

Analysis of The Effectiveness Level of Trans Sarbagita Bus as Public Transport in Denpasar City

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Abstract: Public transportation is a primary necessity for supporting daily activities in Denpasar City. One mode of transport that plays a strategic role is the Trans Sarbagita Bus. As a mass transportation service, this bus system is expected to provide effective, efficient, and affordable mobility. This study aims to analyze: (1) public perception of the effectiveness of the Trans Sarbagita Bus service; (2) the simultaneous effect of accessibility, punctuality, and ticket price on service effectiveness; (3) the partial effect of each of these variables; and (4) the strengths, weaknesses, opportunities, and threats (SWOT) of the Trans Sarbagita Bus system. A quantitative method with an associative approach was employed. Data were collected from 105 active respondents through observation, interviews, and a five-point Likert scale questionnaire, and analyzed using multiple linear regression via SPSS. The findings show that: (1) public perception is generally positive, especially in terms of comfort and safety, although accessibility and punctuality remain suboptimal; (2) accessibility, punctuality, and ticket price simultaneously have a significant effect on service effectiveness; (3) each of these variables also has a positive and significant partial effect; and (4) strengths lie in low fares and safety, while key weaknesses include limited access and delays. Opportunities stem from policy support and rising public awareness, whereas threats include the dominance of private vehicles and low intermodal integration. It is recommended that the government enhance public transport campaigns through media and community partnerships, as well as expand bus stop access and intermodal connectivity to improve service effectiveness.

Keywords: accessibility, punctuality, service effectiveness, ticket price, Trans Sarbagita Bus

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1. INTRODUCTION

Transportation plays a crucial role as the backbone of societal life and serves as a key driver in the development of social, political, and population mobility systems. The growth of the transportation sector often runs parallel with advancements in other sectors, significantly influencing both economic activities and social interactions. Economic infrastructure, such as road networks that open access to isolated areas, has a profound impact by stimulating the emergence of new economic activities within local communities (Bidari et al., 2021). Adequate transportation infrastructure not only facilitates the flow of goods and services but also expands economic coverage and supports equitable development.

Although Indonesia's infrastructure sector has experienced notable progress, there remains a critical need for continuous development and improvement of existing facilities. Transportation infrastructure is a key determinant in supporting national economic growth, as it functions as the main distribution network for goods and services across regions (Raharjo

et al., 2022). Adequate infrastructure is essential to accelerating progress in the economic sector and beyond. Improvements in the transportation sector are typically reflected in the quality of services provided by transportation institutions, which in turn influence public satisfaction and dependence on these modes of transport (Lumingkewas et al., 2023).

As a vital component of the economic system, transportation significantly affects various sectors, including industry, tourism, and trade. It not only facilitates but also drives economic growth and enables social mobility (Chen et al., 2023). To ensure smooth operations in these sectors, the government provides mass transportation services as a more efficient and cost-effective means of mobility. Public transportation allows people to carry out daily activities such as commuting to work or school with shorter travel times and more affordable costs, accessible to all socio-economic groups (Riyadi et al., 2023).

The population, as the foundation of development, demonstrates high mobility characteristics. People naturally move from one location to another to fulfill various social and economic needs (Tamur et al., 2020). The increase in population and mobility has heightened the demand for adequate and high-quality public transportation systems. In Denpasar City, population growth has been accompanied by a rise in private vehicle usage, resulting in severe traffic congestion and negative environmental impacts due to air pollution (Mardikawati et al., 2024). This situation necessitates appropriate transportation policies and infrastructure development that can encourage the public to shift from private to public transportation, thereby reducing such negative externalities (Kariyana et al., 2024).

High population density directly correlates with the need for quality transportation services. Without adequate transportation facilities, development in various sectors may be hindered, impacting regional competitiveness. Consequently, the transportation sector is classified as a derived demand—demand driven by the need to support broader economic activities. The government bears the responsibility to accelerate transportation infrastructure development to avoid it becoming a development bottleneck and to establish regional competitive advantages (Prihatini et al., 2024).

Public service regulations, such as Law Number 25 of 2009, provide the legal framework for improving the quality of public transportation services. This law outlines the responsibilities of public service providers and ensures community involvement and service efficiency. Effective public transportation can reduce congestion and travel time, support better spatial planning, ensure public order, and enhance disaster risk management (Raka, 2022).

Utilizing public transportation also contributes significantly to economic growth by enhancing labor market efficiency. Furthermore, it supports sustainable modal distribution, fulfills social mobility needs, and reduces negative externalities such as air pollution and traffic congestion (Hermawati et al., 2023). Public transportation providers are expected to deliver services that not only meet basic societal needs but also ensure comfort, safety, and reliability. High service quality will increase public usage of mass transportation, ultimately promoting sustainable urban development (Hidayat et al., 2022a).

Denpasar, as the capital city of Bali Province, plays a central role in governance, economy, and tourism, and is characterized by a high level of urbanization. According to the Bali Provincial Statistics Agency (BPS, 2023), Denpasar had a population of 748,000 in 2023, with a continuously increasing growth trend. Rising urbanization has led to increased public

mobility and private vehicle ownership, which reached 1,540,337 registered units in the same year (BPS Bali Province, 2023). This has caused significant traffic congestion, especially during peak hours, resulting in reduced time efficiency, higher transportation costs, and declining urban quality of life (Maharani et al., 2023).

To address these issues, the local government implemented a mass transportation system known as Bus Rapid Transit (BRT) under the name Bus Trans Sarbagita. Officially launched on August 18, 2011, this system aims to reduce congestion, improve public mobility, and provide a safe, comfortable, and affordable transportation alternative for residents of Denpasar and neighboring areas such as Badung, Gianyar, and Tabanan (Natasya, 2022). The Trans Sarbagita Bus serves as a strategic initiative to decrease reliance on private vehicles and enhance the efficiency and quality of public transportation in the Denpasar metropolitan area.

Based on this background, the objectives of this study are to: (1) Analyze public perception regarding the effectiveness of the Trans Sarbagita Bus service; (2) Assess the simultaneous influence of accessibility, punctuality, and perceived ticket price on service effectiveness; (3) Examine the partial influence of each of these variables; and (4) Evaluate the strengths, weaknesses, opportunities, and threats (SWOT) of the Trans Sarbagita Bus system.

2. RESEARCH METHODS

The research design employed in this study is a quantitative associative design. Quantitative research involves the collection of data in numerical form, which is then analyzed using statistical tools (Sugiyono, 2017). The associative approach aims to determine the relationship between several variables—specifically, accessibility, punctuality, and ticket price—and the effectiveness of the Trans Sarbagita Bus service in Denpasar City, Bali Province.

The sampling technique used in this study was purposive sampling, involving a total of 105 respondents who are active users of the Trans Sarbagita Bus service. This sample size was selected to represent the perceptions of users from various areas across Denpasar City.

The research was conducted within Denpasar City, and data were collected through questionnaires and in-depth interviews. The data analysis technique employed was descriptive statistical testing. The selection of this analytical model was based on the consideration that certain variables may strengthen or weaken the relationship between the independent variables and the dependent variable.

3. RESULTS AND DISCUSSION

Table 1. Characteristics of Research Respondents

Age Range	Frequency	Percentage (percent)
15–19 years	5	4.8
20–24 years	20	19
25–29 years	50	47.6
30–34 years	18	17.1
35–39 years	5	4.8
40–44 years	3	2.9
45–49 years	2	1.9

50–54 years	2	1.9
Total	105	100

Based on Table 1, the majority of respondents are in the age range of 25–29 years, which is 47.6 percent. This group is generally in the early phase of their career, characterized by high dynamics, openness to innovation, and adaptive ability to change. The next dominant age ranges are 20–24 years (19 percent) and 30–34 years (17.1 percent), so that overall, respondents aged 20–34 years comprise 83.7 percent of the total study population. This indicates the dominance of the early productive age group to middle who tend to be active and critical of contemporary issues. Other age groups, such as 15–19 years and 35–39 years each comprise 4.8 percent, while the age group above 40 years has a smaller proportion. Nevertheless, the presence of older age groups still enriches the perspective with reflective views based on experience. The dominance of young age is in line with other demographic characteristics, such as unmarried status and activities as workers or students. Therefore, this age distribution is important to note in the analysis and generalization of findings, given the limited representation of older age groups.

Table 2. Distribution of Respondents by Occupation

Job Category	Frequency	Percentage (%)
Student	77	73.3
Service	22	21
Industry	4	3.8
Housewife	1	1
Doesn't work	1	1
Total	105	100

Based on the job category data, the majority of respondents in this study were students, as many as 73.3 percent of the total 105 respondents. This shows that most respondents come from educational backgrounds and have the status of students or active students. In addition, as many as 22 respondents (21 percent) work in the service sector, making it the second largest job group in this sample. Then, there are 4 respondents (3.8 percent) who work in the industrial sector. As for housewives and respondents who do not work, each only amount to 1 percent of the total respondents. Overall, this data shows that this study is dominated by the student group, with a small portion of respondents coming from the service sector, industry, and non-worker categories.

Public Perception of the Effectiveness of Sarbagita Bus Services

Public perception of Trans Sarbagita Bus services is generally quite positive. Accessibility scored high, namely 4.41 for ease of finding bus stops and 4.29 for clarity of route information, indicating that bus stops are easy to reach and information is quite clear. Ticket prices were also considered good with scores of 4.31 and 4.30, reflecting affordable and competitive rates. However, the punctuality aspect scored lower, namely 3.70 for punctuality of arrival and 3.65 for travel efficiency. This indicates that there is still an inconsistency in the schedule which reduces user trust. Overall, the effectiveness of the service scored 3.87 to 3.88, indicating a fairly good level of satisfaction, especially in terms of comfort and bus stop access. However, improving punctuality is a key factor in increasing the trust and effectiveness of the Trans Sarbagita Bus service in supporting optimal community mobility.

Analysis of the Simultaneous Influence of Accessibility, Punctuality, and Ticket Price on the Effectiveness of Trans Sarbagita Bus as Public Transportation in Denpasar City

Simultaneous tests were conducted to determine the simultaneous influence of accessibility, punctuality, and ticket price variables on the effectiveness of Trans Sarbagita Bus as public transportation in Denpasar City. To test this influence, a simultaneous regression coefficient test (F test) was used. The F test was used to determine whether the regression model built as a whole was significant, namely whether all independent variables entered together had an effect on the dependent variable. The calculation was carried out by comparing the F count value with the F table. The F table value was obtained using the degrees of freedom $df = (k - 1), (n - k) = (4 - 1), (105 - 4) = (3, 101)$ at a significance level of 5 percent ($\alpha = 0.05$), which was 2.69. The results of the F test showed that $F \text{ count} > F \text{ table}$, and the significance value < 0.05 , which means that the regression model is statistically significant.

Table 3. Results of the ANOVA^a F Statistical Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30,200	3	10,067	12.60	0.000
	Residual	74,800	101	0.741		
	Total	105,000	104			

a. Dependent Variable: Level of Effectiveness

b. Predictors: (Constant), Ticket Price, Punctuality, Accessibility

Based on Table 3, it can be seen that the significance value (Sig.) generated from the F statistical test is 0.000. This value is smaller than the significance level of 0.05, which means that this regression model is statistically feasible to be used in research.

This shows that the independent variables, namely accessibility, punctuality, and ticket prices simultaneously have a significant effect on the dependent variable, namely the level of effectiveness of the Trans Sarbagita Bus as public transportation in Denpasar City. With thus, it can be concluded that the three independent variables together can explain the changes or variations that occur in the effectiveness of the Trans Sarbagita Bus service.

Partial Influence Analysis of Accessibility, Punctuality, and Ticket Prices on the Effectiveness of Trans Sarbagita Bus as Public Transportation in Denpasar City

The t-test or test of significance is used to determine whether the influence of the independent variable on the dependent variable is significant or not, with criteria based on a significance value < 0.05 , then the independent variable has a significant influence on the dependent variable and vice versa, if the significance value is > 0.05 , then the independent variable does not have a significant influence on the dependent variable (Santoso, 2000). The following are the results of the t-test. This test is carried out by comparing the calculated t with the t table with a significance level of 5% and degree of freedom ($df = n - k$). Where if the calculated $t > t \text{ table}$, then the hypothesis is accepted, in other words the independent variables individually have a significant influence on the dependent variable. Conversely, if the calculated $t < t \text{ table}$ then the hypothesis is rejected.

Table 4. Results of the t-statistic test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1 (Constant)	23,374	6,796		3,881	.000
Accessibility	.590	.127	.167	1,799	.038
Punctuality	.540	.103	.155	1,820	.039
Ticket price	.298	.099	.180	1,328	.046

a. Dependent Variable: Level of Effectiveness

Detailed Analysis Based on Table above

The **accessibility variable** has a t value of 1.799 with a significance level of 0.038. Since this significance value is lower than the 0.05 threshold, it can be concluded that accessibility has a positive and significant effect on the effectiveness of the service. This implies that the higher the perceived accessibility by users, the more it enhances the effectiveness of the service. Therefore, the first hypothesis stating that accessibility influences the level of effectiveness is accepted.

The **punctuality variable** shows a t value of 1.820 with a significance level of 0.039. As this value is also below 0.05, it indicates that punctuality has a positive and significant influence on the service's effectiveness. This means that the more punctual the service is, the more it improves its overall effectiveness. Based on this result, the second hypothesis stating that punctuality influences effectiveness is accepted.

The **ticket price variable** has a t value of 1.328 and a significance level of 0.046. Although the t value is lower than that of the previous variables, the significance value still falls below the 0.05 threshold. Consequently, ticket price has a positive and significant effect on service effectiveness. In other words, when the ticket price aligns with the perceived service quality, it enhances the effectiveness of the service. Thus, the third hypothesis stating that ticket price influences effectiveness is accepted.

The Effect of Accessibility on the Effectiveness of the Trans Sarbagita Bus

The results show that accessibility has a positive and significant impact on the effectiveness of the Trans Sarbagita Bus service. Easy access to bus stops and departure points makes users feel more comfortable and encourages greater usage. This finding is supported by mobility theory, which emphasizes that accessibility is a crucial factor in increasing user satisfaction. Previous studies by Ananda (2021) and Sari & Prasetyo (2022) also highlight the importance of strategic bus stop locations and the availability of information in improving transportation service efficiency. Interviews with users and operational staff further confirm that both physical and informational accessibility play essential roles in attracting users. Therefore, improving accessibility is key to enhancing service effectiveness. Effective route planning and facility provision tailored to user needs are essential for optimal service performance. This demonstrates that accessibility is a primary factor influencing service effectiveness.

The Effect of Punctuality on the Effectiveness of the Trans Sarbagita Bus

Data analysis indicates that punctuality significantly and positively affects the effectiveness of the Trans Sarbagita Bus service. Punctuality serves as a critical indicator of service reliability for users when evaluating service quality. Accurate scheduling reduces uncertainty in travel and enhances user trust in the service. Prior research by Nugroho (2020), Wulandari & Hakim (2023), and Pramudito (2025) also confirms that punctuality is a vital factor in transportation services. Interviews with users and scheduling staff reinforce the idea that maintaining punctuality increases user comfort and satisfaction. Therefore, proper

schedule management is crucial in improving service effectiveness. Punctuality thus emerges as a major contributing factor to the effectiveness of the Trans Sarbagita Bus, underscoring the importance of effective operational management.

The Effect of Ticket Price on the Effectiveness of the Trans Sarbagita Bus

The study finds that ticket price positively and significantly affects the effectiveness of the Trans Sarbagita Bus service. A price perceived as fair and affordable encourages users to utilize the service more frequently, thereby increasing ridership. The concept of fairness pricing suggests that the price should correspond to the value of the service received. Previous studies by Putri (2021), Handayani & Sutrisno (2023), and Yuliana (2025) demonstrate that appropriate ticket pricing supports increased public transportation use. Interviews with passengers and ticketing staff further support the notion that pricing is an important factor in both user comfort and frequency of use. Therefore, setting an appropriate ticket price is a key strategy for improving service effectiveness. A competitive and fair ticket price is one of the main factors in maintaining the effectiveness of public transportation services. This emphasizes the importance of pricing in keeping the service attractive to users.

SWOT Evaluation of the Trans Sarbagita Bus

A SWOT analysis was used to evaluate the effectiveness of the Trans Sarbagita Bus Corridor 1 service based on internal and external factors.

1. **Strengths:** The Trans Sarbagita Bus offers affordable fares (IDR 3,500 for general users; IDR 2,500 for students), strategic routes connecting activity centers such as Renon, Sanglah Hospital, and Udayana University, and adequate facilities like air conditioning, CCTV, and proper bus stops. Comfort and punctuality (82% during morning hours) are also rated highly by users.
2. **Weaknesses:** The fleet size is limited (12 buses out of the ideal 25), departure frequency is low, and the schedule is unreliable. The absence of tracking applications and digital information systems, poor access to bus stops, and lack of promotional efforts result in low utilization rates.
3. **Opportunities:** Growing environmental awareness, budgetary and policy support for sustainable transportation, and potential partnerships with private sectors and technology providers present significant opportunities. Student, university, and tourist segments offer great potential as loyal users if outreach is optimized.
4. **Threats:** The dominance of private vehicles, public reluctance to use public transportation, competition with online transport services, road congestion, and dependency on government subsidies pose substantial challenges to the sustainability of the Trans Sarbagita Bus service.

4. CONCLUSION

1. Users of the Trans Sarbagita Bus generally expressed moderately positive perceptions regarding comfort and safety; however, accessibility and punctuality were still perceived as lacking, indicating that the overall service effectiveness has not yet fully met public expectations.
2. Accessibility, punctuality, and ticket price have a significant simultaneous effect on the dependent variable, namely the effectiveness level of the Trans Sarbagita Bus as a

mode of public transportation in Denpasar City.

3. Accessibility, punctuality, and ticket price were also proven to have a positive and significant partial effect on service effectiveness based on partial test results.
4. The SWOT analysis highlights strengths such as affordable ticket prices and good bus conditions, as well as weaknesses in the form of limited accessibility and delays caused by traffic congestion.

SUGGESTIONS

1. The local government should expand routes and increase the number of bus stops to better serve densely populated areas and public facilities, thereby improving accessibility and increasing ridership.
2. The digitalization of information via applications and on-site media at bus stops must be enhanced to provide real-time access to schedules, routes, fares, and bus positions for the public.
3. The provision of dedicated bus lanes and a traffic light priority system is necessary to reduce delays caused by congestion and improve punctuality of bus operations.
4. The government should actively promote the importance of public transportation to reduce congestion and pollution through educational campaigns across various media and community partnerships to encourage behavioral change among citizens.

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