BIS HUMANITIES AND SOCIAL SCIENCE

Volume 4 2026 | DOI: 10.31603/bishss.441
7th Borobudur International Symposium on Humanities and Social Science (BIS-HSS) 2025

UNIMMA PRESS
Universitas Muhammadiyah Magelang

From expectations to performance: Assessing the quality of Trans Metro Dewata using importance-performance analysis

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Abstract.

This study evaluates the service quality of Trans Metro Dewata (TMD), Bali's Bus Rapid Transit (BRT), by analyzing user satisfaction and expectations. Using Importance–Performance Analysis (IPA), 100 respondents—local residents and domestic tourists—assessed 18 indicators across nine dimensions: availability, ticketing, information, reliability, cleanliness, comfort, temperature/ventilation, safety, and accessibility. Findings show strong performance in safety, cleanliness, accessibility, and comfort, while significant gaps appear in the information dimension, notably real-time arrival accuracy and disruption communication, classified in the "Concentrate Here" quadrant. Meanwhile, elements such as special fare schemes and seating availability fall into "Keep Up the Good Work" reflecting high satisfaction. The study recommends enhancing real-time passenger information systems and maintaining strengths in safety and comfort. Academically, this research enriches literature on BRT service quality in tourism-centric cities; practically, it offers actionable insights for policymakers to improve public transport's role in supporting sustainable, tourist-friendly urban mobility.

Keywords

Service Quality, Public Transport, Importance–Performance Analysis, Trans Metro Dewata, Passenger Satisfaction

Published:
May 04, 2026

Selection and Peer-review under the responsibility of the 7th BIS-HSS 2025 Committee

Introduction

Bali has long been recognized as one of Indonesia's most prominent tourism destinations, consistently attracting a growing number of domestic and international visitors. Its natural beauty, rich cultural heritage, and the renowned hospitality of its people have positioned Bali as a globally competitive tourism hub. Recent data from I Gusti Ngurah Rai International Airport recorded 20,069 international and 10,007 domestic arrivals on a single day, 8 February 2025, underscoring the intense mobility associated with tourism on the island [1]. Such high levels of tourist movement demand

the availability of a reliable, efficient, and comfortable public transportation system to ensure smooth mobility, alleviate traffic congestion, and enhance overall visitor experience. In response to these growing mobility needs, the government introduced the Trans Metro Dewata (TMD) service in 2020 under the Buy The Service (BTS) scheme, operating six major corridors connecting Denpasar, Badung, Gianyar, Tabanan, and the airport zone, in accordance with the Minimum Service Standards (Standar Pelayanan Minimal/SPM) for mass road transport [2].

The service includes fixed departure schedules and 15–30 minute headways to ensure punctuality and reliability, but several implementation challenges remain. Among the most pressing issues is driver behavior, which includes tardiness, traffic violations, mobile phone use while driving, and lack of responsiveness to passengers' needs. These behaviors reflect a mismatch between service delivery and the expectations set by the SPM, particularly regarding safety, comfort, regularity, and reliability. Such service inconsistencies directly impact passenger satisfaction—including international tourists—and indirectly affect Bali's image as a tourism destination. In the tourism context, mobility-related experiences are critical; negative encounters can shape tourist perceptions, reduce the likelihood of return visits, and contribute to unfavorable word-of-mouth, particularly in the age of digital reviews and social media.

Globally, the role of public transportation in supporting tourism development has received considerable scholarly attention, with studies emphasizing its importance for destination appeal and sustainability. Emphasize that public transportation is considered a vital element in destination development by tourism stakeholders [3]. Similarly, highlight the potential of shared mobility systems such as carsharing and bikesharing to enhance transportation efficiency and reduce carbon emissions [4]. Further demonstrates that integrating electric micromobility infrastructure—such as e-bikes and e-scooters—into urban transport networks can improve service quality and meet short-distance travel needs, especially for tourists [5]. A compelling case study in Munich, Germany, illustrates how an integrated, high-quality public transport system can contribute to tourist satisfaction and strengthen destination appeal [6]. However, most existing studies focus on contexts in developed countries and do not sufficiently address the unique challenges faced by developing regions such as Indonesia. In particular, there is a dearth of research evaluating public transportation service quality from the perspective of tourist satisfaction based on the SPM framework, and the role of driver behavior as a determinant of service experience remains underexplored.

This study seeks to address these gaps by evaluating the quality of public transportation in Bali—specifically the Trans Metro Dewata system—through the lens of SPM compliance, with a particular focus on driver behavior. The research employs the Importance Performance Analysis (IPA) method to identify priority service attributes that require improvement in order to enhance tourist satisfaction. By applying a user-centered analytical framework, the study aims to provide an empirical basis for improving service quality in public transportation systems operating in tourism-

dependent regions. Academically, this research contributes to the body of knowledge on tourism and transportation by introducing an evaluative model grounded in regulatory service standards and user perceptions. Practically, it offers policy recommendations for local governments, transport authorities, and tourism stakeholders to improve the quality and reliability of public transport in Bali. Strengthening driver discipline and ensuring full compliance with SPM is expected not only to improve the travel experience of tourists, but also to support the broader objective of sustainable and inclusive destination development.

Method

This study adopts a quantitative-descriptive approach to evaluate the quality of public transport services in Bali, with a particular focus on the Trans Metro Dewata (TMD) system. The primary aim is to assess the extent to which service attributes—especially those related to driver behavior and operational performance—align with passenger expectations and the Minimum Service Standards (SPM) as mandated by Indonesia's Ministry of Transportation. Data collection was conducted through a structured questionnaire distributed to users of the TMD system during the operational period from 18 to 23 April 2025. This timeframe was deliberately selected as it coincided with the early phase of resumed operations following a temporary service suspension.

The study population comprised all passengers using TMD services across its six primary corridors, with a recorded total of 12,929 passengers during the survey period. Using Slovin's formula with a 10% margin of error, a sample size of 100 respondents was determined to ensure efficiency and representativeness. The sample was proportionally distributed according to passenger volume on each corridor. The questionnaire was divided into two main sections: the first gathered demographic information (such as age, gender, and frequency of use), while the second assessed passengers' perceptions and expectations of service quality.

The service quality dimensions employed in this study are based on the adaptation of established public transportation frameworks, particularly those developed by Ibrahim *et al.* [7]. These dimensions include: availability of service (e.g., frequency and operating hours), accessibility (e.g., ease of reaching stations or stops), ticketing (e.g., affordability and ticket options), information (e.g., clarity and timeliness of route and service updates), travel time and reliability (e.g., punctuality and consistency), customer service (e.g., driver behavior and staff responsiveness), comfort (e.g., cleanliness, temperature, and seating availability), and safety (e.g., perceived security and protection from accidents). Each attribute was rated on a five-point Likert scale for both perceived importance and perceived performance.

To analyze the data, the study employed the Importance–Performance Analysis (IPA) technique, which maps service attributes onto a Cartesian grid based on mean scores of importance and performance. The IPA model categorizes attributes into four quadrants: Quadrant I (Concentrate Here) includes high-importance, low-performance attributes

requiring urgent improvement; Quadrant II (Keep Up the Good Work) includes attributes rated highly on both importance and performance; Quadrant III (Low Priority) includes low-importance, low-performance attributes; and Quadrant IV (Possible Overkill) includes attributes with low importance but high performance. The threshold for each quadrant was established using the grand mean of all scores.

Results and discussion

This section presents the findings of the study based on the questionnaire responses collected from 100 Trans Metro Dewata (TMD) users. The discussion begins with a demographic profile of the respondents, providing an overview of their gender, age, occupation, status as local residents or tourists, usage frequency, travel purpose, and the corridors used. This demographic insight is essential for understanding the diversity of service users and interpreting their evaluations of service quality attributes. The analysis is followed by the application of Importance–Performance Analysis (IPA) to assess perceived service performance against its importance across various dimensions.

Respondent Demographics

Understanding the demographic characteristics of respondents is essential for contextualizing their evaluations of public transport service quality. Differences in age, gender, occupation, travel frequency, and trip purpose can influence user expectations and perceptions of service attributes. In the case of Trans Metro Dewata (TMD), which serves both local residents and domestic as well as international tourists, demographic variation plays a key role in shaping the complexity of service demand. This section presents a detailed profile of the 100 respondents who participated in the survey, including their socio-demographic backgrounds, usage patterns, and the service corridors they utilized.

Table 1. Respondent Characteristics

Characteristic	Category	n	%
Gender	Male	81	81.0%
	Female	19	19.0%
Age	< 17 years	2	2.0%
	17 – 25 years	20	20.0%
	26 – 35 years	56	56.0%
	36 – 45 years	16	16.0%
	> 45 years	6	6.0%
Occupation	Private employee	43	43.0%
	Student	17	17.0%
	Civil servant	20	20.0%
	Entrepreneur	20	20.0%
Respondent Status	Local resident (Bali)	60	60.0%
	Tourist	40	40.0%
Frequency of Use	First-time user	9	9.0%
	Rarely	12	12.0%
	Weekly	36	36.0%
	2–3 times per week	26	26.0%
	Daily	17	17.0%

Travel Purpose	Social activities	5	5.0%
	Commuting for work	27	27.0%
	Shopping	17	17.0%
	Tourism	39	39.0%
	School/University	12	12.0%
Corridor Used	Corridor 2 (Ubung–Airport)	26	26.0%
	Corridor 3 (Ubung–Sanur)	14	14.0%
	Corridor 4 (Ubung–Ubud)	26	26.0%
	Corridor 6 (Kuta–Nusa Dua)	34	34.0%

Source: Author's Data (2025)

The majority of respondents were male (81%) and fell within the 26–35 age group (56%), indicating a dominance of young adult male users. Regarding occupation, private-sector employees represented the largest group (43%), followed by civil servants and entrepreneurs (20% each), suggesting that a significant proportion of TMD users are working professionals. Most respondents were local residents (60%), while 40% identified as tourists, aligning with the research's objective of assessing public transport service quality in a tourism-oriented context.

Importance Performance Analysis

In terms of usage frequency, the highest proportion of users reported using the service weekly (36%), followed by 2–3 times per week (26%), and daily users (17%), reflecting the regularity of TMD in supporting daily commuting needs. Interestingly, 9% of the respondents were first-time users, indicating potential growth in ridership. As for trip purpose, tourism (39%) was the most common motivation, followed by commuting for work (27%) and shopping (17%), which reinforces the role of TMD in serving both leisure and routine travel needs.

Corridor-wise, most respondents used Corridor 6 (Kuta–Nusa Dua) and Corridor 2 (Ubung–Airport), accounting for 34% and 26% respectively, highlighting the popularity of routes connected to major tourist destinations and transportation hubs. Importance and Performance Mean Score of Item presented in Table 2.

The detailed importance and performance scores across all service dimensions offer deeper insight into how users perceive the various components of Trans Metro Dewata's service quality. In terms of availability, both the adequacy of operating hours (OPH.1) and the alignment of headways with official schedules (OPH.2) received moderate-to-high importance scores (3.60 and 3.52, respectively), with performance ratings trailing slightly behind. This suggests that while users generally appreciate the existing service times, there is still a perceived gap in punctuality and schedule adherence that warrants incremental improvements.

The ticketing dimension reveals a contrasting pattern. The ease of using payment systems (TKT.1) achieved one of the lowest importance ratings (3.33) but surprisingly high performance (3.67), indicating a potential overinvestment in areas that users do not prioritize as much. Meanwhile, the provision of special fare options for vulnerable

groups (TKT.2) was perceived as both important (3.61) and well-implemented (3.63), reflecting the positive reception of inclusive pricing strategies.

Table 2. Importance and Performance Mean Score of Item

Dimension	Item	Code	Importance	Performance
Availability	Operating hours meet passenger needs (e.g., early morning or late night)	OPH.1	3.6	3.55
	Bus headway matches the official schedule	OPH.2	3.52	3.49
Ticketing	Ease of using payment systems (card or app)	TKT.1	3.33	3.67
	Special fare options for students, elderly, and disabled passengers	TKT.2	3.61	3.63
Information	Real-time arrival information is accurate	INF.1	3.68	3.49
	Service disruptions (e.g., delays, diversions) are clearly announced	INF.2	3.5	3.31
Reliability	Travel time from boarding to alighting is predictable	REL.1	3.47	3.59
	Buses stop only at official designated stops	REL.2	3.47	3.63
Cleanliness	Bus interiors (floor, seats, handrails) are clean	CLN.1	3.68	3.55
	Bus cleanliness is maintained throughout the day	CLN.2	3.73	3.79
Comfort	Space remains sufficient during peak hours	CON.1	3.44	3.53
	Enough opportunity to find a seat during typical rides	CON.2	3.7	3.72
Temperature & Ventilation	Air conditioning system functions properly	TMP.1	3.65	3.67
	Air circulation in the bus is adequate (not stuffy)	TMP.2	3.72	3.65
Safety	Drivers do not use phones or smoke while driving	SFT.1	3.65	3.58
	I feel safe from crime inside the bus	SFT.2	3.81	3.79
Accessibility	Audio/visual information is accessible for passengers with disabilities	ACC.1	3.59	3.53
	Drivers/staff assist priority passengers (elderly, pregnant, tourists with luggage)	ACC.2	3.84	3.73

Source: Author's Data (2025)

In stark contrast, information-related services emerged as a clear area of concern. Real-time accuracy of arrival information (INF.1) was rated highly important (3.68) but showed a noticeable lag in performance (3.49). Similarly, the ability to effectively communicate service disruptions (INF.2) received moderate importance (3.50) yet exhibited the lowest performance score across all indicators (3.31). These findings point to the urgent need for enhancing real-time communication tools and ensuring passengers remain well-informed throughout their journey.

The reliability of operations, reflected in attributes such as predictable travel time (REL.1) and strict adherence to official stops (REL.2), displayed a favorable balance between importance and performance, with both attributes scoring in the mid-to-high range (importance ~3.47, performance ~3.60). This indicates a satisfactory level of operational consistency appreciated by users.

As for cleanliness, it appears to be one of the most consistently delivered dimensions. Both the cleanliness of the bus interior (CLN.1) and its maintenance throughout the day (CLN.2) received high importance scores (3.68 and 3.73, respectively) alongside high performance scores (3.55 and 3.79). The latter, in particular, stands out as an example of effective service delivery that exceeds expectations.

In the comfort dimension, sufficient space during peak hours (CON.1) and the opportunity to find a seat during typical trips (CON.2) scored reasonably well, with CON.2 demonstrating a particularly close alignment between importance (3.70) and performance (3.72). This suggests that seating availability is being effectively managed in relation to passenger expectations, though spatial comfort at peak times may still require further optimization.

Temperature and ventilation, represented by the performance of the air conditioning system (TMP.1) and adequate air circulation (TMP.2), also displayed consistency, with both importance and performance hovering around 3.65–3.72. This implies that climate control systems are functioning effectively and meeting user expectations.

The safety dimension emerged as a critical pillar of service quality. The perception of safety from criminal acts inside the bus (SFT.2) attained the highest importance score (3.81), and its performance was similarly strong (3.79), underscoring the success of safety measures currently in place. Additionally, driver conduct—specifically avoiding the use of phones or smoking (SFT.1)—was deemed highly important (3.65) and moderately well-performed (3.58).

Finally, the accessibility dimension reflects a strong commitment to inclusivity. Audio and visual aids for passengers with disabilities (ACC.1) were valued (3.59) and adequately implemented (3.53). More notably, the assistance provided to priority passengers such as the elderly, pregnant women, or those carrying heavy luggage (ACC.2) received the highest overall importance rating (3.84) and one of the top performance scores (3.73), positioning it as a key strength of the current service offering.

These results collectively illustrate that while most dimensions are being delivered at a level that aligns closely with user expectations, there are critical gaps—especially in information accuracy and communication—that must be addressed to optimize user satisfaction. The subsequent quadrant analysis will further classify these indicators to prioritize actionable improvements based on their strategic significance.

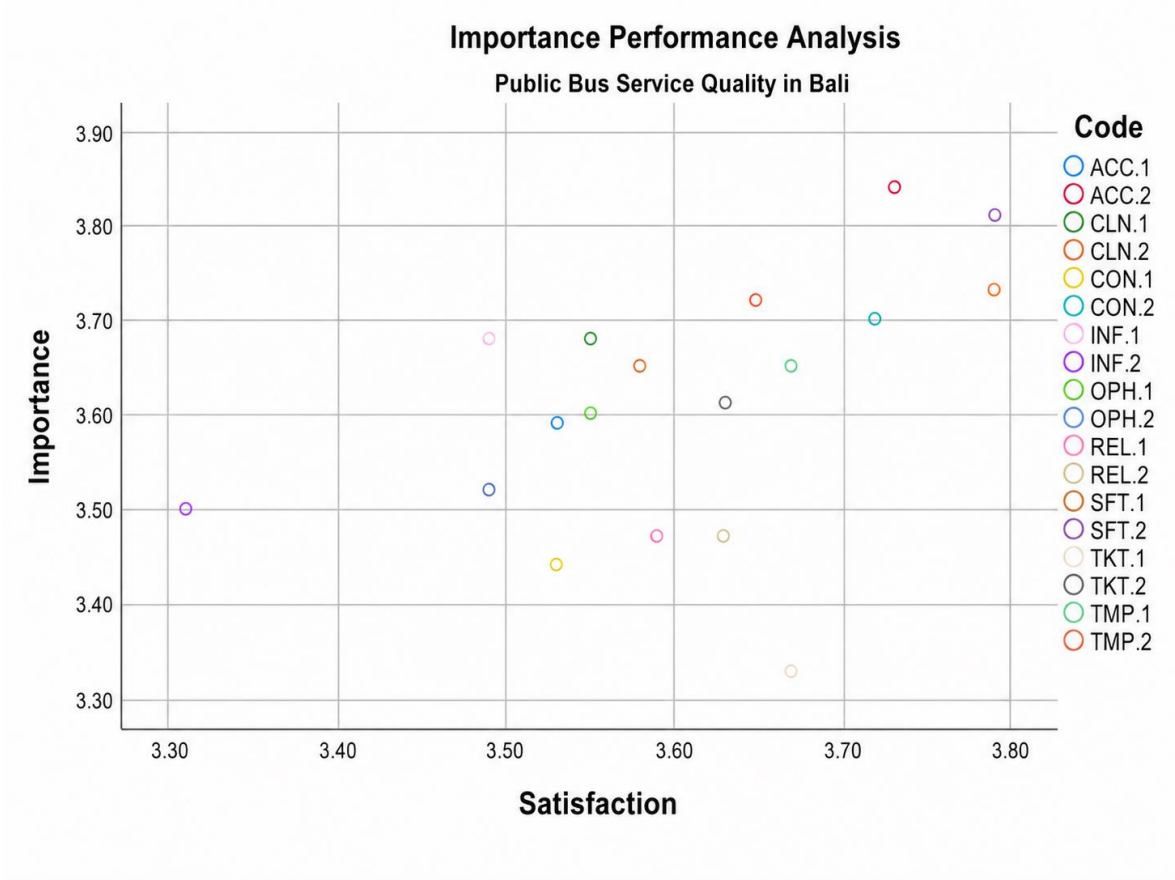

Figure 1. Impotance Performance Analysis (IPA) Result. Photo: Author's Data (2025)

As illustrated in Figure 1, the IPA matrix provides a visual representation of how each service attribute of Trans Metro Dewata aligns with user expectations and actual performance. The graph is divided into four quadrants using the grand mean of importance (3.62) and performance (3.61) as crosshairs. This classification aids in prioritizing improvements and allocating resources effectively.

Quadrant I: Concentrate Here (High Importance, Low Performance) Attributes in this quadrant are deemed crucial by users but are currently underperforming, indicating urgent areas for service improvement. Two indicators stand out:

- INF.1 (Real-time arrival information is accurate)
- INF.2 (Service disruptions are clearly announced)

Both indicators belong to the Information dimension and exhibit relatively high importance (3.68 and 3.50, respectively) but lower satisfaction (3.49 and 3.31). This highlights the inadequacy of TMD's current passenger information systems and suggests a critical need for technological upgrades and communication enhancements.

Quadrant II: Keep Up the Good Work (High Importance, High Performance) Attributes in this quadrant are both important and well-delivered, indicating they should be maintained at their current level. Notable indicators in this quadrant include:

- ACC.2 (Staff assist priority passengers) – highest in both importance (3.84) and strong in performance (3.73)
- SFT.2 (Feeling safe from crime inside the bus) – 3.81 (importance), 3.79 (performance)
- CLN.2 (Cleanliness throughout the day) – 3.73 (importance), 3.79 (performance)
- CON.2 (Opportunity to get a seat) – balanced at 3.70 (importance) and 3.72 (performance)

These items reflect strengths in accessibility, safety, cleanliness, and comfort, and should be consistently reinforced to sustain high user satisfaction.

Quadrant III: Low Priority (Low Importance, Low Performance)
This quadrant comprises indicators considered less important by users and that also exhibit below-average performance. Though these areas may be improved over time, they are not currently critical. Attributes in this group include:

- OPH.2 (Bus headway adherence)
- REL.1 (Predictable travel time)
- INF.2 (Already in Quadrant I, but low in both axes)
- TKT.1 (Ease of using payment systems)

Interestingly, while ease of payment (TKT.1) is technically in this quadrant, it performs better than expected and could be considered for resource reallocation if needed.

Quadrant IV: Possible Overkill (Low Importance, High Performance)
This quadrant identifies service aspects that may be overperforming relative to their importance. Though not inherently negative, they suggest opportunities for resource optimization. Indicators here include:

- TKT.1 (Ease of using payment systems) – low importance (3.33), high performance (3.67)
- REL.2 (Bus stops at designated stops) – moderate importance (3.47), performance (3.63)
- TMP.1 and TMP.2 (Thermal comfort indicators) – good performance but slightly lower importance

Attributes in this quadrant could be maintained with current service standards but do not necessarily require further investment unless expectations shift over time.

The IPA matrix provides a practical roadmap for enhancing service quality. Immediate improvements should focus on real-time passenger information systems, while strengths in safety, cleanliness, comfort, and accessibility must be preserved. Less critical attributes, especially those in Quadrant IV, may be considered for service

efficiency adjustments if necessary. These insights form the basis for the strategic recommendations discussed in the following section.

Discussion

The findings of this study provide a comprehensive understanding of passenger perceptions toward the service quality of Trans Metro Dewata (TMD), highlighting both strengths and areas requiring targeted improvements. The demographic profile of respondents illustrates that the majority of TMD users are young adults, predominantly male, and largely composed of working individuals. This demographic pattern aligns with the functional role of TMD as both a commuter service for local residents and a mobility option for tourists. The diverse user base reinforces the need for adaptable and inclusive service delivery strategies, particularly because expectations may vary depending on travel purpose, familiarity with the system, and travel frequency.

The Importance–Performance Analysis (IPA) reveals uneven performance across service dimensions, emphasizing that user satisfaction is shaped by distinct operational and informational elements. A key insight from the results is the critical role of information services. Both real-time arrival accuracy (INF.1) and clarity of disruption announcements (INF.2) fell into the "Concentrate Here" quadrant, indicating substantial gaps between user expectations and perceived performance. Given the dependence of public transport reliability on timely and accessible information, these deficiencies represent a significant barrier to achieving higher service satisfaction. The findings underscore the urgent need for technological upgrades, such as improved GPS-based tracking and more robust communication channels, to ensure passengers remain informed throughout their journey.

Conversely, several core service attributes—particularly those related to safety, cleanliness, and accessibility—performed consistently well and were categorized in the "Keep Up the Good Work" quadrant. High importance and correspondingly high performance in indicators such as staff assistance for priority passengers (ACC.2), passenger safety from crime (SFT.2), and maintenance of cleanliness throughout the day (CLN.2) demonstrate the effectiveness of existing operational protocols. These results reflect positively on TMD's commitment to providing a safe, inclusive, and hygienic travel environment. Maintaining these strengths is essential, as they contribute substantially to the public perception of service reliability and comfort, especially among tourists who rely on predictable and secure transportation options.

Some dimensions exhibited balanced but moderate performance. For instance, reliability indicators (REL.1 and REL.2) and comfort-related attributes (CON.1 and CON.2) were perceived as satisfactory but not exceptional. Although not identified as priority areas for intervention, incremental improvements—such as better peak-hour management or optimized headways—could elevate the overall user experience. Meanwhile, indicators in the "Possible Overkill" quadrant, particularly ease of payment (TKT.1), suggest that resources may be allocated beyond user expectations. While

efficient ticketing systems remain important, their high performance relative to lower perceived importance suggests opportunities for resource optimization.

Collectively, the results indicate that TMD's operational strengths lie in its safety, cleanliness, and accessibility provisions, all of which contribute positively to user satisfaction. However, the inadequacy of real-time information services presents a critical weakness that undermines overall service quality. Addressing this gap should therefore be prioritized in future development plans. Improving digital communication systems, integrating real-time data more effectively, and ensuring transparency during service disruptions could significantly enhance passenger trust and satisfaction.

Overall, the findings affirm the value of IPA as a diagnostic tool for public transportation evaluation, providing actionable insights for TMD's service optimization. By focusing on critical informational improvements while preserving strong operational attributes, TMD can advance toward a more reliable, user-centered, and resilient public transport system.

Conclusion

This study assessed the service quality of Trans Metro Dewata (TMD) in Bali using Importance–Performance Analysis (IPA) based on responses from 100 users across 18 service attributes and nine dimensions: availability, ticketing, information, reliability, cleanliness, comfort, temperature and ventilation, safety, and accessibility. The findings show that most service attributes performed reasonably well and were close to user expectations, particularly in safety, cleanliness, accessibility for priority passengers, and seating comfort. However, the information dimension, especially real-time arrival updates and communication of service disruptions, remains a key weakness requiring immediate improvement. Some attributes, such as payment convenience and interior climate comfort, performed beyond their perceived importance, suggesting that resources in these areas could be optimized and redirected toward improving passenger information and communication systems. Therefore, TMD is recommended to adopt GPS-based technologies, digital signage, mobile applications, SMS alerts, and official social media channels while maintaining strong standards in cleanliness, safety, and accessibility to enhance user satisfaction, strengthen public trust, and position TMD as an inclusive urban transport model in tourism-intensive regions such as Bali.

Acknowledgement

The author would like to express sincere appreciation to the management and staff of Trans Metro Dewata (TMD) for their cooperation and support throughout the data collection process. Their assistance in facilitating access to the study sites and providing relevant operational information greatly contributed to the successful completion of this research. The author also extends gratitude to all respondents who participated in the survey, as well as to individuals who offered technical or administrative support.

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