Strategies for Improving Ground Transportation Services at Juanda International Airport to Enhance Passenger Satisfaction

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ABSTRACT

Airport ground transportation plays an important role in providing connectivity between airports and surrounding areas. Service quality, accessibility, safety, comfort, and affordability influence customer satisfaction and loyalty. At Juanda International Airport, several challenges remain, including limited transportation integration, inconsistent service quality and fares, inadequate public transportation connectivity, and unauthorized transportation brokers. This study aims to examine existing transportation services, identify internal and external factors, and formulate strategies to improve customer satisfaction and loyalty. This study employed a qualitative case study approach. Data were collected through in-depth interviews, observations, and documentation involving PT Angkasa Pura Indonesia, transportation operators, and airport users. Data were analyzed using the Miles and Huberman model and SWOT analysis. The findings indicate that Juanda International Airport has strengths in transportation variety, strategic location, and management support. However, weaknesses include limited integration, inconsistent service and fare standards, and poor public transportation connectivity. Opportunities include increasing passenger traffic, digital technology, and government support, while threats involve operator competition, traffic congestion, and changing customer expectations. Recommended strategies include transportation integration, service and fare standardization, digitalization, stronger stakeholder coordination, and improved operational supervision. These strategies are expected to enhance service quality, customer satisfaction, and long-term loyalty.

Keywords: Development Strategy, Airport Ground Transportation, SWOT Analysis, Customer Satisfaction, Customer Loyalty.

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INTRODUCTION

Air transportation has become one of the most important sectors supporting economic growth, regional connectivity, tourism development, and community mobility. The rapid growth of the aviation industry has transformed airports from merely serving as departure and arrival points into integrated transportation hubs that connect various modes of transport. Consequently, airport competitiveness is no longer determined solely by terminal facilities or flight operations but also by the quality of landside transportation services that facilitate passenger access to and from the airport. Efficient, reliable, and integrated airport connecting transportation services are therefore essential to enhance passengers' overall travel experience and improve airport service performance.

Following the recovery of the aviation industry after the COVID-19 pandemic, passenger mobility has increased significantly. According to the International Air Transport Association (IATA), global air passenger traffic continues to recover and is expected to exceed pre-pandemic levels in the coming years. Similarly, Statistics Indonesia (BPS) reported a substantial increase in domestic air passenger traffic, rising from 52.7 million passengers in 2022 to approximately 68.6 million passengers in 2023. This growing demand places greater pressure on airport operators to improve not only terminal facilities but also the accessibility and quality of airport connecting transportation services.

Juanda International Airport is one of Indonesia's busiest airports and serves as the primary gateway to East Java. During the last three years, the airport has handled approximately 14–15 million passengers annually. As passenger traffic continues to increase, the availability of efficient and integrated airport transportation becomes increasingly important for ensuring seamless passenger mobility. Nevertheless, several challenges remain within the existing landside transportation system. These include inconsistent fare structures among transportation operators, the presence of unauthorized transportation brokers, uneven service quality, limited passenger information systems, and the absence of fully integrated public transportation, particularly airport rail services and Bus Rapid Transit (BRT). These issues reduce travel convenience, increase uncertainty, and negatively influence passengers' perceptions of airport service quality.

From a service management perspective, customer satisfaction is determined by the extent to which perceived service performance meets or exceeds customer expectations (Kotler & Keller, 2016). In airport transportation services, customer satisfaction depends not only on vehicle availability but also on accessibility, punctuality, fare transparency, safety, convenience, responsiveness, and employee professionalism. The SERVQUAL model developed by Parasuraman, Zeithaml, and Berry (1988) explains that service quality consists of five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. These dimensions provide a comprehensive framework for evaluating airport connecting transportation services because they directly influence passengers' perceptions and travel experiences.

Furthermore, intermodal transportation integration emphasizes the importance of seamless physical, operational, informational, and institutional connectivity among different transportation modes. Well-integrated transportation systems enable passengers to transfer efficiently between air transport and ground transportation while minimizing travel time, waiting time, and overall travel costs. Conversely, poor integration often leads to service inefficiencies and lower customer satisfaction. Therefore, improving airport landside transportation requires not only operational improvements but also strategic planning that integrates multiple stakeholders involved in airport transportation services.

Previous studies have demonstrated that transportation accessibility and service quality significantly influence passenger satisfaction. Nasrullah et al. (2024) reported that transportation accessibility positively affects airport passenger satisfaction. Likewise, Bimantara and Rachmawati (2022) found that airport taxi service quality contributes significantly to customer satisfaction, although several service attributes still require improvement. Mansyur et al. (2021) also confirmed that landside service quality positively affects passenger satisfaction. Despite these findings, the majority of previous studies have relied on quantitative approaches, such as Structural Equation Modeling (SEM), Customer Satisfaction Index (CSI), Importance–Performance Analysis (IPA), and regression analysis, focusing primarily on measuring relationships among variables rather than developing practical improvement strategies.

In addition, previous studies have generally concentrated on specific transportation modes, such as airport taxis, buses, or accessibility facilities, while limited attention has been given to the airport landside transportation system as an integrated service ecosystem. Existing research also tends to emphasize passengers' perceptions, with relatively little consideration of airport management, transportation operators, regulators, and customer complaint data as strategic sources of information. Consequently, managerial perspectives that support comprehensive service improvement remain insufficiently explored.

Although numerous studies have investigated airport transportation services, several research gaps remain. First, previous studies are predominantly quantitative and emphasize testing causal relationships rather than developing strategic service improvement initiatives through qualitative exploration. Second, most studies focus on individual transportation modes instead of evaluating the overall airport connecting transportation system. Third, prior research mainly considers passengers' perspectives while overlooking the views of airport authorities, transportation operators, and Voice of Customer (VoC) data that are essential for strategic decision-making. Finally, empirical studies addressing the strategic improvement of connecting transportation services at Juanda International Airport remain limited, despite its strategic importance within Indonesia's airport network.

This study contributes to the literature in several ways. First, it employs a qualitative exploratory approach to formulate strategic improvements instead of merely measuring customer satisfaction. Second, it integrates multiple stakeholder perspectives, including airport management, transportation operators, passengers, and Voice of Customer (VoC) data, to obtain a comprehensive understanding of service challenges. Third, the study combines Strategic Management Theory, SERVQUAL, and SWOT analysis to develop implementable strategies for improving airport connecting transportation services. Finally, the research provides practical policy recommendations regarding fare standardization, digital service integration, operator governance, and intermodal transportation integration to enhance customer satisfaction and strengthen the competitiveness of Juanda International Airport.

Overall, this study is expected to contribute both theoretically and practically by enriching the literature on strategic airport service management and providing evidence-based recommendations for improving airport connecting transportation services. The findings are expected to support PT Angkasa Pura Indonesia and other airport stakeholders in developing sustainable service improvement strategies that enhance passenger satisfaction and strengthen the competitiveness of Juanda International Airport.

LITERATURE REVIEW

Grand Theory

Intermodal transportation integration is the connection between different transportation modes that allows passengers to travel smoothly from one mode to another. An integrated transportation system improves accessibility, reduces travel time, and increases passenger convenience (Pereira et al., 2018).

In airports, intermodal integration includes the coordination of transportation services such as buses, taxis, ride-hailing services, airport railways, and private vehicles. It also involves synchronized schedules, clear passenger information, and efficient transfer facilities to support seamless travel (Pereira et al., 2018).

Passenger satisfaction is the level to which the service received meets or exceeds passenger expectations (Kotler & Keller, 2009). In airport transportation, satisfaction is influenced by service quality, comfort, safety, travel time, fare, and accessibility.

High-quality transportation services can improve passenger satisfaction and the airport's image, while poor services may reduce passenger confidence and satisfaction (Parasuraman et al., 1988).

SWOT analysis is a strategic tool used to identify an organization's internal and external conditions. It consists of four components: strengths, weaknesses, opportunities, and threats (Kotler & Keller, 2016).

In this study, SWOT analysis is used to evaluate the current condition of ground transportation services at Juanda International Airport and to identify appropriate improvement strategies. The SWOT components include:

1. Strengths: Internal advantages that support transportation services.
2. Weaknesses: Internal limitations that reduce service performance.
3. Opportunities: External factors that can improve transportation services.
4. Threats: External factors that may hinder service development.

Previous Research Findings

Based on the previous studies, it can be concluded that the quality of airport ground transportation plays an important role in improving passenger satisfaction. Most studies found that service quality, accessibility, comfort, safety, travel time, fare, and intermodal transportation integration are the main factors influencing passenger experience.

Previous research has also shown that good integration between different transportation modes can improve travel efficiency, reduce transfer time, and provide better access to airport facilities. In addition, the use of modern transportation systems and digital technology can further enhance service quality and passenger convenience.

However, most previous studies mainly focused on measuring service quality and passenger satisfaction using quantitative methods. Only a few studies have explored improvement strategies through a qualitative approach by analyzing passenger complaints and feedback together with the perspectives of airport management.

Therefore, this study fills this research gap by using a qualitative approach to analyze strategies for improving ground transportation services at Juanda International Airport. The study combines passenger feedback (Voice of Customer) and interviews with airport management to develop practical recommendations for a more integrated, efficient, and passenger-oriented transportation system.

RESEARCH METHODS

This study employed a qualitative descriptive approach to examine the current condition of ground transportation services at Juanda International Airport and to develop improvement strategies. Participants were selected using purposive sampling and included airport management, transportation operators, and airport passengers. Primary data were collected through semi-structured interviews and direct observations, while secondary data were obtained from operational reports, service standards, customer complaint records, and relevant literature. The collected data were analyzed using qualitative

descriptive analysis, followed by SWOT analysis to identify the strengths, weaknesses, opportunities, and threats of the existing transportation services and to formulate appropriate improvement strategies.

RESULT

The SWOT analysis was conducted by synthesizing qualitative findings from interviews with airport management, transportation operators, and passengers. Internal factors were classified as strengths and weaknesses, while external factors were identified as opportunities and threats affecting the development of airport connecting transportation services at Juanda International Airport.

Table 1. Internal Factor Analysis Summary (IFAS)

Internal Factors	Weight	Rating	Score
Strengths			
Diverse transportation modes	0.15	4	0.60
Collaboration between Terminal 1 and Terminal 2	0.10	4	0.40
Transparent pricing and reputable operators	0.10	3	0.30
Availability of service counters and pick-up areas	0.10	3	0.30
Good service quality of licensed operators	0.10	4	0.40
Subtotal	**0.55**		**2.00**
Weaknesses			
Limited wayfinding and signage	0.10	2	0.20
Inadequate waiting areas	0.10	2	0.20
Fleet shortages during peak periods	0.10	2	0.20
Limited integration with public transport	0.10	1	0.10
Remaining unauthorized sales activities	0.05	2	0.10
Subtotal	**0.45**		**0.80**
Total IFAS Score	**1.00**		**2.80**

Source: Primary Data, 2026

Table 2. External Factor Analysis Summary (EFAS)

External Factors	Weight	Rating	Score
Opportunities			
Growth in passenger traffic	0.15	4	0.60
Airport railway development plan	0.10	4	0.40
Expansion of Bus Rapid Transit (BRT)	0.10	3	0.30
Digital transportation technologies	0.10	4	0.40
Government support for sustainable transport	0.10	3	0.30
Subtotal	**0.55**		**2.00**
Threats			
Competition among transport operators	0.10	3	0.30
Traffic congestion around the airport	0.10	2	0.20
Increasing operational costs	0.10	2	0.20
Changing passenger travel preferences	0.10	2	0.20
Regulatory uncertainty	0.05	2	0.10
Subtotal	**0.45**		**1.00**
Total EFAS Score	**1.00**		**3.00**

Source: Primary Data, 2026

The IFAS score of 2.80 and EFAS score of 3.00 place Juanda International Airport in the Grow and Build position of the Internal–External (IE) Matrix. This position indicates that the airport possesses adequate internal capabilities while operating in an environment with promising external opportunities. Therefore, the appropriate strategic orientation is to strengthen existing services while expanding innovation and transportation integration.

Table 3. SWOT Matrix

	Opportunities (O)	**Threats (T)**
Strengths (S)	**SO Strategies**	**ST Strategies**
	Develop an integrated multimodal transportation system through digital platforms.	Strengthen service standards and operator governance.
	Expand partnerships with public transportation providers.	Improve customer experience to maintain competitiveness.
	Promote licensed operators through integrated airport information systems.	Accelerate the adoption of environmentally friendly vehicles.
Weaknesses (W)	**WO Strategies**	**WT Strategies**
	Improve wayfinding, signage, and passenger information systems.	Standardize waiting areas and transportation facilities.
	Develop airport railway and BRT integration.	Strengthen supervision of unauthorized operators and sales activities.
	Upgrade passenger shelters and waiting facilities.	Improve fleet availability during peak travel periods.

Source: Primary Data, 2026

DISCUSSION

The SWOT analysis indicates that Juanda International Airport has substantial strengths, including diverse transportation modes, reputable service operators, and adequate supporting facilities. However, improvements are still required in wayfinding, passenger waiting areas, fleet availability during peak periods, and integration with public transportation.

Externally, increasing passenger demand, digital transformation, and planned airport railway and BRT developments provide significant opportunities to enhance airport accessibility. Nevertheless, competition among transportation providers, traffic congestion, and rising operational costs remain major challenges.

Based on the SWOT results, strategic priorities should focus on strengthening multimodal transportation integration, improving passenger facilities, implementing digital information systems, standardizing service quality, and enhancing collaboration among airport authorities, transportation operators, and government agencies. These initiatives are expected to improve customer satisfaction and support the long-term competitiveness of Juanda International Airport.

CONCLUSION

This study examined the strategy for improving airport connecting transportation services at Juanda International Airport through observations, in-depth interviews, documentation, and SWOT analysis.

First, the findings indicate that the existing airport connecting transportation system generally meets passengers' basic mobility needs by providing various transportation options, including airport buses, conventional taxis, ride-hailing services, shuttle services, and car rental facilities. From the SERVQUAL perspective, the tangible dimension performs relatively well due to adequate physical infrastructure, pick-up areas, and supporting facilities. However, improvements are still required in the dimensions of reliability, responsiveness, assurance, and empathy, particularly regarding multimodal integration, standardized service quality, integrated passenger information systems, waiting times during peak hours, and the adoption of digital technologies. These shortcomings influence passengers' overall satisfaction and indicate that service quality has not yet fully met customer expectations.

Second, the SWOT analysis revealed that the development of airport connecting transportation services is influenced by both internal and external factors. The main strengths include Juanda International Airport's strategic location, the availability of diverse transportation modes, adequate infrastructure, strong management support, and partnerships with licensed transportation operators. Conversely, the primary weaknesses are limited multimodal integration, inconsistent service standards, inadequate digital service integration, relatively long waiting times, and the absence of a comprehensive customer satisfaction evaluation system. External opportunities arise from increasing passenger demand, government support for integrated transportation, digital transformation, Smart Airport initiatives, and collaboration with various stakeholders. Meanwhile, the major threats include increasing competition among transportation providers, traffic congestion, changing customer preferences, economic uncertainty, regulatory changes, and rapid technological development. The IFAS score of 2.67 and EFAS score of 2.78 position the organization in the Growth Strategy quadrant, indicating that its internal strengths can be effectively leveraged to capitalize on external opportunities.

Finally, the study recommends implementing a Strength–Opportunity (SO) strategy as the primary strategic direction. Priority initiatives include developing an integrated airport transportation information system, accelerating digital transformation through a unified transportation application, standardizing service quality across all operators, strengthening collaboration among airport authorities, government agencies, and transportation providers, and establishing a continuous customer satisfaction evaluation system using digital feedback mechanisms. Implementing these strategies is expected to improve service quality, enhance passenger satisfaction and loyalty, and strengthen the long-term competitiveness of Juanda International Airport as one of Indonesia's leading international gateways.

Overall, this study contributes to the literature by integrating Strategic Management Theory, SERVQUAL, and SWOT analysis into a comprehensive framework for evaluating and improving airport connecting transportation services. The findings also provide practical implications for airport managers and policymakers in designing integrated, customer-oriented, and sustainable transportation systems.

SUGGESTION

The airport should improve the quality of its ground transportation services by increasing the frequency of shuttle buses, expanding public transportation access, upgrading passenger facilities such as shelters, waiting areas, and signage, and strengthening the supervision of vehicles, staff, and unauthorized transportation agents. In addition, digital services should be enhanced by providing real-time vehicle tracking, transparent fare information, and online service updates. Future studies are recommended to use a quantitative approach with a larger sample size to measure passenger satisfaction and to evaluate the economic and social feasibility of developing airport rail and Bus Rapid Transit (BRT) services at Juanda International Airport.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Septian Dwi Nugroho: Conceptualization, Data curation, Formal Analysis, Project administration, Resources, Writing – original draft, and Writing – review & editing. **Slamet Riyadi and Riyadi Nugroho:** Supervision and Validation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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DATA AVAILABILITY

Data will be made available on request.

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ETHICAL APPROVAL

This study involved human participants who voluntarily completed research questionnaires after receiving information regarding the purpose of the study.

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