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ANALYSIS OF IMPROVING THE QUALITY OF MASS TRANSPORTATION SERVICES WITH THE BUY THE SERVICE (BTS) SCHEME USING THE IMPORTANCE PERFORMANCE ANALYSIS (IPA) METHOD: CASE STUDY OF BTS ROUTE GRESIK – LAMONGAN

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ABSTRACT
Transportation is fundamental to societal function, impacting lifestyles, production, and service accessibility, and it is a cornerstone of urban mobility. This study evaluates the quality of mass transportation services under the Buy The Service (BTS) scheme on the Gresik - Lamongan route using Importance-Performance Analysis (IPA). The research identifies key performance attributes influencing passenger satisfaction using primary data from field observations, passenger surveys, and secondary data from local transportation authorities. Results indicate high satisfaction with safety features like fire extinguishers, glass breaker hammers, and accessibility features such as priority seating for wheelchair users. However, improvements are needed in areas such as bus intervals and operational consistency. The IPA quadrant analysis highlights strategic priorities for enhancing service quality. Recommendations include prioritizing safety, optimizing accessibility, and leveraging technology to improve reliability and efficiency. These findings offer policymakers and transportation operators insights to enhance service delivery and meet diverse passenger needs.

Keywords: buy the service, importance-performance analysis, Gresik - Lamongan

INTRODUCTION

Transportation is an essential part of society's functioning and activities, closely linked to lifestyles, the range and location of production activities, and services available for consumption (Prawiradipura & Wilson, 2023; Ramadhan et al., 2015; Riawan, 2018; Tjitrohartoko & Saraswati, 2020). As one of the key pillars, the transportation sector supports the services and mobility of urban residents to improve their quality of life. In transportation, the two main elements are movement and the physical change of location of goods and passengers to another place (Forino & Putranto, 2023; Insani et al., 2023; Riawan, 2018). With the advancement of human civilization, global transportation underwent significant changes thanks to technological developments that resulted in faster, large-capacity, and efficient means of modern transportation, driving the acceleration of technology-based transportation systems.

An area that is planned to become a city is developed using specific functions about the potential to develop to meet the social and economic needs independently of most of the population in the city by utilizing the situation and conditions, existing space and economic level (Annisa et al., 2019; Fadilah & Abdul Qodir Jaelani, 2023; Insani et al., 2023; Nur Ahlina & Ishak, 2023). The city can fulfill essential infrastructure services to meet its needs, have a transportation system, and support the surrounding area. Analysis of land use

patterns and population movements illustrates the concept of transportation system management following the pattern of generation and attraction. It is concluded that public transportation management in the city needs to create integrated internal transportation using regional transportation systems such as BRT, MRT, and regional public transportation networks that create population mobility with diverse needs. The demand for better transportation services is inevitable, especially in some cities. In addition to providing and maintaining good infrastructure, a strategy is needed in the form of transportation system management to improve the performance of a city's transportation services (Pramadha et al., 2024). The fundamental goal of transport system management is infrastructure efficiency, achieved by optimizing public transport management. This optimization includes the management of supply and demand, namely the regulation of the movement of people and goods and the management of road capacity. The regulation of people's movement is more about when, where, and how the movement is carried out (Nugroho and Malkhamah, 2018).

According to Boakye et al. (2022), transportation infrastructure has two leading roles, namely, as a tool to direct development in urban areas and as infrastructure for the movement of people and/or goods arising from activities in these urban areas. The benefits or uses of transportation are as follows: a. Time efficiency. With sound and regular transportation facilities and infrastructure, people who work in the capital city, those who live in Jakarta and its surroundings (Bogor, Depok, Tangerang, Bekasi) will be significantly helped because it will shorten travel time and save travel time. b. Cost Efficiency. Providing the public with a safe, comfortable, and affordable movement or mobility service for all groups. Distance Efficiency. The choice of routes to be traveled varies so that the distance traveled will be shorter and, of course, it will be faster. This is closely related to time efficiency and cost efficiency.

The development of urban transportation also carries the mission that urban transportation must be able to reduce congestion, be able to reduce traffic disturbances, be able to maintain environmental quality, and be affordable by all levels of transportation service users (Bi et al., 2024; Pramadha et al., 2024; Sun et al., 2024). In response to these problems, mass transit is one of the strategic solutions to reduce congestion and the negative impacts of private vehicle use. Mass transit is not only able to reduce the volume of vehicles on the road but also has the potential to reduce fossil energy consumption, reduce greenhouse gas emissions, and lower transportation costs for the community (Kwan et al., 2017; Nur Ahlina & Ishak, 2023). The effectiveness of mass transit as a public transportation solution is highly dependent on the quality of its services. Factors such as punctuality, comfort, affordable prices, and safety are important elements that must be considered so that people switch to mass transit (Turner, 2013).

Since 2023 there are 5 BTS Corridors that have been operated by the East Java Provincial Government, including Corridor I with the Sidoarjo Route (Porong Terminal) - Gresik (Bunder Terminal), Corridor II with the Sidoarjo route (Bungurasih Terminal) - Mojokerto (Kertajaya Terminal), Corridor III with the Mojokerto - Gresik route, corridor IV

with the Gresik route (Bunder Terminal) - Lamongan (Paciran Terminal) and Corridor V with the Sidoarjo route (Bungurasih terminal) - Bangkalan (Bangkalan Terminal). The five corridors received a positive response from the community. This can be seen from the number of load factors, which shows that each route has exceeded the established standards.

The condition of existing public transportation operating in Lamongan Regency, especially those connecting the Paciran area to Gresik Regency, has slowly begun to be abandoned by the community, the cause is the condition of the fleet that has begun to be unmaintained, uncertainty in service hours, tariffs that are pegged relatively high and security that is less guaranteed. The presence of Transjatim Corridor IV with the Gresik - Lamongan route received an excellent response from the community in the route area passed, this is evident from the many positive responses through social media that support the operation of Transjatim Corridor IV public transportation, and until now it can be seen that in the Peak Season there is a reasonably high passenger queue at the transit stop point.

Observing this, there is an indication of an imbalance between the Supply and Demand of transportation because there is still a queue of passengers who cannot be directly served by public transportation, so it is considered necessary to evaluate the mass public transportation service in question, based on that the standards set by the Decree of the Director General of Land Transportation Number: SK/687/AJ.206/DRDJ/2002, that the standard load factor of transportation is 70%. There is a 30% reserve to accommodate a surge in passengers so that between Supply and Demand is balanced and there is no buildup of queues of prospective passengers. This study aims to analyze the condition of transportation and characteristics of Transjatim Corridor IV mass transit passengers on the Gresik - Lamongan route using the Buy The Service (BTS) scheme.

While existing research has explored the BTS (Buy the Service) scheme in various urban contexts, this study uniquely contributes by focusing on the Gresik-Lamongan route in East Java, Indonesia. This route presents a distinct case due to [mention specific reasons, e.g., its mix of urban and rural characteristics, specific socio-economic factors of the passenger base, unique challenges in service delivery]. Unlike previous studies focusing on broader metropolitan areas or different operational models, this research provides a granular analysis of service quality perceptions within this specific regional context. The novelty of this study lies in its application of the Importance-Performance Analysis (IPA) method to identify key areas for service improvement from the perspective of diverse passenger demographics, including students, workers, and tourists, utilizing both primary data collected through field observations and passenger surveys, and secondary data sourced from local transportation offices.

METHOD

This research employs a quantitative descriptive approach to analyze the quality of mass transportation services under the Buy The Service (BTS) scheme on the Gresik-Lamongan route. The study integrates primary and secondary data to assess service

performance using the Importance Performance Analysis (IPA) method. Primary data was collected through passenger surveys, structured questionnaires, and field observations along the Gresik-Lamongan route. Respondents included daily commuters, students, and workers who frequently use BTS services—the surveys aimed to evaluate passenger satisfaction, service expectations, and areas needing improvement. Meanwhile, secondary data was sourced from relevant government agencies, including the East Java Provincial Transportation Office, Gresik Regency Transportation Office, and Lamongan Regency Transportation Office. This data comprised operational reports, passenger load statistics, and route maps.

The survey used a Likert scale to measure service satisfaction across key indicators such as safety, security, comfort, affordability, accessibility, and punctuality. Additionally, direct field observations were conducted at transit stops and onboard buses to validate passenger feedback and operational consistency. Official transportation service records were also examined to compare expected and actual performance.

Data analysis was performed using the Importance Performance Analysis (IPA) method. The collected data was processed using SPSS software, where Cronbach's Alpha was used to test instrument reliability. The IPA method categorized service attributes into four quadrants (high importance-high performance, high importance-low performance, low importance-high performance, and low importance-low performance). This classification helped identify priority areas for service improvement. The results were visualized using Cartesian diagrams, enabling policymakers to develop targeted strategies to enhance mass transportation quality. This detailed methodological approach objectively evaluates BTS service performance, providing a data-driven basis for strategic recommendations to improve public transportation efficiency and passenger satisfaction.

RESULTS AND DISCUSSION

Transportation Services

Transjatim Corridor IV BTS transportation services on the Gresik - Lamongan route are regulated in Road Traffic and Transportation as part of the national transportation system must be developed to realize the potential and role of security, safety, order, and smooth traffic. Ministerial Regulation No. 29 of 2015, which discusses Minimum Service Standards (MSS) on Transportation, includes several important points related to transportation services in Indonesia. This regulation regulates various types of public transportation that must meet SPM to determine the suitability of services on mass transportation with the Transjatim Corridor IV BTS scheme on the Gresik - Lamongan route.

Table 1. Transportation Services

	Security
1	Availability of CCTV in the bus
2	Availability of IoT for Providing Hazard Information

3	Vehicle Identity
4	Presence of Stewards / Stewardesses
5	Driver's ID
6	Bus Positioning Information Device (GPS)
7	Availability of Complaint Service Contacts
Safety	
8	Seat belt availability
9	Availability of glass breaker hammer
10	Availability of fire extinguisher tubes
11	Availability of First Aid Kit
12	Pre-operational unit check
13	Workshop availability
14	Automatic door that can be opened and closed
15	Accident Insurance
Comfort	
16	Availability of Information through Audio Adlibs
17	Carrying capacity according to destination route
18	Availability of Air Conditioner (AC)
19	Music available during the trip
Affordability	
20	Availability of a special application for bus information. Transjatim Application
21	Availability of bus stops on main road areas
22	Availability of special student fares
Equality	
23	Availability of access for the disabled
24	Availability of priority seats
25	Availability of space for wheelchair users
Regularity	
26	Availability of Service Information
27	Availability of Information If there is a disruption
28	The presence of officers at Transit Point stops
29	Ticket availability as proof of payment
30	Bus Interval
31	Suitability of Travel Time

Satisfaction Level Analysis

From the respondent survey data, the results of the analysis are visualized through the following diagram:

Table 2. Satisfaction Level of Respondents of Transjatim Corridor IV Users

No. Importance	Score					Weight
	Not Important	Less Important	Important enough	Important	Very Important	
1	0	2	20	12	66	442
2	0	3	14	25	58	438
3	0	1	16	19	64	446

4	0	4	14	20	62	440
5	0	1	15	23	61	444
6	0	1	14	28	57	441
7	0	0	9	33	58	449
8	0	2	9	27	62	449
9	0	0	10	28	62	452
10	0	0	9	24	67	458
11	0	2	8	29	61	449
12	0	1	20	34	45	423
13	0	2	9	39	50	437
14	0	1	10	29	60	448
15	1	6	19	30	44	410
16	1	5	17	18	59	429
17	0	3	18	20	59	435
18	1	3	13	21	62	440
19	0	4	16	22	58	434
20	0	4	17	20	59	434
21	0	6	18	20	56	426
22	0	1	12	28	59	445
23	0	2	12	25	61	445
24	0	1	11	32	56	443
25	0	1	5	34	60	453
26	0	6	18	36	40	410
27	0	9	31	32	28	379
28	0	21	27	21	31	362
29	0	3	28	40	29	395
30	3	15	48	24	10	323
31	0	1	31	29	39	406

Source: Analysis Results

From the table above, it can be explained that:

1. The performance indicator column contains the statement code for each dimension: statements about security (1-7), statements about safety (8-15), comfort statements (16-19), affordability statements (20-22), equality statements (23-25), and regularity statements (26-31).
2. The weight column is the number of respondents for each statement.
3. The weight column is the number of frequencies multiplied by the value of the level of satisfaction, where indicators numbers 9, 1, and 25 are considered the most satisfying. These indicators include the availability of a glass breaker hammer, a fire extinguisher tube in the bus, a complaint service contact, and fleets equipped with air conditioning (AC) and space for wheelchair users.

Level of Importance Analysis

For the level of importance of Transjatim Corridor IV user respondents on service quality have weights as shown in Table 3.

Table 3. Level of Importance of Transjatim Corridor IV User Respondents

No. Importance	Score					Weight
	Not Important	Less Important	Important enough	Important	Very Important	
1	1	3	14	20	62	439
2	0	3	17	22	58	435
3	0	3	18	20	59	435
4	0	6	19	20	55	424
5	0	1	11	30	58	445
6	0	1	9	30	60	449
7	1	6	20	30	43	408
8	0	6	17	17	60	431
9	0	2	20	20	58	434
10	0	0	7	10	83	476
11	0	3	14	25	58	438
12	0	1	5	34	60	453
13	0	6	18	36	40	410
14	0	9	33	31	27	376
15	0	21	27	21	31	362
16	0	2	9	27	62	449
17	0	0	10	28	62	452
18	0	0	11	23	66	455
19	0	2	9	30	59	446
20	0	1	16	19	64	446
21	0	4	14	20	62	440
22	0	1	15	24	60	443
23	0	2	13	25	60	443
24	0	1	14	32	53	437
25	0	1	20	35	44	422
26	0	2	9	38	51	438
27	0	1	14	29	56	440
28	0	0	10	33	57	447
29	0	3	28	40	29	395
30	3	15	48	24	10	323
31	0	1	31	29	39	406

From the table above, it can be explained that:

1. The importance indicator column contains the statement code for each dimension: statements about security (1-7), statements about safety (8-15), statements about comfort (18-19), statements about affordability (20-22), statements of equality (3), and statements about safety (4).
2. (23-25) and regularity statements (26-31).

3. The score column represents the number of respondents for each statement.
4. The weight column is the number of frequencies multiplied by the satisfaction level. Indicator 10 is considered very important and needs attention, while indicator 30 is considered less important. Number 10 is the availability of fire extinguisher tubes and bus intervals.

Transportation Service Quality Index

The results of the service quality index, shown in Table 4, must be calculated before calculating the level of conformity.

Table 4. Service Quality Index

No	Importance Performance (X)	Importance (Y)	No. Importance	rformance (X)	Importance (Y)
1	4.42	4.39	17	4.35	4.52
2	4.38	4.35	18	4.40	4.55
3	4.46	4.35	19	4.34	4.46
4	4.40	4.24	20	4.34	4.46
5	4.44	4.45	21	4.26	4.40
6	4.41	4.49	22	4.45	4.43
7	4.49	4.08	23	4.45	4.43
8	4.49	4.31	24	4.43	4.37
9	4.52	4.34	25	4.53	4.22
10	4.58	4.76	26	4.10	4.38
11	4.49	4.38	27	3.79	4.40
12	4.23	4.53	28	3.62	4.47
13	4.37	4.10	29	3.95	3.95
14	4.48	3.76	30	3.23	3.23
15	4.10	3.62	31	4.06	4.06
16	4.29	4.49	**Average**	**4.29**	**4.29**

Based on the table, it can be observed that the average performance index of the quality of intermodal transportation services perceived by passengers is 4.29, while the expected quality of transportation services is 4.29. Analysis of the level of conformity between performance values and expected values.

Table 5. Level of Conformity of Transjatim Corridor IV User Respondents

No.	Importance Performance (X)	Importance (Y)	Suitability Level
1	4.42	4.39	1.01
2	4.38	4.35	1.01
3	4.46	4.35	1.03
4	4.40	4.24	1.04

5	4.44	4.45	1.00
6	4.41	4.49	0.98
7	4.49	4.08	1.10
8	4.49	4.31	1.04
9	4.52	4.34	1.04
10	4.58	4.76	0.96
11	4.49	4.38	1.03
12	4.23	4.53	0.93
13	4.37	4.10	1.07
14	4.48	3.76	1.19
15	4.10	3.62	1.13
16	4.29	4.49	0.96
17	4.35	4.52	0.96
18	4.40	4.55	0.97
19	4.34	4.46	0.97
20	4.34	4.46	0.97
21	4.26	4.40	0.97
22	4.45	4.43	1.00
23	4.45	4.43	1.00
24	4.43	4.37	1.01
25	4.53	4.22	1.07
26	4.10	4.38	0.94
27	3.79	4.40	0.86
28	3.62	4.47	0.81
29	3.95	3.95	1.00
30	3.23	3.23	1.00
31	4.06	4.06	1.00

Based on the table above, the average respondent is satisfied with Transjatim Corridor IV services, but there are several services that are felt to be moderate or sufficient satisfaction levels, namely at indicator numbers 12, 26, 27, and 28.

Analysis of User Satisfaction Level with Service Quality Based on Cartesian Diagram (IPA Diagram)

To map the satisfaction and interests of transportation actors on several indicators of questions related to service quality that affect the satisfaction of transportation actors, a quadrant analysis (Cartesian diagram) is used. The cartesian diagram is a chart divided into four parts bounded by two lines that intersect perpendicularly at points (X, Y) where X is the average of the average score of the level of implementation or customer satisfaction and Y is the average of the average score of the level of interest. The table of average assessment results from the level of satisfaction and the level of importance are then plotted in a

quadrant consisting of 4 parts. The average value of the satisfaction and importance scores is the crossing line or cut line of the quadrant analysis, which limits the type of assessment between one quadrant and another. Briefly, the assessment in the quadrant is divided into:

- Quadrant I : Maintain Achievement
- Quadrant II : Top Priority
- Quadrant III : Low Priority
- Quadrant IV : Excessive

The IPA diagram shows the position of each dimension of service quality based on the level of importance and the level of satisfaction of Transjatim Corridor IV users. Based on the results of calculations on the level of importance and satisfaction of user respondents on all indicators of service quality, Transjatim Corridor IV produces IPA diagrams processed using SPSS applications as shown in Figure 1.

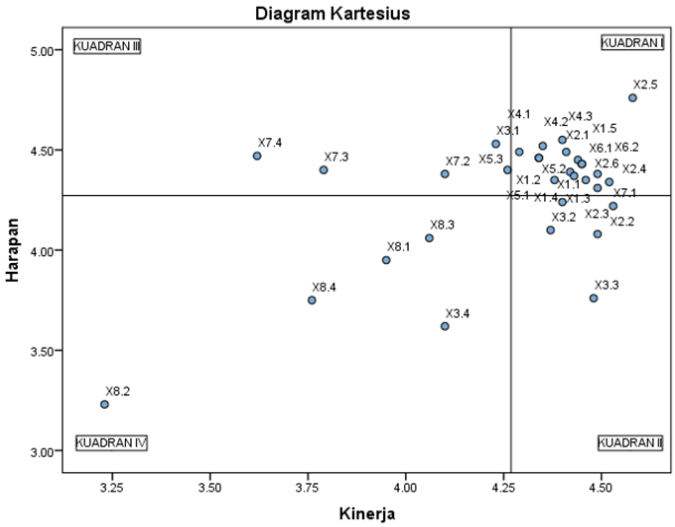

Figure 1. Cartesian diagram (IPA)

From the results of the diagram above, we can know the following things:

1. Quadrant I shows the level of customer expectations or expectations is high as well as the level of fact or perception (Transjatim performance). This indicates that passengers consider the indicators in this quadrant important. Transjatim as a service provider has also provided good service on these indicators so that customers can be assumed to be satisfied. Therefore, Transjatim must maintain its performance and service quality on indicators in this quadrant, namely X2.5 (availability of APAR tubes), X4.3 (availability of special student tariffs), X4.2 (availability of bus stops in the main road area), X1.5 (driver identification), X2.1 (availability of seat belts), X6.1 (availability of access for the disabled), X6.2 (availability of special student fares) X2.6 (availability of workshops), X2.4 (availability of first aid boxes) X5.2 (availability of priority seats), X1.1 (availability of CCTV) and X1.2 (availability of IoT for hazard information).
2. Quadrant II shows that the level of customer expectations or expectations is high, but the level of fact or perception (Transjatim performance) is low. This means that the

indicators that are in this quadrant are considered important by passengers. However, the services provided by Transjatim as a service provider are still lacking so that passengers feel less satisfied. This is a separate evaluation for Transjatim to have to improve the quality of its services on indicators X7.4 (30-minute bus interval), X7.3 (25-minute bus interval), X7.2 (20-minute bus interval), X5.3 (availability of wheelchair access), and X3.1 (availability of information through Audio ad-libs).

3. Quadrant III shows that the level of customer expectations or expectations is low as well as the level of fact or perception (Transjatim performance). This can be interpreted that the indicators in this quadrant are considered not too important so that they have not been deemed necessary and passengers do not mind too low the performance of service providers. Indicators contained in this quadrant are X1.4 (the presence of steward officers), X1.3 (the presence of vehicle identification), X2.3 (availability of APAR tubes), X2.2 (availability of glass-breaking hammers), and X3.3 (availability of air conditioning).
4. Quadrant IV shows a low level of customer expectations or perceptions but a high level of fact or perception (hospital performance). This can be interpreted as meaning that customers do not consider the indicators in this quadrant necessary, so they do not need to be prioritized too much, but the performance of service providers is considered excessive. The indicator in this quadrant is X3.4 (availability of music during the trip).

CONCLUSION

This study has thoroughly evaluated the Transjatim Corridor IV BTS service on the Gresik-Lamongan route, employing Importance-Performance Analysis (IPA) to identify key areas for service enhancement. The findings demonstrate that passengers are generally satisfied with safety features, such as the availability of fire extinguishers (Indicator 10) and glass breaker hammers (Indicator 9), as well as accessibility provisions like priority seating for wheelchair users (Indicator 25). However, significant gaps persist, most notably in relation to bus intervals (Indicator 30) and overall operational consistency. The IPA quadrant analysis revealed that while some attributes fall into the "Maintain Achievement" quadrant, indicating strong performance relative to importance, others require immediate attention to bridge the gap between passenger expectations and service delivery. These results underscore the importance of addressing the specific needs and priorities of diverse passenger demographics, including students, workers, and tourists, to ensure the long-term success of the BTS scheme.

The implications for policymakers are multifaceted. First, the demonstrated importance of safety and accessibility necessitates rigorous enforcement of safety standards and sustained investment in accessible infrastructure. This encompasses not only ensuring the presence of safety equipment on buses but also implementing regular maintenance checks and comprehensive safety training programs for staff. Second, the identified deficiencies in bus intervals and operational consistency highlight the need for improved route planning, scheduling optimization, and the implementation of real-time monitoring

systems. Policymakers should explore technology-driven solutions, such as GPS tracking and passenger information systems, to optimize bus frequencies and provide passengers with accurate and timely updates about service disruptions. Furthermore, the findings suggest that policymakers should explore opportunities to expand the BTS scheme to other underserved routes in East Java, prioritizing routes with similar socio-economic characteristics and transportation needs, accompanied by a robust evaluation framework.

This research provides a robust foundation for future investigations into mass transit service quality and the effectiveness of the BTS scheme. Subsequent studies could broaden the scope by incorporating longitudinal analysis to track changes in passenger satisfaction and service performance over time, allowing for a more nuanced understanding of the long-term effects of policy interventions and operational improvements. Additionally, future research could explore the perspectives of stakeholders such as bus drivers, transportation operators, and local businesses to gain a more comprehensive understanding of the challenges and opportunities associated with the BTS scheme. Comparative studies across different regions or countries could also provide valuable insights into the factors that contribute to the success of BTS schemes in diverse contexts. By addressing these research gaps, future studies can further inform policy decisions and contribute to the development of more effective and equitable mass transit systems.

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