

Passenger Characteristics and Service Factors Associated with Passenger Perception of Public Transport on the Tanjung Karang–Teluk Betung Route, Bandar Lampung, Indonesia

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ABSTRACT: Urban public transportation plays an important role in supporting daily mobility, particularly for communities that rely on affordable and accessible transport services. However, passenger perceptions of public transportation may vary depending on socioeconomic characteristics and perceived service quality. This study examines passenger characteristics and identifies service-related factors associated with passenger perceptions of public transportation along the Tanjung Karang–Teluk Betung route in Bandar Lampung, Indonesia. A field survey was conducted from 10 to 25 June 2026 using a structured questionnaire administered to 100 public transport passengers. Respondents were recruited at and around Pasar Bawah Terminal and along the study route on selected weekdays and Sundays between 06:00 and 18:00. Descriptive statistics were used to characterize passenger demographics and travel patterns, while multiple linear regression was employed to examine the associations between passenger perceptions and eight service-related variables: fare affordability, ease of accessing public transport, waiting time, safety, comfort, service quality, service availability, and vehicle suitability. The regression model yielded an R^2 of 0.925 and an adjusted R^2 of 0.918, indicating that the eight variables collectively explained 92.5% of the variation in passenger perceptions. Fare affordability, waiting time, safety, comfort, service quality, service availability, and vehicle suitability were statistically significantly associated with passenger perceptions, whereas ease of accessing public transport was not statistically significant. The study provides route-specific empirical evidence on passenger characteristics and the service attributes influencing perceptions of conventional urban public transportation in Indonesia. The findings suggest that maintaining affordable fares should be complemented by improvements in service reliability, safety, comfort, service quality, and vehicle condition to enhance the attractiveness and continued use of public transportation in Bandar Lampung.

KEYWORDS: Passenger perception; public transport; service quality; travel behavior; urban mobility; Bandar Lampung

1. Introduction

Urban transportation plays a vital role in supporting economic activities, education, employment, and access to essential services. Public transportation is particularly important in developing cities, where it provides mobility opportunities for individuals who do not own private vehicles or cannot regularly afford to use them. An efficient and accessible public transportation system can also contribute to sustainable urban development by reducing dependence on private vehicles, alleviating traffic congestion, and minimizing environmental impacts. However, these benefits depend largely on the ability of public transportation services to provide reliable, affordable, comfortable, and competitive mobility options that meet passenger expectations [1–3].

Travel behavior and transportation mode choice are influenced by various socioeconomic, psychological, and service-related factors. Previous studies have demonstrated that individual characteristics, including income, occupation, age, and household circumstances, significantly influence transportation decisions and mobility preferences [4–6]. In addition, transportation mode choice is associated with service attributes such as travel time, transportation costs, convenience, accessibility, and reliability [7–9]. These factors are particularly relevant in developing urban areas, where conventional public transportation services compete with motorcycles, private cars, and other mobility alternatives. Understanding how passengers perceive these attributes is therefore essential for identifying service deficiencies and developing appropriate strategies to improve public transportation performance.

Passenger perceptions and satisfaction are closely associated with the quality of public transportation services. Previous research has indicated that waiting time, comfort, convenience, accessibility, and service reliability influence how passengers evaluate their travel experiences [7]. Furthermore, perceived service quality has been associated with passenger satisfaction, behavioral intentions, and willingness to continue using public transportation [10]. Positive perceptions may contribute to greater passenger confidence and continued service use, whereas negative experiences may reduce the attractiveness of public transportation compared with alternative modes. Consequently, evaluating passenger perceptions provides valuable insights into service performance from the users' perspective and helps transportation operators and policymakers identify areas requiring improvement.

In Indonesia, conventional urban public transportation continues to face challenges related to service reliability, accessibility, vehicle condition, passenger comfort, and competition from private transportation. Previous studies involving Indonesian commuters have demonstrated that transportation decisions are influenced by socioeconomic characteristics and trip-related factors [6]. Although affordable fares may encourage passengers to continue using conventional public transportation, affordability alone may not adequately compensate for deficiencies in service quality, safety, reliability, and vehicle conditions. These challenges highlight the importance of examining passenger perceptions across multiple service dimensions rather than evaluating transportation performance solely through operational indicators or passenger characteristics.

Bandar Lampung, a major urban center in southern Sumatra, experiences substantial daily mobility associated with residential, commercial, educational, and employment activities. The Tanjung Karang–Teluk Betung route serves as an urban public transportation corridor connecting several activity centers within the city. Public transportation along this route

primarily consists of small-capacity minibuses, including Suzuki Carry/Futura-type vehicles with an approximate passenger capacity of 12 people. Many vehicles observed along the route are relatively old, raising concerns regarding passenger comfort, safety, vehicle suitability, and overall service quality. Furthermore, the continued operation of conventional public transportation within an increasingly competitive urban mobility environment creates challenges for maintaining passenger confidence and service attractiveness. These conditions emphasize the need for a systematic assessment of passenger characteristics and perceptions to better understand the service-related issues affecting this corridor.

Despite the importance of conventional public transportation, several challenges remain in understanding how different service characteristics are associated with passenger perceptions in specific urban corridors. Existing studies have extensively examined transportation mode choice, passenger satisfaction, travel behavior, and service quality [4–10]. However, these investigations have often focused on broader transportation systems or general relationships between socioeconomic characteristics and mobility decisions. Route-specific empirical evidence remains limited regarding the simultaneous associations between multiple service attributes and overall passenger perceptions of conventional urban public transportation in Bandar Lampung. In particular, insufficient attention has been given to evaluating how fare levels, ease of accessing public transportation, waiting time, safety, comfort, service quality, service availability, and vehicle suitability are collectively associated with passenger perceptions along the Tanjung Karang–Teluk Betung corridor. This knowledge gap limits the availability of locally relevant evidence for identifying which service characteristics warrant greater attention in transportation planning and service improvement.

To address this gap, the present study investigates passenger characteristics and service-related factors associated with overall passenger perceptions of conventional public transportation along the Tanjung Karang–Teluk Betung route in Bandar Lampung, Indonesia. The study first identifies the socioeconomic characteristics and travel patterns of passengers using the corridor. It then evaluates passenger perceptions of key transportation service attributes, including fares, ease of obtaining transportation, speed of obtaining transportation, safety, comfort, service quality, certainty of obtaining transportation, and vehicle suitability. Finally, multiple linear regression is employed to examine the statistical associations between these eight service-related variables and overall passenger perceptions. By integrating passenger characteristics with a multidimensional assessment of transportation services, the study provides route-specific empirical evidence that can support the identification of service improvement priorities. The principal contribution of this study lies in its integrated, corridor-specific assessment of conventional urban public transportation, rather than the development of a new analytical method. As the analysis is based on cross-sectional survey data, the findings are interpreted as statistical associations rather than causal relationships or direct evidence of changes in transportation mode choice, passenger behavior, or continued service use.

2. Materials and Methods

2.1. Study Area.

The study was conducted along the Tanjung Karang–Teluk Betung public transportation route in Bandar Lampung, Lampung Province, Indonesia. The survey covered passengers using public transportation at and around Pasar Bawah Terminal and those traveling along the

designated route. The study area represents an urban transportation corridor connecting several residential, commercial, and other activity centers within Bandar Lampung. Public transportation services along the observed route were predominantly operated using Suzuki Carry/Futura-type minibuses with an approximate capacity of 12 passengers. Based on field observations, the vehicles were generally manufactured between 1997 and 2002 and had engine capacities of approximately 1,300 cc. These characteristics reflect the continued operation of conventional small-capacity public transportation vehicles within the urban transportation network. The Tanjung Karang–Teluk Betung route was selected because it serves passengers with diverse socioeconomic backgrounds and travel purposes while connecting several important urban activity areas. These characteristics provide a relevant setting for investigating passenger travel patterns, evaluating perceived transportation service quality, and examining the associations between service-related attributes and overall passenger perceptions.

2.2. Survey Design and Data Collection.

This study employed a quantitative, cross-sectional survey design supported by direct field observations and structured questionnaires. Primary data were collected from 10 to 25 June 2026 between 06:00 and 18:00 on selected Mondays, Thursdays, and Sundays. The survey schedule was designed to capture variations in passenger characteristics and travel conditions across working days and weekends. A total of 100 passengers participated in the survey. Eligible respondents included individuals who were using, boarding, alighting from, or accessing public transportation along the Tanjung Karang–Teluk Betung route during the data collection period. Respondents were recruited at and around Pasar Bawah Terminal and at selected locations along the route to obtain information from passengers with different travel characteristics and service experiences.

Respondents were selected using a systematic random sampling procedure at the designated survey locations. Following the identification of eligible passengers, the survey team approached potential respondents according to a predetermined selection interval. When multiple eligible passengers were simultaneously available, the initial respondent was selected randomly, after which subsequent respondents were approached according to the established interval. This procedure was intended to reduce interviewer selection bias and improve the consistency of respondent recruitment. To minimize duplicate responses, each passenger was permitted to complete the questionnaire only once during the survey period. Before administering the questionnaire, respondents were asked whether they had previously participated in the survey. Data collection was distributed across the selected survey days, observation periods, and locations to capture variations in socioeconomic characteristics, travel purposes, and perceived transportation service conditions.

2.3. Questionnaire Design and Measurement.

The questionnaire was developed to collect information on passenger characteristics, travel behavior, perceived transportation service attributes, and overall passenger perceptions. It consisted of four main components covering socioeconomic characteristics, travel characteristics, service-related attributes, and overall passenger perceptions. Socioeconomic information was collected to describe the demographic and economic profiles of respondents, while travel-related questions were used to identify passenger mobility patterns and

transportation service use. The service-related attributes and overall passenger perceptions were measured using structured ordinal response categories with five levels. Numerical values ranging from 1 to 5 were assigned to the response categories according to the predetermined coding scheme. These numerical codes were subsequently used in the statistical analysis to examine the associations between perceived service characteristics and overall passenger perceptions.

The dependent variable was overall passenger perception (Y), representing respondents' general evaluations of the public transportation service. Eight independent variables were included in the analysis: tariff (X₁), ease of obtaining public transportation (X₂), speed of obtaining public transportation (X₃), safety (X₄), comfort (X₅), service quality (X₆), certainty of obtaining public transportation (X₇), and vehicle suitability (X₈). These variables were selected to represent the principal service dimensions considered relevant to passenger evaluations of conventional urban public transportation. Three variables related to accessibility and service reliability were conceptually distinguished to avoid overlapping interpretations. Ease of obtaining public transportation (X₂) referred to the perceived difficulty or convenience of accessing the service. Speed of obtaining public transportation (X₃) represented passengers' perceptions of the time required to obtain or board an available vehicle. Certainty of obtaining public transportation (X₇) referred to the perceived predictability and reliability of service availability when transportation was required. Although these variables are conceptually related, each captures a different aspect of passengers' experiences with public transportation accessibility and reliability. The operational definitions, measurement indicators, and numerical coding procedures for all variables are presented in Table 1. The response categories were coded according to the original questionnaire design to maintain consistency between data collection and statistical analysis.

Table 1. Operational definitions and questionnaire coding of the study variables.

Variable	Construct	Measurement	Coding
Y	Overall passenger perception	Overall assessment of the service	1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Very good
X ₁	Tariff	Perceived fare affordability	1 = Very expensive; 2 = Expensive; 3 = Moderate; 4 = Cheap; 5 = Very cheap
X ₂	Ease of obtaining public transportation	Perceived ease of accessing public transportation	1 = Very difficult to 5 = Very easy
X ₃	Speed of obtaining public transportation	Perceived time required to obtain a vehicle	1 = Very fast; 2 = Fast; 3 = Moderate; 4 = Slow; 5 = Very slow
X ₄	Safety	Perceived safety during transportation use	1 = Very unsafe to 5 = Very safe
X ₅	Comfort	Perceived comfort during travel	1 = Very comfortable; 2 = Comfortable; 3 = Moderate; 4 = Uncomfortable; 5 = Very uncomfortable
X ₆	Service quality	Overall perceived service quality	1 = Very poor to 5 = Very good
X ₇	Certainty of obtaining public transportation	Perceived reliability and predictability of service availability	1 = Very uncertain to 5 = Very certain
X ₈	Vehicle suitability	Perceived suitability of vehicle conditions	1 = Very unsuitable to 5 = Very suitable

The coding directions of the independent variables were considered when interpreting the regression results. Specifically, speed of obtaining public transportation (X₃) and comfort (X₅) were coded in the opposite direction from safety (X₄), service quality (X₆), certainty of obtaining public transportation (X₇), and vehicle suitability (X₈). Higher scores for X₃ indicated

longer perceived waiting times or slower access to available vehicles, whereas higher scores for X_5 represented lower perceived comfort. Consequently, negative regression coefficients for these variables would indicate that slower access or reduced comfort was associated with lower overall passenger perceptions, assuming other variables remained constant. The coding scheme was established before regression analysis and consistently applied throughout the study.

2.4. Conceptual Framework and Regression Model.

The conceptual framework was developed to examine the associations between transportation service characteristics and overall passenger perceptions. Overall passenger perception was treated as the dependent variable, representing passengers' general evaluations of the public transportation service, while eight service-related attributes were specified as independent variables. These attributes covered fare affordability, transportation accessibility, service availability, safety, comfort, service quality, and vehicle conditions. The framework assumed that each service attribute could be statistically associated with overall passenger perception after accounting for the other variables included in the model. Multiple linear regression was employed to estimate the associations between the eight independent variables and overall passenger perception. The analysis was conducted using the numerical scores assigned to the questionnaire responses. Although the individual variables were measured using ordinal categories, their coded values were treated as numerical predictors for the regression analysis. The model was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \varepsilon \quad (1)$$

where Y represents overall passenger perception; X_1 denotes tariff; X_2 represents ease of obtaining public transportation; X_3 denotes speed of obtaining public transportation; X_4 represents safety; X_5 denotes comfort; X_6 represents service quality; X_7 denotes certainty of obtaining public transportation; and X_8 represents vehicle suitability. The parameter β_0 is the regression intercept, β_1 through β_8 are the unstandardized regression coefficients associated with the respective independent variables, and ε represents the residual error term.

The regression coefficients were interpreted as the estimated changes in overall passenger perception associated with a one-unit increase in each independent variable while holding the remaining predictors constant. The direction and magnitude of these coefficients were interpreted according to the coding scheme presented in Table 1. Because the study employed a cross-sectional survey design, the regression analysis was intended to identify statistical associations rather than establish causal relationships between transportation service characteristics and passenger perceptions.

2.5. Data Analysis.

Descriptive statistical analysis was performed to summarize respondents' socioeconomic characteristics, travel behavior, and perceptions of public transportation services. The analysis provided an overview of passenger profiles, travel patterns, and evaluations of the service attributes examined in this study. Multiple linear regression was subsequently employed to investigate the statistical associations between eight independent variables and overall

passenger perception. The regression analysis used unstandardized coefficients to estimate the direction and magnitude of the association between each service-related variable and passenger perception while controlling for the other variables included in the model.

The statistical significance of individual regression coefficients was evaluated using *t*-tests at a significance level of 0.05, while the overall significance of the regression model was assessed using the F_{test} . The coefficient of determination (R^2) and adjusted R^2 were calculated to evaluate the proportion of variation in overall passenger perception explained by the independent variables. The adjusted R^2 was also considered to account for the number of predictors included in the model. Because the study employed a cross-sectional survey design, statistically significant regression coefficients were interpreted as associations rather than evidence of causal relationships.

Diagnostic tests were conducted to evaluate the assumptions underlying multiple linear regression, including residual normality, multicollinearity, and heteroscedasticity. Residual normality was assessed using the Kolmogorov–Smirnov test, which yielded a significance value of 0.200. Since this value exceeded the 0.05 significance threshold, the test did not indicate a statistically significant departure from normality. However, this result does not establish that the residuals were perfectly normally distributed.

Multicollinearity among the independent variables was evaluated using tolerance values and variance inflation factors (VIFs). The tolerance values ranged from 0.421 to 0.742, while the VIF values ranged from 1.348 to 2.375. All tolerance values exceeded the minimum threshold of 0.10, and all VIF values were below the commonly applied threshold of 10. These findings indicated that severe multicollinearity was not detected among the independent variables, suggesting that the estimated regression coefficients were unlikely to be substantially affected by excessive linear dependence among the predictors.

Heteroscedasticity was examined using the Glejser test and visual inspection of the residual scatterplot. The Glejser test produced significance values ranging from 0.118 to 0.781, all exceeding the 0.05 significance threshold. Furthermore, the residual scatterplot did not exhibit a clear systematic pattern or funnel-shaped distribution. These findings suggested that there was insufficient statistical evidence to reject the assumption of constant error variance. Overall, the diagnostic results did not identify major violations of the tested regression assumptions, supporting the use of multiple linear regression to examine associations between transportation service characteristics and overall passenger perception.

3. Results and Discussion

3.1. Passenger Characteristics.

The socioeconomic characteristics of the 100 respondents were examined based on age, sex, educational attainment, occupation, and monthly income. These characteristics provide an overview of the passenger population using the Tanjung Karang–Teluk Betung public transportation route and help contextualize the potential importance of transportation affordability, accessibility, and service quality. The complete socioeconomic distribution of respondents is presented in Table 2. The age distribution indicates that public transportation users were predominantly young adults and individuals of working age. Respondents aged 25–35 years represented the largest group (38%), followed by those aged 18–24 years (29%) and 36–45 years (17%). Collectively, passengers aged 18–35 years accounted for 67% of the

sample, suggesting that the surveyed service was frequently used by younger individuals who may have regular mobility needs related to employment, education, and other daily activities. Meanwhile, respondents younger than 18 years and older than 45 years represented 7% and 9%, respectively. Although these groups were less represented, their presence indicates that the service accommodates passengers across different age categories. Previous studies have identified age as an important socioeconomic characteristic associated with travel behavior and transportation preferences [4–6]. However, the present descriptive findings do not establish whether age significantly influences overall passenger perceptions.

Table 2. Socioeconomic Characteristics of Respondents.

Characteristic	Category	n	Percentage (%)
Age	<18 years	7	7
	18–24 years	29	29
	25–35 years	38	38
	36–45 years	17	17
	>45 years	9	9
Sex	Male	46	46
	Female	54	54
Education	Elementary school	4	4
	Junior high school	14	14
	Senior high school	59	59
	Diploma	8	8
	Bachelor degree or higher	15	15
Occupation	Employee	34	34
	Student	30	30
	Self-employed	23	23
	Homemaker	7	7
	Other	6	6
Monthly income	< IDR 2,000,000	53	53
	IDR 2,000,000–5,000,000	46	46
	IDR 5,000,000–10,000,000	1	1

The distribution by sex was relatively balanced, with female respondents accounting for 54% and male respondents representing 46%. This composition suggests that the surveyed public transportation service accommodates both male and female passengers without a pronounced imbalance in the observed sample. From a transportation planning perspective, the participation of both groups highlights the relevance of service characteristics such as safety, comfort, accessibility, and reliability. Nevertheless, differences in service perceptions between male and female passengers cannot be inferred from these descriptive percentages alone and would require additional comparative analysis.

Educational attainment was concentrated at the senior high school level, which accounted for 59% of respondents. Passengers with bachelor's degrees or higher represented 15%, while diploma holders accounted for 8%. Junior high school and elementary school graduates represented 14% and 4%, respectively. These findings indicate that the route serves passengers with different educational backgrounds, although senior high school graduates constituted the dominant group. Educational attainment may be associated with employment opportunities, income levels, and mobility preferences, but these relationships were not directly evaluated in

the present analysis. Therefore, the observed educational distribution should primarily be interpreted as a descriptive characteristic of the surveyed passengers.

Regarding occupation, employees represented the largest passenger group (34%), followed by students (30%) and self-employed individuals (23%). Together, these three categories accounted for 87% of respondents. This distribution indicates that the route serves a substantial proportion of passengers whose daily activities may involve regular travel for employment, education, and business purposes. Homemakers and respondents in other occupational categories accounted for 7% and 6%, respectively. The relatively high representation of employees and students suggests that service availability, waiting time, and fare affordability may be particularly relevant considerations for passengers who depend on transportation to reach scheduled activities. However, the frequency and regularity of public transportation use would need to be examined separately to determine the extent of daily dependence.

Monthly income distribution provides further insight into the economic characteristics of the surveyed passengers. More than half of respondents (53%) reported monthly incomes below IDR 2,000,000, while 46% earned between IDR 2,000,000 and IDR 5,000,000. Only 1% reported monthly income between IDR 5,000,000 and IDR 10,000,000. Thus, 99% of respondents reported monthly incomes not exceeding IDR 5,000,000. This concentration in the lower reported income categories suggests that transportation expenditure may be an important consideration for many passengers. Affordable fares could therefore contribute to the attractiveness of conventional public transportation, particularly for individuals with limited transportation budgets. This interpretation is consistent with previous research identifying income and transportation costs as relevant factors in mobility decisions [4–6].

Overall, the socioeconomic findings indicate that the Tanjung Karang–Teluk Betung route serves a passenger population characterized by a relatively high proportion of young adults, employees, students, and respondents in lower income categories. These characteristics provide useful context for understanding the importance of affordable and accessible transportation services. However, because the survey was conducted at selected locations and times, the observed distributions should not be interpreted as representative of all passengers using the route throughout the year. Furthermore, the descriptive analysis does not establish direct relationships between socioeconomic characteristics and passenger perceptions. Such relationships would require additional statistical testing beyond the service-attribute regression model employed in this study.

3.2. Trip Characteristics and Passenger Perceptions.

Travel characteristics and passenger assessments were analyzed to understand how respondents used public transportation along the Tanjung Karang–Teluk Betung route and how they evaluated selected service attributes. The analysis covered trip purpose, in-vehicle travel time, fare expenditure, fare perception, overall service rating, perceived waiting time, and vehicle condition. In this study, travel time refers specifically to the duration between boarding and alighting from the public transportation vehicle and excludes the time required to access the service or wait for an available vehicle. The distribution of travel characteristics and passenger assessments is summarized in Table 3. Trip purpose provides an indication of the activities supported by public transportation along the studied corridor. Work-related trips accounted for the largest proportion (38%), followed by school-related trips (27%) and shopping trips (17%).

Recreation and other purposes represented 4% and 14%, respectively. Collectively, work and school trips accounted for 65% of the reported journeys, indicating that employment and educational activities were major travel purposes among the surveyed passengers. These findings suggest that conventional public transportation continues to provide an important mobility function for individuals traveling to workplaces and educational institutions. For passengers undertaking time-sensitive activities, service reliability and waiting time may be particularly relevant because transportation delays can interfere with scheduled activities. Nevertheless, the present survey did not directly measure punctuality or the consequences of delays, and these implications should therefore be considered potential planning concerns rather than confirmed behavioral effects.

Table 3. Travel Characteristics and Passenger Perceptions.

Variable	Category	n	Percentage (%)
Trip purpose	Work	38	38
	School	27	27
	Shopping	17	17
	Recreation	4	4
	Other	14	14
Travel time	<5 min	47	47
	5–15 min	38	38
	15–30 min	11	11
	30–60 min	4	4
Fare	< IDR 10,000	69	69
	IDR 10,000–15,000	21	21
	IDR 15,000–20,000	4	4
	IDR 20,000–25,000	6	6
Fare perception	Cheap	63	63
Service rating	Good	62	62
	Fair	37	37
	Poor	1	1
Waiting time	Fast	48	48
	Moderate	44	44
	Long	8	8
Vehicle condition	Suitable	74	74
	Less suitable	21	21
	Unsuitable	5	5

The distribution of respondents according to their primary trip purposes is illustrated in Figure 1. Work-related travel represented the largest category, while recreation accounted for the smallest proportion. The figure complements the numerical information in Table 3 by providing a visual comparison of the relative contributions of different travel purposes. The dominance of work and school trips further emphasizes the relevance of maintaining accessible and dependable public transportation services along this corridor. In-vehicle travel times were generally short, with 47% of respondents reporting journeys lasting less than five minutes and another 38% reporting travel times between five and 15 minutes. Consequently, 85% of surveyed passengers reported journeys of no more than 15 minutes, while only 15% reported longer travel durations. This pattern indicates that the surveyed route was frequently used for

relatively short journeys within the urban corridor. Short travel durations may reflect the proximity of activity centers, the availability of intermediate boarding and alighting locations, or the specific journey segments selected by respondents. However, the data do not establish the actual travel distances or average operating speeds. Furthermore, because access time and waiting time were excluded, the reported durations should not be interpreted as total door-to-door travel times.

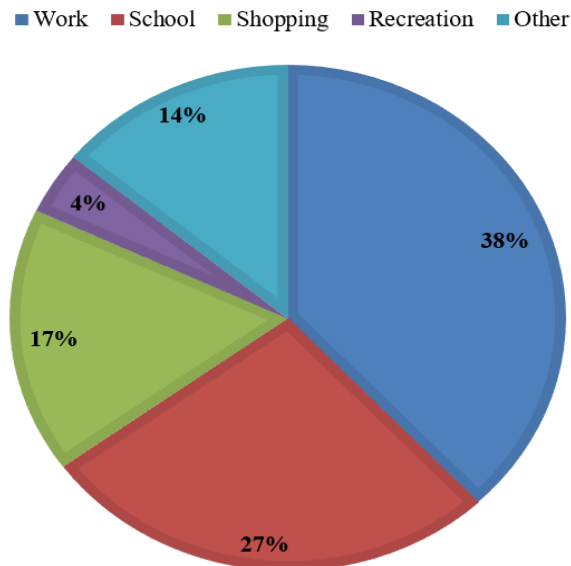


Figure 1. Distribution of Respondents According to Their Primary Trip Purpose.

Fare expenditure was concentrated in the lower payment categories. Most respondents (69%) reported paying less than IDR 10,000 per trip, while 21% paid between IDR 10,000 and IDR 15,000. Only 10% reported fares exceeding IDR 15,000. In addition, 63% of respondents perceived the fare as cheap, suggesting that a majority considered the transportation cost affordable. Nevertheless, actual fare expenditure and perceived affordability represent different dimensions. Fare expenditure reflects the amount paid, whereas affordability depends on income, travel frequency, and the perceived value of transportation services. Given the relatively low reported incomes of most respondents, fare affordability may be particularly relevant to maintaining the accessibility of conventional public transportation.

Passenger evaluations of overall service quality were generally favorable. Approximately 62% rated the service as good, while 37% considered it fair and only 1% rated it poor. These findings suggest that most surveyed passengers considered the existing service acceptable or satisfactory. However, the relatively large proportion of fair assessments indicates that opportunities for improvement remain, particularly in service consistency, passenger comfort, and operational reliability. Because the survey did not directly establish the reasons underlying these ratings, further analysis is required to determine which service attributes are most strongly associated with overall passenger perceptions.

Waiting time was perceived as fast by 48% of respondents, moderate by 44%, and long by 8%. These findings indicate that many passengers experienced relatively favorable service accessibility, although perceptions were not uniformly positive. The substantial proportion of moderate assessments suggests that waiting time may remain an important operational consideration. Nevertheless, the results represent subjective perceptions rather than objectively

measured waiting durations. Consequently, the findings cannot be used to determine actual vehicle headways, service frequency, or average passenger waiting time.

Vehicle condition was assessed positively by most respondents, with 74% considering the vehicles suitable for transportation purposes. Meanwhile, 21% rated the vehicles as less suitable, and 5% considered them unsuitable. Although the majority expressed favorable assessments, approximately one-quarter of respondents reported some degree of concern regarding vehicle suitability. This finding is particularly relevant because the observed fleet predominantly consisted of relatively old minibuses. Vehicle age may be associated with maintenance requirements, passenger comfort, and mechanical reliability, although age alone does not establish poor vehicle performance or unsafe operating conditions.

The positive assessment proportions for selected transportation service attributes are illustrated in Figure 2. The figure presents the percentages of respondents who considered fares cheap (63%), rated overall service quality as good (62%), perceived waiting time as fast (48%), and considered vehicle condition suitable (74%). Vehicle suitability received the highest proportion of favorable assessments, while waiting time received the lowest. These results suggest that passengers were generally more favorable toward vehicle suitability and fare affordability than toward waiting time. However, because the attributes were measured using different response categories, the percentages represent the proportions selecting the specified favorable category rather than directly comparable satisfaction scores. Therefore, the figure should be interpreted descriptively and not as a statistical ranking of service performance.

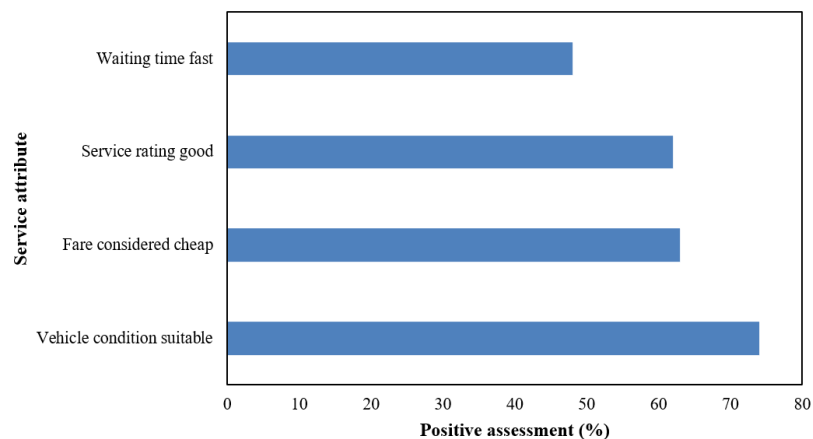


Figure 2. Proportion of Respondents Reporting Favorable Assessments of Selected Public Transportation Service Attributes.

The comparison shown in Figure 3 provides a descriptive overview of passengers' favorable assessments across selected service dimensions. The relatively lower proportion of passengers reporting fast waiting times suggests that service availability and waiting-time consistency may warrant additional investigation. Meanwhile, the higher proportion considering vehicles suitable indicates that most respondents regarded the existing fleet as acceptable for their transportation needs, despite the relatively old vehicles observed along the route. The findings also suggest that fare affordability remains a favorable characteristic of the service. However, the presence of fair overall ratings and less favorable assessments of waiting time and vehicle condition indicates that positive passenger perceptions do not necessarily imply the absence of service deficiencies.

Overall, the findings demonstrate that the Tanjung Karang–Teluk Betung route provides relatively affordable transportation for passengers undertaking predominantly short journeys, particularly those associated with employment and education. Most respondents expressed favorable perceptions of fare affordability, overall service quality, and vehicle suitability, while waiting-time assessments were more varied. These findings highlight the importance of considering multiple service dimensions when evaluating conventional urban public transportation. The descriptive analysis also provides a foundation for the subsequent multiple linear regression analysis, which examines the statistical associations between individual service attributes and overall passenger perceptions.

3.3. Multiple Linear Regression Results.

Multiple linear regression was performed to examine the statistical associations between eight transportation service attributes and overall passenger perception along the Tanjung Karang–Teluk Betung route. The analysis considered tariff, ease of obtaining public transportation, speed of obtaining public transportation, safety, comfort, service quality, certainty of obtaining public transportation, and vehicle suitability. The estimated regression model is expressed in Equation (2).

$$Y = 6.000 + 0.865X_1 - 0.054X_2 - 0.976X_3 + 0.279X_4 - 2.049X_5 + 0.624X_6 + 2.127X_7 + 1.676X_8 \quad (2)$$

The regression coefficients represent unstandardized estimates, indicating the expected change in the modeled passenger-perception score associated with a one-unit increase in each predictor while holding the remaining variables constant. The positive or negative direction of each coefficient was interpreted according to the questionnaire coding described in Table 1. The detailed regression estimates, standard errors, standardized coefficients, t-statistics, significance levels, and confidence intervals are presented in Table 4.

Table 4. Multiple Linear Regression Results.

Variable	B	SE	Standardized β	t	p-value	95% CI	Interpretation
Constant	6	0.547	—	10.96	<0.001	4.913–7.087	Significant
X ₁ Tariff	0.865	0.173	0.221	4.988	<0.001	0.521–1.209	Significant
X ₂ Ease of obtaining mode	−0.054	0.234	−0.011	−0.231	0.818	−0.518–0.410	Not significant
X ₃ Speed of obtaining mode	−0.976	0.223	−0.189	−4.368	<0.001	−1.420–−0.532	Significant
X ₄ Safety	0.279	0.132	0.091	2.113	0.037	0.017–0.541	Significant
X ₅ Comfort	−2.049	0.298	−0.284	−6.882	<0.001	−2.640–−1.458	Significant
X ₆ Service quality	0.624	0.299	0.093	2.09	0.039	0.031–1.217	Significant
X ₇ Certainty of obtaining mode	2.127	0.202	0.431	10.545	<0.001	1.726–2.528	Significant
X ₈ Vehicle suitability	1.676	0.223	0.325	7.504	<0.001	1.232–2.120	Significant

Note: B and SE are based on the reported regression coefficients and t-values. The standardized β values are reconstructed estimates for comparative interpretation and should be replaced by the original statistical software output if available.

The regression model produced an R^2 of 0.925 and an adjusted R^2 of 0.918, indicating that the eight predictors collectively accounted for approximately 92.5% of the observed variation in passenger perception. After adjusting for the number of predictors, the explained variation remained high at 91.8%. The overall F-test was statistically significant, $F(8, 91) = 140.29$, $p < 0.001$, indicating that the predictors were jointly associated with overall passenger perception. Seven variables were statistically significant at the 5% level, while ease of obtaining transportation (X_2) was not significant ($p = 0.818$). These findings suggest that passengers' evaluations were associated with multiple service dimensions rather than fare affordability or accessibility alone.

3.4. Interpretation of the High R^2 .

The relatively high R^2 value of 0.925 indicates a strong statistical fit within the surveyed sample. However, this result requires careful interpretation because the independent variables and dependent variable were derived from passengers' evaluations of the same transportation service. For example, respondents who considered vehicles suitable might also have reported favorable perceptions of comfort and service quality. Similarly, passengers who perceived service availability as reliable might have evaluated waiting time more positively. These relationships could contribute to the high proportion of explained variation. Nevertheless, multicollinearity diagnostics did not indicate severe linear dependence among the predictors. Tolerance values ranged from 0.421 to 0.742, while VIF values ranged from 1.348 to 2.375, remaining within the adopted thresholds. Although these findings support the stability of the predictor relationships, they do not eliminate the possibility of conceptual overlap or common-method effects. Therefore, the high R^2 should be interpreted as evidence of strong statistical association within the sample rather than causal explanatory power or guaranteed predictive performance in other transportation corridors.

3.5. Tariff and Passenger Perception.

Tariff (X_1) demonstrated a positive and statistically significant association with overall passenger perception ($B = 0.865$, $p < 0.001$). Because higher tariff scores represented more favorable perceptions of fare affordability, the positive coefficient indicates that passengers who considered fares more affordable tended to report higher overall perception scores. This finding is consistent with previous studies identifying transportation costs as an important consideration in public transport evaluations and travel decisions [7, 18]. The result is particularly relevant because 53% of respondents reported monthly incomes below IDR 2,000,000, while 69% paid less than IDR 10,000 per trip. Furthermore, 63% perceived the fare as cheap. These findings suggest that affordability represents a favorable characteristic of the existing service, particularly for passengers with limited financial resources. Nevertheless, the regression result does not establish that fare reductions would directly improve passenger perceptions, as the analysis examined perceived affordability rather than the causal effects of fare changes.

3.6. Accessibility, Waiting, and Certainty of Service.

Three variables were examined to distinguish different aspects of public transportation accessibility and reliability. Ease of obtaining transportation (X_2) was not statistically

significant ($B = -0.054$, $p = 0.818$), indicating that perceived ease of access was not independently associated with overall passenger perception after accounting for the other predictors. This result does not imply that accessibility is unimportant, but suggests that its contribution was not statistically distinguishable within the specified model.

In contrast, speed of obtaining transportation (X_3) showed a significant negative coefficient ($B = -0.976$, $p < 0.001$). Because higher scores represented slower access to an available vehicle, the negative coefficient indicates that longer perceived waiting times were associated with less favorable passenger perceptions. This finding is consistent with the descriptive results, in which 44% of respondents rated waiting time as moderate and 8% considered it long. The results suggest that improving the consistency of vehicle availability may be relevant to enhancing passengers' experiences.

Certainty of obtaining transportation (X_7) demonstrated a strong positive association with passenger perception ($B = 2.127$, $p < 0.001$). Its standardized coefficient was also the largest among the reported predictors ($\beta = 0.431$), suggesting that service certainty had the strongest relative association within the fitted model, subject to verification of the standardized estimates. Unlike ease of access, which concerns the convenience of reaching transportation services, service certainty reflects passengers' confidence that a vehicle will be available when needed. This distinction is particularly relevant for work- and school-related trips, which accounted for 65% of surveyed journeys and may involve specific arrival-time requirements.

3.7. Safety, Comfort, and Service Quality.

Safety (X_4) demonstrated a positive and statistically significant association with passenger perception ($B = 0.279$, $p = 0.037$). This result indicates that respondents who perceived the service as safer tended to report more favorable overall evaluations. Although the coefficient was smaller than those of several other predictors, safety remains an important consideration because passengers' confidence in transportation conditions can influence their assessment of service acceptability. Comfort (X_5) showed a statistically significant negative coefficient ($B = -2.049$, $p < 0.001$). This negative relationship reflects the questionnaire coding, in which higher scores represented lower comfort levels. Accordingly, passengers reporting poorer comfort conditions tended to have lower overall perception scores. Comfort may be particularly relevant for conventional minibuses because seating arrangements, ventilation, cleanliness, and vehicle condition can influence the travel experience. However, these specific comfort components were not independently tested in the regression model. Service quality (X_6) was also positively associated with overall passenger perception ($B = 0.624$, $p = 0.039$). The finding suggests that favorable evaluations of service quality were associated with more positive overall assessments, even after accounting for the other transportation attributes. These results are consistent with previous research emphasizing safety, comfort, and service quality as important dimensions of public transportation evaluation [10, 11]. Nevertheless, the conceptual distinction between overall service quality and overall passenger perception should be maintained when interpreting their statistical relationship.

3.8. Vehicle Suitability.

Vehicle suitability (X_8) demonstrated a significant positive association with overall passenger perception ($B = 1.676$, $p < 0.001$). The reported standardized coefficient ($\beta = 0.325$) was the second largest among the predictors, indicating a relatively strong association within the

regression model. This finding suggests that passengers who considered the vehicles more suitable tended to evaluate the overall transportation service more positively. The descriptive findings indicated that 74% of respondents considered the vehicles suitable, while 21% rated them as less suitable and 5% as unsuitable. Thus, 26% expressed some degree of concern regarding vehicle conditions. Considering that the observed fleet predominantly consisted of vehicles manufactured between 1997 and 2002, regular maintenance and roadworthiness inspections remain relevant operational priorities. Improvements in seating, ventilation, cleanliness, lighting, and general vehicle condition may address concerns identified by passengers, although their effectiveness would require further evaluation.

3.9. Implications for Sustainable Urban Transportation.

The findings reinforce previous research identifying transportation costs, service reliability, comfort, safety, and service quality as important dimensions of public transportation evaluation [7, 10, 11, 18]. The present study extends this understanding by providing route-specific evidence from a conventional public transportation corridor in Bandar Lampung. In particular, the strong association between service certainty and passenger perception highlights the relevance of predictable vehicle availability for passengers undertaking employment- and education-related journeys. The findings also demonstrate that affordable fares alone do not fully characterize passengers' evaluations. Although most respondents considered fares affordable, comfort, vehicle suitability, safety, and service reliability remained statistically significant. From a sustainable transportation perspective, maintaining affordable services while improving operational reliability and passenger experience may help strengthen the attractiveness of conventional public transportation. However, because the study did not directly examine changes in mode choice, ridership, or environmental outcomes, its implications for sustainable mobility should be interpreted as potential benefits rather than demonstrated effects.

3.10. Practical Implications for Bandar Lampung.

The results provide several practical considerations for improving conventional public transportation along the Tanjung Karang–Teluk Betung corridor. First, maintaining affordable fares remains relevant given the substantial proportion of respondents in lower income categories. Second, improving the predictability of vehicle availability should receive attention because service certainty demonstrated the strongest reported standardized association with overall passenger perception. More consistent operating schedules, vehicle availability monitoring, and improved passenger information could be considered as potential management measures. Vehicle maintenance and gradual fleet improvement should also be considered because 26% of respondents expressed concerns regarding vehicle suitability. Attention to cleanliness, ventilation, seating conditions, safety inspections, and driver practices may help address passenger expectations regarding comfort and service quality [19–22]. Finally, periodic passenger surveys and operational monitoring could support the evaluation of service improvements over time. These recommendations are informed by the observed statistical associations and descriptive findings; their actual effects should be assessed through subsequent operational evaluations or longitudinal studies.

4. Conclusions

This study investigated passenger characteristics and the associations between transportation service attributes and overall passenger perceptions along the Tanjung Karang–Teluk Betung route in Bandar Lampung, Indonesia. The findings revealed that the surveyed passengers were predominantly young adults, employees, students, and individuals in lower income categories, with employment and education representing the primary travel purposes. Most respondents reported relatively low transportation expenditures, with 69% paying less than IDR 10,000 per trip and 63% perceiving fares as cheap. Overall service evaluations were generally favorable, with 62% rating the service as good. The multiple linear regression model demonstrated a strong statistical fit ($R^2 = 0.925$; adjusted $R^2 = 0.918$). Seven service attributes, namely tariff, speed of obtaining transportation, safety, comfort, service quality, certainty of obtaining transportation, and vehicle suitability, were significantly associated with overall passenger perception, whereas ease of obtaining transportation was not statistically significant. Service certainty and vehicle suitability exhibited particularly strong associations. The negative coefficients for speed of obtaining transportation and comfort reflected their inverse questionnaire coding, indicating that slower access and poorer comfort were associated with less favorable passenger perceptions. These findings highlight the importance of maintaining affordable fares while improving service reliability, safety, comfort, and vehicle conditions. Nevertheless, the high R^2 requires cautious interpretation because the predictors represent related dimensions of passenger experience. Furthermore, the cross-sectional design limits the findings to statistical associations rather than causal relationships. Future research should incorporate larger and more representative samples, objective operational indicators, and longitudinal assessments to strengthen the evidence supporting sustainable public transportation planning and service improvements in Bandar Lampung.

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Author Contribution

Satrio Wicaksono: Conceptualization, methodology, data collection, data analysis, writing—original draft, and visualization. Fery Hendi Jaya: Supervision, methodology, interpretation of results, writing—review and editing, and project administration. Both authors approved the final version of the manuscript.

Competing Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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