact same experience.

Recognizing this variation is useful for businesses because it helps identify groups of customers who may be less satisfied or have specific issues. By understanding these differences, companies can make targeted improvements to better meet the needs of all customers, boosting overall satisfaction and minimizing negative feedback.

The combination of the mean and standard deviation offers a detailed perspective: the average satisfaction level is strong, and although there are some differences in customer opinions, the variation is reasonable. This allows for focused efforts to improve service quality and enhance the overall customer experience.

5.5 Relation Of Customer Satisfaction Scores With Registered Two Wheeler For Hire Vehicles Under Dto, Aizawl

The result of the survey may have connections with the registration of Two-Wheelers taxis (Bike Taxis) that offers personalized transport.

These services have proven to be highly effective, offering the ability to maneuver through congested traffic, narrow pathways, and steep inclines where larger vehicles often struggle. This mode of transportation offers a highly adaptable and terrain-sensitive solution, specifically designed to accommodate the unique and challenging geographical features of Aizawl city.

Its ability to efficiently navigate the steep slopes, narrow streets, and uneven terrain makes it particularly well-suited to the city's topography, providing a practical and effective alternative to conventional larger vehicles that often face limitations in such environments.

Table 5: Number of Registered Two-wheeler Vehicles in Aizawl City

YEAR	Number of Registered vehicles(Frequency)	Cumulative Frequency	Percentage
2016(Year of introduction)	35	35	1.06
2017	162	197	4.92
2018	298	495	9.05
2019	179	674	5.43
2020	1171	1845	35.57
2021	1182	3027	35.93
2022	265	3292	8.04

Source: Directorate of Transport

Table 5 displays the number of registered two-wheeler vehicles in Aizawl City over a span of seven years, from 2016 to 2022. The table also includes a cumulative frequency (CF) column, which shows the running total of registered vehicles up to each year.

In 2016, the year when the registration process for two-wheelers was introduced, only 35 vehicles were registered. The following years show a steady increase in registrations, with 162 vehicles in 2017 and 298 in 2018, bringing the cumulative total to 495 by the end of 2018. There was a slight decrease in 2019 with 179 registrations, but the numbers surged dramatically in 2020 and 2021, with 1171 and 1182 vehicles registered respectively. These two years account for a significant portion of the total registrations, pushing the cumulative count to 3027 by the end of 2021.

In 2022, the number of registered vehicles dropped to 265, yet the cumulative total continued to rise, reaching 3292. This indicates that while the rate of new registrations slowed down in the latest year, the overall growth in registered two-wheelers in Aizawl City has been substantial since the introduction of the registration system.

Overall, the data reflects a strong upward trend in the adoption of two-wheelers in Aizawl City, with notable spikes in 2020 and 2021, possibly due to increased demand or other influencing factors during those years.

The increasing number of two-wheeler taxis aligns with high customer satisfaction scores, particularly in product quality (87.86%) and ease of use (92.10%), indicating that the service meets user expectations and is convenient for urban mobility in Aizawl's narrow and hilly terrain.

The strong Net Promoter Score (74.8% promoters) further reflects positive customer loyalty and willingness to recommend the service, which likely contributed to the rising registrations and service adoption. One way to increase public transport usage is to retain current users while at the same time attracting new ones (Tong ha, S. et al.2019).

Areas with lower satisfaction scores—value for money (67.60%) and safety (67.20%)—highlight challenges that could affect future demand if not addressed, suggesting that while demand has grown, service providers need to focus on these aspects to sustain customer trust and growth.

The usage pattern data showing frequent and regular use (with 91.6% regular users) also supports the notion of robust demand for two-wheeler taxis, correlating with the upward registration trend.

The drop in new registrations in 2022 may signal a new government policies, that the market has reached a level of maturity or that customers are awaiting service improvements before further expansion.

VI. CONCLUSION

In conclusion, the study highlights a generally positive customer experience with the two-wheeler service, as evidenced by high satisfaction scores in product quality and ease of use, along with a strong Net Promoter Score indicating customer loyalty and willingness to recommend the service. Despite these strengths, the survey identified areas needing improvement, particularly in value for money (67.60%) and safety (67.20%).

These relatively lower scores highlight potential barriers to further growth and customer retention. Addressing these concerns through enhanced safety measures, transparent pricing, and improved customer support will be essential to maintain trust and encourage sustained demand.

Despite these strengths, the survey identified areas needing improvement, particularly in value for money (67.60%) and safety (67.20%). These relatively lower scores highlight potential barriers to further growth and customer retention. Addressing these concerns through enhanced safety measures, transparent pricing, and improved customer support will be essential to maintain trust and encourage sustained demand.

In conclusion, the registration data and customer satisfaction analysis jointly illustrate a successful integration of two-wheeler taxis into Aizawl's transport ecosystem, driven by positive user experiences and increasing demand. To capitalize on this momentum, service providers must focus on enhancing safety and value perceptions, ensuring the service remains competitive, trusted, and responsive to evolving urban mobility needs.

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