



## **PUBLIC TRANSPORTATION DEMAND TO TOURISM DESTINATIONS IN ACEH PROVINCE, INDONESIA**

**Cut Rika Aprilia Naja<sup>1</sup>, Irin Caisarina<sup>2\*</sup>, Fahmi Aulia<sup>3</sup>,  
Shida Irwana Omar<sup>4</sup>**

<sup>1,2,3</sup> *Faculty of Engineering*

UNIVERSITAS SYIAH KUALA

<sup>4</sup> *School of Housing, Building and Planning*

UNIVERSITI SAINS MALAYSIA

### **Abstract**

According to the 2020–2034 Aceh Besar Regency Tourism Development Plan, Lhoknga Beach Recreation Area is one of the province's leading tourism destinations. Coastal tourism destinations often exhibit high dependence on private vehicles, resulting in congestion, environmental degradation, and reduced accessibility. Therefore, the provision of public transportation is essential to facilitate tourist mobility between origins and destinations. This study aims to examine tourists' potential demand for public transportation and identify the key factors influencing their willingness to shift from private vehicles. A quantitative approach was adopted, with a questionnaire administered to 306 tourists visiting six beach destinations, and the data were analysed using factor analysis. The results reveal three principal factors influencing tourists' potential demand for public transportation: (1) traffic and cost-related factors, including congestion, fuel prices, parking limitations, and safety concerns; (2) service quality attributes, such as punctuality, comfort, cleanliness, accessibility, and information availability; and (3) tourists' perceptions of public transport, including flexibility, privacy, and perceived mobility constraints. These findings suggest that enhancing service quality and addressing congestion and travel cost issues can significantly increase tourists' acceptance of public transportation. This study contributes empirical evidence to support sustainable transport planning and policy development for tourism destinations in coastal areas.

**Keywords:** Public transportation; Tourism destination; Tourist Characteristics; Public Transportation Potential Demand; Coastal tourism

<sup>2</sup> Corresponding author. Email: irincaisarina@usk.ac.id

## **INTRODUCTION**

The tourism industry is a significant source of revenue for both national and world economies. Tourism, as a form of travel, is highly dependent on efficient transportation, which moves tourists from their point of departure to the destination (Rohini & Meenakshi, 2024; Rodrigue, 2016). Adequate transportation infrastructure and services enhance tourists' mobility and accessibility to tourist sites, thereby directly supporting tourism development (The Tourism Institute, 2025). Furthermore, transportation connectivity and accessibility play a key role in influencing tourism activities and destination economic growth (Sitorus & Sitorus, 2017). The quality of the tourist experience is also highly influenced by transportation services. Jie & Abu Talib (2024) emphasise that convenience, comfort, and safety in transportation significantly influence tourists' overall satisfaction.

According to the 2020–2034 Aceh Besar Regency Tourism Development Plan (RIPPARKAB), the Lhoknga Beach Recreation Tourism Strategic Area is one of the region's leading tourism destinations, consisting of six major beach attractions: Pantai Lampuk, Pulo Kapuk, Pantai Lhoknga, Pantai Momong, Pantai Babah Dua, and Pantai Babah Kuala Mon Ikeun. This area is strategically located near Banda Aceh City, the capital of Aceh Province, as the main gateway for both international and domestic tourists. As a Tourism Strategic Area, it must integrate four key tourism components, namely, attractions, accessibility, amenities, and ancillary services—as emphasised by Cooper et al (2005). Accessibility refers to the infrastructure and facilities required for visitors to reach a destination, including public transportation access; operational factors such as service frequency and route availability; and transportation hubs, such as airports, seaports, railway networks, and other supporting transport systems (Sunaryo, 2013).

Transportation plays a major role in generating carbon emissions in tourism activities, particularly in the movement of tourists to, from, and within destinations (Peeters & Dubois, 2010). Recent studies have shown that transportation is a significant source of carbon emissions in tourism, with transport-related travel being one of the largest contributors to tourism's overall environmental footprint (Yan & Phucharoen, 2024). Improving public transportation access, a key component of accessibility, has been shown to enhance access to tourism sites and promote sustainable tourism growth by reducing dependence on private vehicles (Naik et al., 2025). Furthermore, encouraging tourists to adopt sustainable travel options - such as public transport, walking, and cycling - can help reduce the carbon footprint associated with tourism transportation (Naik et al., 2025).

According to Government Regulation No. 50 of 2011 concerning the National Tourism Development Master Plan (2010–2025), the development of

transportation facilities aims to ensure tourist accessibility, mobility, and safety in reaching tourism destinations. Furthermore, the 2020–2034 Aceh Besar Regency Tourism Development Plan emphasises that one of the strategic approaches to tourism destination development is the provision of public transportation services through regulatory arrangements and collaboration among stakeholders from both government and private sectors. Therefore, the provision of efficient and reliable public transportation infrastructure is essential for achieving sustainable tourism development (Iamtrakul et al., 2025). Given this phenomenon, investigating tourists' characteristics and potential demand factors that influence the provision of public transportation is crucial.

## **LITERATURE REVIEW**

### **Public Transportation**

Public transport is defined as a shared passenger transport service operating on fixed routes and schedules, designed to carry large volumes of passengers efficiently and equitably (Vuchic, 2017). Saif et al. (2019) also stated that public transport is conceptualised as a shared mobility service that improves accessibility by offering high-capacity, cost-effective travel options for diverse user groups. Enhancing public transport services is essential for improving accessibility for diverse users, particularly low-income groups who are unable to use private vehicles (Othman & Ali, 2020), and for reducing social exclusion (Litman, 2025). It provides multiple benefits across environmental, economic, and social dimensions, including ensuring accessibility to activities and services, reducing traffic congestion, enhancing productivity, and lowering carbon emissions (Litman, 2013). Furthermore, it provides accessibility that can significantly affect daily outcomes and directly influences individuals' ability to reach jobs, services, and social activities (Saif et al., 2019). Encouraging a modal shift from private vehicles to public transportation is also considered essential for achieving sustainable mobility (Banister, 2008). It aligns with Sustainable Development Goal (SDG) 11, particularly Target 11.2, which emphasises providing access to safe, affordable, accessible, and sustainable transport systems for all, while improving road safety and expanding public transport, particularly for vulnerable groups.

In conclusion, public transport plays a critical role in creating accessible, equitable, and sustainable urban mobility systems. By enhancing access to essential activities, reducing congestion and emissions, and supporting social inclusion, strong public transport systems directly enhance the everyday quality of life (Litman, 2023). Strengthening the public transport system is a major solution for reducing dependence on private vehicles and improving urban mobility efficiency (Purwoko et al., 2022). Therefore, encouraging people to shift

away from private vehicles is an essential step in achieving sustainable cities and inclusive transport systems.

### **Tourism Destinations**

UNWTO (2019) defined a tourism destination as a physical space where visitors spend time. A tourism destination is an integrated system comprising 6A framework elements: attractions, accessibility, amenities, activities, available packages, and ancillary services (Buhalis, 2000). Accessibility is one of the six essential components of a tourism destination, emphasising its role in connecting tourists to attractions and services. The development and competitiveness of destinations depend on effective planning, including infrastructure, accessibility, and resilience (Rodrigues et al., 2025), as well as on the contributions of government and coordination among stakeholders to ensure high-quality experiences while maintaining environmental and socio-cultural sustainability (Dredge & Jenkins, 2007).

In conclusion, tourism destinations are multidimensional systems that integrate physical space, infrastructure, and services. Accessibility plays a vital role in connecting tourists to attractions and services and in shaping destination competitiveness and development outcomes. Therefore, integrated planning and stakeholder collaboration in the provision of public transportation are essential for strengthening destination performance while maintaining environmental and socio-cultural sustainability (Becken & Simmons, 2010).

### **Transportation and tourism**

Various studies related to transportation and tourism have been conducted, and they have a strong relation. Prideaux (2000) further demonstrates that transport infrastructure and service provision significantly influence tourism flows, spatial development patterns, and destination competitiveness. Potential tourism destinations can't be reached or developed without transportation infrastructure. The better the infrastructure, the more tourists are willing to visit, and vice versa. Law (2002) stated that the provision of public transportation in tourism development is often neglected. In fact, the tourism sector has increased steadily over the years and will likely continue to grow, as demand for travel is also expected to rise (Graham, Papatheodorou, & Forsyth, 2008). Therefore, to accommodate the increasing number of tourists and maintain sustainable mobility at destinations, it is important to shift to sustainable transport and to improve the efficiency of the transport system (Peeters & Dubois, 2010). Hall (1999), as cited in Madeno (2011), identified 4 transportation roles in tourism development. First, connect tourists' origins to tourist destinations; provide access and mobilise tourists either within the destination's wider area or within the destination itself; and provide access surrounding the destination.

In transporting tourists to and from tourism destinations, transportation has a significant impact on carbon dioxide emissions (Peeters & Dubois, 2010). Among modes of transportation, private vehicles are the most effective means of reaching tourism destinations in developed countries (Hall, 2011). Indeed, it can increase air pollution and endanger the natural environment in tourism destinations. Therefore, to reduce such environmental problems, it will be necessary to reduce personal car use and encourage other, more environmentally sustainable modes of personal transport, such as walking, cycling, and, for longer distances, greater use of public transport (Graham-Rowe et al., 2011). Peeters & Dubois (2010) also stated that the most effective way to minimise air pollution and protect the natural environment is to switch to or increase the use of sustainable modes of transport, such as buses, trains, cycling, and walking.

### **Factors Influencing the Demand for Public Transport**

Several factors influence the demand for public transport, including the quantity and quality of service, spatial factors, fares, and economic factors (Stover & McCormack, 2012). Spatial access, cost, information, physical access, and attitude are the factors that influence someone's ability and desire to use public transport (Daniels & Mulley, 2013). Environmental factors, attitudes, and service quality provided by public transport are determining factors in public transport use (Borhan et al., 2014). It aligns with Sugito et al. (2024), who argue that the quality of public transportation needs improvement by considering passengers' perceptions of service quality, safety, comfort, and accessibility. Environmental aspects and service quality positively affect public transportation users' attitudes.

According to Diab et al. (2017), factors that influence users' perceptions of public transport use include the provision of better-quality services. For new users, quality factors such as punctuality, travel time, and waiting time can affect their satisfaction more than other quality factors, such as seat comfort, air conditioning, and so on. Accessibility, travel purpose, travel time, convenience, service frequency, cost, and parking space availability are also influencing factors of public transport demand (Corpuz, 2007). In addition, Wang & Liu (2015) identified environmental factors, safety, travel distance and time, accessibility, availability, and service frequency as influencing factors in the use of public transport. According to Polat (2012), two factors influence the demand for public transport: structural and external factors. Structural factors include fare, service quality, travel time, travel distance, mode of transportation and travel destination. In contrast, external factors include dependence on public transport, social and economic factors, and policies and attitudes towards public transport.

Overall, the literature suggests that public transport demand is shaped by a combination of service-related, spatial, economic, and behavioural factors. However, it is important to distinguish between actual demand and potential

demand in the context of this study. Actual demand refers to the observed usage of existing public transport services, whereas potential demand reflects the likelihood of individuals using public transportation if such services were available. Since no public transport system currently operates in the Lhoknga coastal tourism area, this study focuses on potential demand, which is assessed through tourists' willingness to shift from private vehicles and their perceptions of hypothetical public transport services. Therefore, the factors identified in this study should be interpreted as determinants of potential demand rather than indicators of actual public transport usage.

## **RESEARCH METHODOLOGY**

Lhoknga District, Aceh Besar Regency, Aceh Province, Indonesia was selected as the study area due to its status as one of the key coastal tourism destinations identified in the 2020–2034 Aceh Besar Regency Tourism Development Plan (RIPPARKAB). The area comprises six major beach attractions, namely Lampuuk Beach, Pulo Kapuk Beach, Lhoknga Beach, Momong Beach, Babah Dua Beach, and Babah Kuala Mon Ikeun Beach. Despite its strong tourism potential and strategic location near Banda Aceh City as the main gateway for visitors, the area is currently not served by public transportation. This condition makes Lhoknga an appropriate case for analysing the potential demand for public transport in coastal tourism destinations.

A quantitative research design was employed to examine the factors influencing the potential demand for public transportation to tourism destinations. The study focused on measurable variables adapted from a validated instrument developed in previous research by Alotaibi (2017), consisting of 17 indicators related to transport demand and tourism behavior.

Data were collected using a structured questionnaire administered directly to tourists at selected beach destinations. A non-probability sampling technique, specifically accidental sampling, was applied due to the dynamic and unpredictable nature of tourist populations. This approach allowed the researchers to efficiently reach respondents who were present at the study sites and met the inclusion criteria, namely tourists who had visited at least one of the six selected beaches.

The field survey was carried out from 3 to 10 July 2021 across six coastal tourism sites in Lhoknga District, namely Lampuuk Beach, Pulo Kapuk Beach, Lhoknga Beach, Momong Beach, Babah Dua Beach, and Babah Kuala Mon Ikeun Beach. A total of 306 valid responses were obtained and used for analysis.

The respondents were predominantly young domestic tourists, with female respondents forming the majority of the sample. Most participants were residents of Banda Aceh and Aceh Besar, primarily students and young working

adults, who generally accessed the destinations using private vehicles. This demographic profile reflects the dominant visitor characteristics of the study area and provides a relevant basis for assessing potential demand for public transportation services.

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS). Factor analysis was employed to identify the underlying dimensions influencing tourists' potential demand for public transportation. Prior to factor extraction, the suitability of the data was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity. The KMO test evaluates the adequacy of the sample for factor analysis, while Bartlett's test determines whether the correlation matrix is appropriate for structure detection and factor extraction. The map of the study area is presented in Figure 1.

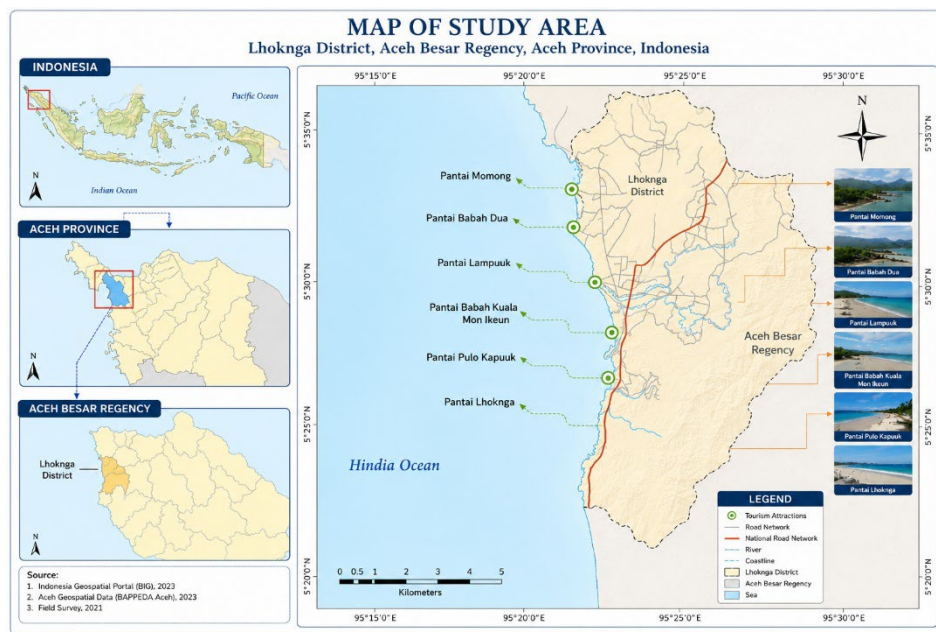


**Figure 1: Research Location**

*Source: Author's elaboration using ArcGIS based on Google Maps, with photographs from Google*

## ANALYSIS AND DISCUSSION

This section presents the results of the data analysis and findings on the factors influencing the potential demand for public transportation to beach tourism destinations. Factor analysis was applied to systematically identify and prioritise demand-related factors for the formulation of a customised public transport system.

## Potential Demand

### a. KMO and Barlett's Test

The Kaiser-Meyer-Olkin measure assesses the adequacy of the sample, based on the sample size. The recommended value of the KMO is above 0.5. In this research, the KMO value is 0.900, which is above the recommended value (0.5) (Table 1). This indicates that the data are valid and sufficient for further analysis. In addition, Bartlett's test of Sphericity is used to test if "x" samples are from populations with equal variances. The recommended value is less than 0.05. Bartlett's test of sphericity for the study yields a p-value of 0.000; therefore, the null hypothesis is not accepted.

**Table 1.** KMO MSA Test

|                                                 |                    |          |
|-------------------------------------------------|--------------------|----------|
| Kaiser-Mayer-Olkin Measure of Sampling Adequacy |                    | .900     |
| Bartlett's Test of Sphericity                   | Approx. Chi-Square | 2634.460 |
|                                                 | Df                 | 136      |
|                                                 | Sig.               | .000     |

Note: KMO Measure of Sampling Adequacy .900.  
Bartlett's test of sphericity (p<.001)

### b. Anti-image correlation

Anti-image correlation is used to determine which variables are appropriate for retention in the study by examining the MSA value. The recommended MSA value exceeds 0.5. If the value is less than 0.5, the variable should be omitted from the research. Based on the SPSS result, the MSA values of all the variables are more than 0.5 (Table 2). This means that all variables can be used in this research.

**Table 2.** Anti-image correlation Test

| Indicator                                                                                                    | Anti-Image Correlation |
|--------------------------------------------------------------------------------------------------------------|------------------------|
| If public transport is provided, I will encourage and recommend my family to use public transport            | .946 <sup>a</sup>      |
| I will use public transport if the stop location is accessible and efficient                                 | .931 <sup>a</sup>      |
| I will use public transport to avoid congestion when visiting the beach tourism destinations.                | .930 <sup>a</sup>      |
| I will use public transport if there is a special discount on the ticket                                     | .928 <sup>a</sup>      |
| I am willing to use public transport instead of using my car                                                 | .928 <sup>a</sup>      |
| Public transport is a solution for women, the elder and children when visiting beach tourism destinations.   | .927 <sup>a</sup>      |
| I agree that public transport is provided to access the beach tourism destinations                           | .925 <sup>a</sup>      |
| If the price of fuel is increased, I will consider using public transport                                    | .910 <sup>a</sup>      |
| Limited parking and high entry fees at beach tourist destinations will encourage me to use public transport. | .910 <sup>a</sup>      |

| Indicator                                                                                                                                 | Anti-Image Correlation |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| My decision to switch to public transport depends on its safety and security                                                              | .898 <sup>a</sup>      |
| I always worry about traffic accidents when I travel, so I am willing to use public transport because it will be safer than driving a car | .882 <sup>a</sup>      |
| I prefer high-quality public transport, such as comfortable seats, air conditioning, and cleanliness.                                     | .868 <sup>a</sup>      |
| Punctuality on the public transport system is very important for me                                                                       | .867 <sup>a</sup>      |
| Clear and efficient passenger information on the public transport system is very important                                                | .852 <sup>a</sup>      |
| I prefer driving instead of mixing with others when I am travelling                                                                       | .671 <sup>a</sup>      |
| I have a negative impression of public transport.                                                                                         | .582 <sup>a</sup>      |
| If I use public transport, I have limited access to the destinations.                                                                     | .580 <sup>a</sup>      |

*Source: Author's calculation*  
*Note: MSA (Measure of Sampling Adequacy) > 0.5*  
*All the variables are adapted from Alotaibi (2017)*

### c. Total Variance Explained

Total Variance Explained shows the total variance explained by the factors obtained from the eigenvalue. The eigenvalue must be > 1. The analysis identifies 3 newly formed factors from 17 variables (Table 3).

**Table 3.** Total Variance Explained

| Component | Total | % of Variance | Cumulative % |
|-----------|-------|---------------|--------------|
| 1         | 7.119 | 41,829        | 41.829       |
| 2         | 1.758 | 10,342        | 52.221       |
| 3         | 1.362 | 8,012         | 60,232       |

*Source: Author's calculation*

### d. Rotated Component Matrix

The rotated component matrix helps identify which component corresponds to which factor. Although there are 17 factors, they can be grouped into 3 broader factors. Table 4 presents the categorised factors as defined in SPSS.

**Table 4.** Rotated Component Matrix

| Component Matrix                                                                                                                          | Loading factor |   |   |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------|---|---|
|                                                                                                                                           | 1              | 2 | 3 |
| I agree that public transport is provided to access the beach tourism destinations                                                        | .553           |   |   |
| I am willing to use public transport instead of using my car                                                                              | .737           |   |   |
| I always worry about traffic accidents when I travel, so I am willing to use public transport because it will be safer than driving a car | <b>.812</b>    |   |   |
| I will use public transport to avoid congestion when visiting the beach tourism destinations.                                             | .738           |   |   |

| Component Matrix                                                                                             | Loading factor |             |             |
|--------------------------------------------------------------------------------------------------------------|----------------|-------------|-------------|
|                                                                                                              | 1              | 2           | 3           |
| I will use public transport if the stop location is accessible and efficient                                 |                | .706        |             |
| Punctuality on the public transport system is very important for me                                          |                | <b>.798</b> |             |
| I prefer high-quality public transport, such as comfortable seats, air conditioning, and cleanliness.        |                | <b>.734</b> |             |
| Clear and efficient passenger information on the public transport system is very important                   |                | <b>.836</b> |             |
| I will use public transport if there is a special discount on the ticket                                     | .653           |             |             |
| If the price of fuel is increased, I will consider using public transport                                    | <b>.802</b>    |             |             |
| Limited parking and high entry fees at beach tourist destinations will encourage me to use public transport. | <b>.777</b>    |             |             |
| If I use public transport, I have limited access to the destinations.                                        |                |             | <b>.670</b> |
| I prefer driving instead of mixing with others when I am travelling                                          |                |             | <b>.733</b> |
| My decision to switch to public transport depends on its safety and security                                 | .614           |             |             |
| Public transport is a solution for women, the elder and children when visiting beach tourism destinations.   | .569           |             |             |
| If public transport is provided, I will encourage and recommend my family to use public transport            | .680           |             |             |
| I have a negative impression of public transport.                                                            |                |             | <b>.704</b> |

Source: Author's calculation

Note: All the variables are adapted from Alotaibi (2017)

Based on the analysis, three principal factors were identified as influencing the potential demand for public transportation to beach tourism destinations in Lhoknga District (Table 3). These factors consist of multiple indicators derived from the rotated component matrix (Table 4).

### 1. Traffic Costs and Problems

The first factor is identified as the most significant determinant influencing the use of public transportation, explaining 41.829% of the total variance and comprising ten indicators with varying factor loadings. The indicator with the highest loading factor (0.812) is related to concerns about traffic accidents, indicating that respondents are more willing to use public transportation because it is perceived as safer than driving private vehicles. These finding highlights that travel safety is a critical consideration in shaping tourists' mode choice. This result is consistent with the findings of Beirão & Cabral (2007), who identified safety, along with travel time, as a primary determinant of public transport use.

The second-highest loading factor (0.802) corresponds to the indicator concerning fuel price increases. This suggests that rising fuel costs can significantly influence tourists' willingness to shift from private vehicles to public transportation. This finding supports the argument presented by Department for Transport (2015), which states that economic factors, such as fuel prices and road-related expenses, play an important role in determining public transport demand.

The third-highest loading factor (0.777) is associated with parking-related constraints, including limited parking availability, entry fees, and high parking charges at tourism destinations. This indicates that parking restrictions and costs can act as a push factor encouraging the use of public transportation. This result is in line with the study by Ison & Wall (2002), which found that parking management policies, particularly the implementation of parking fees, can effectively promote a shift from private vehicle use to public transport.

Based on these indicators, it can be concluded that traffic-related issues and economic considerations are the dominant factors influencing the potential demand for public transportation. Therefore, this factor is appropriately classified as "Traffic Costs and Problems", reflecting the combined influence of safety concerns, fuel costs, and parking constraints on tourists' travel behaviour.

## **2. Service Quality of Public Transport**

The second factor consists of four indicators and explains 10.342 of the total variance. The indicator with the highest loading factor (0.836) relates to the importance of clear and efficient passenger information, followed by other indicators such as punctuality, comfort, cleanliness, and accessibility of public transport services. These findings indicate that service quality attributes play a crucial role in influencing tourists' willingness to use public transportation.

This result is consistent with the findings of Polat (2012), who emphasised that service quality elements—such as reliability, waiting time, comfort, and service frequency—significantly affect user satisfaction and public transport demand. Similarly, Diab et al. (2017) found that operational attributes, particularly punctuality and travel time, are key determinants in shaping users' acceptance of public transportation, especially among potential users.

Furthermore, the importance of accessibility and information provision identified in this study aligns with the findings of Daniels & Mulley (2013), who highlighted that spatial accessibility and the availability of clear information significantly influence public transport usage. These findings suggest that improving service reliability, accessibility, and passenger information systems is essential to enhance the attractiveness of public transport for tourists.

Based on these indicators, this factor is appropriately labelled as “Service Quality of Public Transport”, reflecting the importance of operational performance and user-oriented service attributes in influencing travel behaviour.

### **3. Tourists’ Perceptions of Public Transport**

The third factor comprises three indicators and explains 8.012% of the total variance. The indicator with the highest loading factor (0.733) reflects a preference for using private vehicles rather than sharing space with others when travelling. Other indicators include negative perceptions of public transport and concerns about limited accessibility when using public transportation. These findings indicate that subjective perceptions and personal preferences significantly influence tourists’ mode choice decisions.

This result is consistent with the study by Cullinane & Cullinane (2003), which found that individuals tend to prefer private vehicles due to greater privacy, comfort, and personal control. Public transportation, in contrast, is often perceived as less flexible and less convenient.

In addition, the perception of limited accessibility identified in this study supports the findings of Caesarina & Mat (2010), who argue that private vehicles offer greater flexibility and allow users to access a wider range of destinations more efficiently. This limitation may reduce tourists’ willingness to rely on public transport, particularly in tourism areas where destinations are spatially dispersed.

Therefore, addressing negative perceptions and improving perceived flexibility are essential strategies to increase public transport demand. One possible approach is the integration of supporting local transport modes, such as feeder services, to enhance mobility within tourism destinations.

Based on these indicators, this factor is labelled as “Tourists’ Perceptions of Public Transport”, highlighting the importance of psychological and behavioural aspects in influencing transport choices.

However, unlike the first two factors, this factor reflects deeper behavioural and psychological barriers that cannot be addressed solely through infrastructure or pricing policies. Negative perceptions and habitual preferences for private vehicles may persist even when service quality improves. Encouraging a modal shift requires not only physical and operational improvements but also strategies aimed at changing user perceptions, such as awareness campaigns, service branding, and improving the overall travel experience (Graham-Rowe et al., 2011; Banister, 2008).

The identified factors indicate that future public transportation planning for coastal tourism destinations should integrate both service improvements and travel demand management strategies. Shuttle bus routes supported by feeder services, affordable fares, accessible bus stops, reliable schedules, real-time

passenger information, and park-and-ride facilities may contribute to increasing tourists' potential demand for public transportation. In addition, promotional campaigns highlighting the convenience and environmental benefits of public transport may improve tourists' perceptions and encourage a shift from private vehicles, thereby supporting more sustainable tourism mobility in the study area.

Despite these findings, several limitations should be acknowledged. This study was conducted only in six beach tourism destinations in Lhoknga District, used accidental sampling, and collected data within a one-week period. Therefore, the findings may be limited in terms of generalisability and may not fully capture seasonal variations in tourist behaviour. Future studies are recommended to expand the geographical scope, apply probability sampling techniques, and conduct longer observation periods to improve robustness.

## **CONCLUSION**

This study identified three principal factors influencing tourists' potential demand for public transportation to coastal tourism destinations in Lhoknga District: traffic costs and problems, public transport service quality, and tourists' perceptions. Traffic-related and economic considerations were found to be the most influential factors. These findings provide useful insights for transport planners and local governments in developing sustainable public transportation strategies that encourage a shift from private vehicles to public transport in coastal tourism destinations.

## **ETHICAL CONSIDERATION**

This study adhered to ethical research standards. All respondents participated voluntarily and were informed about the purpose of the study prior to data collection and the data were used solely for academic purposes.

## **ACKNOWLEDGEMENT**

The authors would like to express their sincere gratitude to the Aceh Besar Regency Government and local tourism authorities for their support during data collection. Special thanks are extended to all respondents who participated in the survey and contributed valuable information to this study. Appreciation is also given to colleagues and academic peers for their constructive feedback throughout the research process.

## **REFERENCES**

- Alotaibi, O. M. (2017). *Potential demand for public transport in Riyadh City, Saudi Arabia* (Thesis). Cardiff University, United Kingdom.
- Banister, D. (2008). The sustainable mobility paradigm. *Transport Policy*, 15(2), 73–80. <https://doi.org/10.1016/j.tranpol.2007.10.005>

- Becken, S., & Simmons, D. G. (2010). Transport matters: Policy, planning and provision of sustainable transport in tourism. *Journal of Sustainable Tourism*, 18(3), 271–286.
- Beirão, G., & Cabral, J. (2007). Understanding attitudes towards public transport and private car: A qualitative study. *Transport Policy*, 14(6), 478–489.
- Borhan, M. N., Syamsunur, D., Akhir, N. M., Yazid, M. R., Ismail, A., & Rahmat, R. A. (2014). Predicting the use of public transportation: A case studi from Putrajaya, Malaysia. *The Scientific World Journal*, 1–9.
- Buhalis, D. (2000). Marketing the competitive destination of the future. *Tourism Management*, 21(1), 97–116.
- Caesarina, I., & Mat, H. (2010). Car use pattern in Penang Island rural area, Malaysia. *4th International Conference on Built Environment in in Developing Countries 2010*, Penang, Malaysia.
- Cooper, C., Fletcher, J., Fyall, A., Gilbert, D., & Wanhill, S. (2005). *Tourism: Principles and practice* (3rd ed.). Pearson Education.
- Corpuz, G. (2007). Public transport or private vehicle factors that impact on mode choice. *30th Australasian Transport Research Forum*.
- Cullinane, S., & Cullinane, K. (2003). Car dependence in a public transport dominated city: Evidence from Hong Kong. *Transportation Research Part D: Transport and Environment*, 8(2), 129–138.
- Daniels, R., & Mulley, C. (2013). Explaining walking distance to public transport: The dominance of public transport supply. *Journal of Transport and Land Use*, 6(2), 5–20.
- Department for Transport. (2015). *Understanding the drivers road travel: Current trends in and factors behind roads use*. Department for Transport.
- Diab, E., Lierop, D. V., & Geneidy, A. E. (2017). Recommending transit disentangling users' willingness to recommend transit and their intended continued use for publication. *Travel Behaviour and Society*, 1–27.
- Dredge, D., & Jenkins, J. (2007). *Tourism planning and policy*. John Wiley & Sons Australia.
- Graham, A., Papatheodorou, A., & Forsyth, P. (Eds.). (2008). *Aviation and tourism: Implications for leisure travel*. Ashgate Publishing.
- Graham-Rowe, E., Skippon, S., Gardner, B., & Abraham, C. (2011). Can we reduce car use and, if so, how? A review of available evidence. *Transportation Research Part A: Policy and Practice*, 45(5), 401–418.
- Hall, C. M. (2011). A typology of governance and its implications for tourism policy analysis. *Journal of Sustainable Tourism*, 19(4–5), 437–457. <https://doi.org/10.1080/09669582.2011.570346>
- Iamtrakul, P., Chayphong, S., Seo, D., & Trinh, T. A. (2025). Promoting accessibility for sustainable tourism: A spatial analysis of tourist attractions and public transportation networks in Bangkok. *City, Territory and Architecture*, 12(1), Article 13. <https://doi.org/10.1186/s40410-025-00266-8>
- Ison, S., & Wall, S. (2002). Attitudes to traffic-related issues in urban areas of the UK and the role of workplace parking charges. *Journal of Transport Geography*, 10(1), 21–28.
- Law, C. M. (2002). *Urban tourism second edition the visitor economy and the growth of*

- large cities*. Cromwell Press.
- Litman, T. (2013). *Safer than you think!: Revising the transit safety narrative*. Victoria Transport Policy Institute.
- Litman, T. (2023). *Evaluating public transportation benefits and costs*. Victoria Transport Policy Institute.
- Litman, T. (2025). *Evaluating accessibility for transport planning*. Victoria Transport Policy Institute.
- Mandeno, T. G. (2011). *Is tourism a driver for public transport investment?* (Thesis). University of Otago, Dunedin, New Zealand.
- Naik, S., Chanda, R. S., & Paliwal, M. (2025). Encouraging sustainable travel choices through behavioural interventions to reduce tourists' carbon footprints. *Discover Sustainability*, 6, Article 1320. <https://doi.org/10.1007/s43621-025-02233-2>
- Othman, A. A., & Ali, M. M. (2020). Public transportation and sustainable urban development. *Planning Malaysia*, 18(1), 1–13.
- Peeters, P., & Dubois, G. (2010). Tourism travel under climate change mitigation constraints. *Journal of Transport Geography*, 18(3), 447–457.
- Polat, C. (2012). The demand determinants for urban public transport services: A review of the literature. *Journal of Applied Sciences*, 12(12), 1211.
- Prideaux, B. (2000). The role of the transport system in destination development. *Tourism Management*, 21(1), 53–63.
- Purwoko, B., Chotib, & Yola, A. (2022). Willingness to modal shift from private to public transportation in Jakarta metropolitan area. *Planning Malaysia*, 20(2), 85–97.
- Rodrigue, J.-P. (2016). Tourism and transportation. In *The geography of transport systems* (4th ed.). Routledge.
- Rodrigues, C., Liberato, D., Brandão, F., Liberato, P., & Mendes, T. (2025). Sustainable tourism development: Literature review for a new conceptual model. In *Innovation and creativity in tourism, business and social sciences*. [https://doi.org/10.1007/978-3-031-78471-2\\_35](https://doi.org/10.1007/978-3-031-78471-2_35)
- Rohini, R., & Meenakshi, S. (2024). Role of transportation in tourism development. *KUEY: International Journal of Engineering and Technology*, 30(5), 210–217.
- Saif, M. A., Zefreh, M. M., & Torok, A. (2019). Public transport accessibility: A literature review. *Periodica Polytechnica Transportation Engineering*, 47(1), 36–43.
- Sitorus, B., & Sitorus, C. N. (2017). Peran transportasi dalam mendukung kawasan strategis pariwisata nasional Danau Toba. *Jurnal Manajemen Transportasi & Logistik*, 4(1), 1–16. <https://doi.org/10.25292/j.mtl.v4i1.60>
- Stover, V. W., & McCormack, E. D. (2012). The impact of weather on bus ridership in Pierce County, Washington. *Journal of Public Transportation*, 15(1), 95–110. <https://doi.org/10.5038/2375-0901.15.1.6>
- Sugito, H., Yusoff, N. I. M., & Ahmad, S. S. (2024). The effects of passenger behaviour on public bus services. *Planning Malaysia*, 22(1), 45–58.
- Sunaryo, S. (2013). Accessibility in tourism: Infrastructure and services that facilitate tourist travel. *International Journal of Multidisciplinary Management*, 1(2), 76–89.
- The Tourism Institute. (2025). *The integral role of transport in tourism development*. The Tourism Institute.
- UNWTO. (2019). *Guidelines for institutional strengthening of destination management*

- organizations. UNWTO.
- Vuchic, V. R. (2017). *Urban transit systems and technology*. John Wiley & Sons.
- Wall, G., & McDonald, M. (2007). Improving bus service quality and information in Winchester. *Transport Policy*, 14(2), 165–179.
- Wang, D., & Liu, Y. (2015). Factors influencing public transport use: A study of university commuters' travel and mode choice behaviours. *State of Australian Cities Conference 2015*, Gold Coast, Australia, 9–11 December 2015. [https://www.researchgate.net/publication/301749275\\_Factors\\_Influencing\\_Public\\_Transport\\_Use\\_A\\_Study\\_of\\_University\\_Commuters'\\_Travel\\_and\\_Mode\\_Choice\\_Behaviours](https://www.researchgate.net/publication/301749275_Factors_Influencing_Public_Transport_Use_A_Study_of_University_Commuters'_Travel_and_Mode_Choice_Behaviours)
- Wicaksono, S., Agustin, I., & Utomo, D. (2019). Karakteristik dan perjalanan wisata di Kota Batu. *Planning of Urban Region and Environment*, 2(3), 87–96.
- Yan Jie, & Abu Talib, A. A. (2024). Exploring the impact of accommodation and transportation on tourist satisfaction: Literature review. *Journal of Current Research and Studies*, 1(3), 52–62. <https://journalcurrentresearch.com/pub/jcr/article/view/18>
- Yan, Y., & Phucharoen, C. (2024). Tourism transport-related CO2 emissions and economic growth: A deeper perspective from decomposing driving effects. *Sustainability*, 16(8), 3135. <https://doi.org/10.3390/su16083135>

Received: 15<sup>th</sup> May 2026. Accepted: 6<sup>th</sup> June 2026