



Optimizing Customer Satisfaction Through Measuring The Actual Servqual Score (ASC) and Importance - Performance Analysis (IPA) Of The Integrated Cross Rail (LRT) Of South Sumatra

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Abstract. South Sumatra's Light Rapid Transit (LRT) was built to support the 2018 Asian Games in Palembang. After the 2018 Asian Games, LRT is used as an integrated mode of transportation to support community mobility. Seeing the importance of the South Sumatra LRT, it needs to be evaluated to maintain passenger satisfaction. Therefore, this study aims to determine the expected value and actual value of passengers above the minimum service standard (SPM) of South Sumatra LRT. As well as knowing the condition of the South Sumatra LRT SPM depending on the size expected by passengers.

By using a survey method to obtain the expected value and actual satisfaction value of the community and analyzed using the Service Quality (Servqual) and Importance - Performance Analysis (IPA) methods. The result is the condition of the South Sumatra LRT minimum service standard based on the dimensions that passengers expect as reflected in the number of services and the actual service score of 101%. This achievement shows that the overall performance of the South Sumatra LRT service has met 101% of passenger expectations compared to before using the train. According to data from Servqual, the reliability aspect is not as expected. Based on IPA using Cartesian diagrams, the attributes prioritized for improvement are the suitability of travel time and stop time at the station. **Keywords:** Servqual, IPA, Railway.

1 Introduction

The 18th Asian Games 2018 held in Jakarta and Palembang. To support the biggest sports party for countries on the Asian continent, the Government of the Republic of Indonesia prepares various infrastructure including transportation. In order to support the mobility of athletes competing in Palembang City. More than four years after the 2018 Asian Games, the South Sumatra LRT continues to operate. The train, which has a track length of 23.4 km, is now used as a mode of public transportation that supports the mobility of the people of Palembang City. South Sumatra LRT has 13 stations, 9 sub-stations and 1 dipo.

The choice of mode integration is also based on the high number of accidents in Palembang City. Based on data, the increasing use of private vehicles, especially two-

wheelers in Palembang, has an impact on the increasing number of traffic accidents. In 2020, there were 478 traffic accidents dominated by two-wheeled motor vehicle accidents. In 2021, the number increased to 772 incidents and was still dominated by two-wheeled vehicles [1].

The South Sumatra Light Railway Management Center noted that during 2022, as many as 3,087,735 passengers used LRT transportation modes. The peak use of South Sumatra LRT was highest in May 2022 with 352,840 passengers. Conversely, the fewest passengers were in February 2022, totaling 146,524 passengers. On average, the number of passengers per month is 257,311.25 passengers. This figure has increased compared to previous years. Especially during a pandemic where population mobility is limited.

Looking at the data above, LRT is one of the favorite modes for the people of Palembang City. For this reason, the author sees the importance of the South Sumatra LRT, so it needs to be evaluated so that passenger satisfaction is maintained. Evaluation using Actual Servqual Score (ASC) and Importance - Performance Analysis (IPA) Minimum Service Standards in South Sumatra Integrated Cross-Rail Travel (LRT). This study aims to determine the expectation and reality value of passengers on the minimum service standards of the South Sumatra LRT, determine the condition of the minimum service standards of the South Sumatra LRT based on the dimensions expected by passengers, and what are the priorities for improving South Sumatra LRT services based on the Importance - Performance Analysis (IPA) method.

2 Literature

2.1 LRT as an Urban Transportation Mode

Light rail transit (LRT) is an electrically powered train service that operates in fully exclusive urban environments, on exclusive tracks on highways, and in some cases in mixed traffic. Most often using one to three rail cars and serving high-volume corridors at higher speeds than local bus and tram services. Design and operational elements of LRT include passenger boarding and alighting, off-train fare payment, and traffic signal priority. Stations are typically spaced further apart than local stations and are usually located in places with higher population and employment density.[2]

2.2 Minimum Service Standards in Railway Services

Minimum service standards are the most basic things that must be met by service providers for service users. The minimum tourism service standards mentioned in PM No. 63 of 2019 include at least:[4]

a) Safety

Having information and facilities related to health and safety, including fire extinguishers, emergency brakes, glass breakers, first aid kits and evacuation directions.

b) Security

To ensure safety during travel, trains must have at least a tool to monitor events that occur on board, have at least 2 guards and information on what passengers will do in the event of loss, safety order in the train.

- c) Reliability
Reliability and regularity of train schedules, if there is a delay, inform passengers.
- d) Comfort
Facilities are provided to increase the comfort value of passengers, such as lighting, air conditioning, toilets, luggage racks, and ticket matching seats.
- e) Convenience
Convenience when passengers need the information needed, so that passengers do not feel confused and can understand the information clearly.
- f) Equality
Facilities are available to meet the needs of priority passengers, such as persons with disabilities, pregnant women, the elderly, and infants.

2.3 Customer Satisfaction as the Main Purpose of Service

Customer satisfaction is defined as an effort to achieve something or make something satisfying. Basically, customer satisfaction is a situation where the needs, wants and expectations of consumers can be satisfied through the services or products consumed [5]. According to Kotler and Keller, customer satisfaction is defined as a person's feeling of satisfaction or disappointment that arises after comparing the performance (outcome) of a product considered with the expected performance (outcome) of the product. If the performance is lower than expected, the customer is dissatisfied. If the performance exceeds expectations, the customer is satisfied. If the performance far exceeds expectations, the customer is very satisfied [6].

2.4 Servqual Method and IPA as a Customer Satisfaction Measurement Tool

Service Quality Methodology Developed by three service quality experts, A. Parasuraman, Valarie A. Zeithaml and Leonard L. Berry (1985, 1988, 1990, 1991, 1993, 1994) [8]. Quality of Service is used to help businesses analyze the source of Quality of Service problems and understand how to improve Quality of Service. This service quality assessment method allows to see the quality of service based on 5 components, namely: tangibility, reliability, responsiveness, assurance and empathy [9].

Meanwhile, the importance-performance analysis (IPA) according to Nasaputra [10], is a method used to measure customer satisfaction by measuring interests (expectations) and performance (perceptions). In the analysis using the IPA method, a Cartesian diagram is used to find the quadrant of each attribute [11].

2.5 Previous Research

In this study, several similar studies were chosen as a guide. This previous research has become a literature in the form of methods, tools, and scope of research. Among

them is research [12] which is located at PT Transjakarta. The foundation of this research is that consumers have an important role because the number continues to grow, but it must also be balanced with improved service to consumers. If not, it will make consumers unhappy and use other modes. The method used is Servqual to measure the value of 5 service dimensions. The resulting Servqual value of service performance in the six trans-Jakarta corridors is only 70.16% of passenger expectations. The problem that often arises in corridor six is the accumulation of passengers at bus stops due to the slow arrival of buses.

The difference with the research conducted is that it chose a location at the South Sumatra Light Railway Management Center with the trip studied in the form of South Sumatra LRT. Taking the object in the form of South Sumatra LRT so that the services provided between Transjakarta and diesel trains have different standards.

3 Research Method

To achieve the research objectives, researchers conducted an evaluation using the Quality of Service (Servqual) and Importance Performance Analysis (IPA) approaches. Questionnaires were distributed to a sample of 382 respondents who were South Sumatra LRT passengers. Before distributing questionnaires to find data, questionnaires will be distributed as a trial to test validity and reliability. If the validity and reliability tests meet the requirements for actual testing, the questionnaire will be distributed according to the required sample size.

In analyzing it, researchers optimize the five dimensions of Servqual adopting PM Number 63 of 2019.

Table 1. Research Indicators

No	Indicators	Data Code
	Measurable evidence	
1	Presence of essential instructions/information	A1
2	Presence of emergency facilities	A2
3	Cleanliness and comfort on board	A3
	Reliability	
4	Equal service to passengers	B1
5	Appropriateness of travel time	B2
6	Appropriateness of stopping time at the station	B3
	Responsiveness	
7	Officer response in serving passengers	C1
8	Ease of getting stop information	C2
9	The existence of officers who serve priority passengers	C3
	Guarantee	
10	Passenger seat according to ticket	D1
11	Ability of officers to serve passengers	D2

12	Feeling safe and comfortable on the trip	D3
	Empathy	
13	Easy access to train information	E1
14	Attitude and behavior of officers in the train	E2
15	Existence of tickets without seats (standing)	E3

In the calculation, it will be carried out in accordance with the gap 5 in Servqual, which is the difference between passenger expectations and reality. So the data can be positive or negative, depending on the value given by the passenger.

Table 2. Research Data Recapitulation.

No	Dimension	Expected Score	Reality Score
1	Measurable Evidence		
2	Reliability		
3	Responsiveness		
4	Assurance		
5	Empathy		

Then satisfaction will be assessed on each indicator by calculating the percentage comparison between the reality value and the expected value to obtain the Actual Servqual Score value, the formula used is:

$$\text{Score} = (\text{Reality Value})/(\text{Expected Value}) \times 100\%$$

Furthermore, IPA calculations determine which attributes are considered most important by passengers based on the average performance questionnaire and preference questionnaire values. To determine the priority of improvement attribute used cartesian diagram which is divided into 4 quadrants.

4 Results and Discussion

4.1 Validity and Reliability Test

Research on optimizing customer satisfaction through measuring the actual servqual score (ASC) of minimum service standards (MSS) in the South Sumatra integrated rail transit (LRT) was conducted in Palembang City. South Sumatra LRT is operated by the South Sumatra Light Railway Management Center (BPKARSS).

Before distributing the questionnaire, validity and reliability testing was carried out. By conducting a preliminary survey to 30 respondents to test each item in the questionnaire. This test is carried out by comparing the items in the statement with the total value of 30 sample respondents. With a sample size of 30, the r table will be 0.361. The results of testing the validity of expected value through SPSS produce the following output.

Table 3. Validity Test for Excepted Score.

No Statement	<i>Corrected item-total correlation</i>	Result
A1	0.725	Valid
A2	0.594	Valid
A3	0.783	Valid
B1	0.857	Valid
B2	0.857	Valid
B3	0.767	Valid
C1	0.843	Valid
C2	0.798	Valid
C3	0.699	Valid
D1	0.594	Valid
D2	0.755	Valid
D3	0.771	Valid
E1	0.850	Valid
E2	0.707	Valid
E3	0.620	Valid

From the table above it appears that all of them are valid. Furthermore, testing the reliability of the expected value was carried out using Cronbach's alpha method on the data obtained from the pilot sample. The calculation of reliability analysis was carried out using the SPSS program, then the Cronbach alpha coefficient was obtained. In SPSS, the alpha value that meets is 0.942. So it can be concluded that all questions are reliable. For testing the validity of the reality value, the SPSS output is obtained as follows.

Tabel 4 Validity Test for Reality Score

No Statement	<i>Corrected item-total correlation</i>	Result
A1	0.659	Valid
A2	0.599	Valid
A3	0.687	Valid
B1	0.605	Valid
B2	0.697	Valid
B3	0.710	Valid
C1	0.724	Valid
C2	0.759	Valid
C3	0.749	Valid

No Statement	Corrected item-total correlation	Result
D1	0.737	Valid
D2	0.723	Valid
D3	0.745	Valid
E1	0.807	Valid
E2	0.817	Valid
E3	0.817	Valid

From the table the results of the reality value validity test also show that all items studied are valid. Then for the reliability analysis of the reality value obtained from testing using SPSS, the Cronbach alpha (a) coefficient is 0.935. So it can be concluded that all questions are reliable.

4.2 South Sumatra LRT Customer Satisfaction Assessment

In the previous sub-chapter, the results of the calculation of expectations and reality of the South Sumatra LRT SPM were discussed. Furthermore, a service quality assessment will be carried out. This is to determine the priority of corrective actions that must be taken by PT Kereta Api Indonesia, to achieve improved service performance. The assessment is obtained by calculating the difference between the actual value and the expected value for each element. The data will be calculated as an overall average. The table below shows the actual Servqual and Servqual values for each available dimension.

Tabel 5 Servqual Value and Actual Servqual Average Reality of Each Dimension

No	Dimension	Expected Score	Reality Score	Servqual Score	Actual Servqual
1	Measurable Evidence	3,2	3,33	0,13	104%
2	Reliability	3,41	3,39	-0,02	99%
3	Responsiveness	3,48	3,5	0,02	101%
4	Assurance	3,47	3,49	0,02	101%
5	Empathy	3,41	3,46	0,05	101%
Average		3,394	3,434	0,04	101%

Based on the table above, it is known that the Servqual number is the difference between the reality and expectation numbers, which is negative and positive. For those with a negative value, it means that there is a difference in perception that shows deficiencies between perceptions after using and before using. And vice versa. For those with a positive value, it means that the reality is above expectations. Measurable evidence has the highest servqual value. Conversely, reliability has the lowest

servqual value. This means that reliability is felt to be below the expectations of respondents. Above, in addition to measuring the servqual value number, researchers also measure the actual servqual value. This value is the percentage comparison of the reality value felt by passengers compared to the expected value of South Sumatra LRT consumers.

4.3 Improved Service Components Based on IPA Values

Importance-Performance Analysis (IPA) is used to determine which attributes are considered most important by passengers based on the average performance questionnaire and preferred questionnaire property values. To determine the priority of property improvement, a Cartesian diagram is used which is divided into 4 quadrants. The quadrants in the Cartesian chart have their respective priority importance, as in quadrant A being the top priority for improvement. The following are the results of the importance and performance analysis:

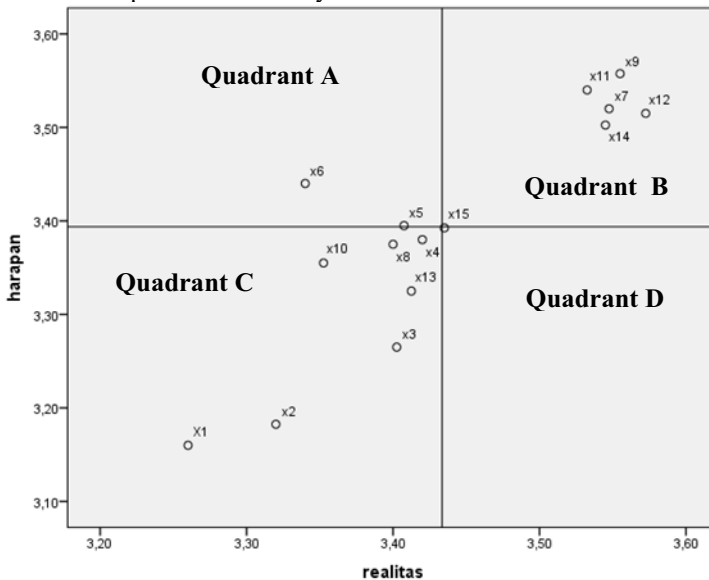


Figure 1 Kartesius Chart

The figure above shows the position of each attribute of each quality aspect based on the evaluation results of South Sumatra LRT passengers on the service quality aspects of the importance and performance values that South Sumatra LRT passengers are divided into four parts, namely Quadrant A is an attribute that is considered very important but its performance is less than satisfactory. Quadrant B is a quadrant with very important and satisfying attributes that must be maintained, while Quadrant C is an attribute that is considered less important and unsatisfactory and Quadrant D

is the least important attribute but their service performance is very satisfying. The following table describes each attribute in its quadrant:

Quadrant A

Tabel 6 Attributes in Quadrant A

No	Attributes	Quadrant	Gap Score
1	Conformity of Travel Time	A	0,0125
2	Station Stop Time Conformance	A	-0,1

In the table above, properties in quadrant A represent dimensional properties that are considered very important by passengers, but implementation/performance is not considered in accordance with passenger expectations, so attribute improvements should be prioritized. Namely the suitability of travel time and the suitability of stopping time at the station.

Quadrant B

Tabel 7 Attributes in Quadrant B

No	Attributes	Quadrant	Gap Score
1	Officer Response in Serving Passengers	B	0,0275
2	Presence of Officers Serving Priority Passengers	B	-0,0025
3	Officer's Ability to Serve Passengers	B	-0,0075
4	Feeling Safe and Comfortable on the Journey	B	0,0575
5	Attitude and Behavior of Officers on the Train	B	0,0425
6	Existence of Ticket without Seating	B	0,0425

In the table above, the attributes located in quadrant B mean that passengers consider the nature of this quadrant to be very important and the results are satisfactory so that their performance must be maintained so that the satisfaction value is maintained in accordance with the wishes of the passengers. Among them are the response of officers in serving passengers, the presence of officers serving priority passengers, the ability of officers to serve passengers, a sense of security and comfort on the trip, the attitude and behavior of officers on the train, and the existence of tickets without seats.

Quadrant C

Tabel 8 Attributes in Quadrant C

No	Attributes	Quadrant	Gap Score
1	Presence of Important Instructions/Information	C	0,1
2	Presence of Emergency Facilities	C	0,1375
3	Cleanliness and Comfort in the Train	C	0,1375
4	Equal Service to Passengers	C	0,04
5	Ease of Getting Stop Information	C	0,025
6	Passenger Seating according to Ticket	C	-0,0025
7	Easy Access to Train Information	C	0,0875

In the table above, properties in quadrant C indicate properties of some dimensions that are less important and unsatisfactory, so that passengers can act normally. In quadrant C, improvements still need to be made to increase satisfaction scores, but improvement efforts are not prioritized for improvement. Among them are the existence of important instructions / information, the existence of emergency facilities, cleanliness and comfort in the train, the same service to passengers, ease of getting stop information, passenger seating according to tickets, and easy access to train information. There are no attributes in Quadrant D. This means that there are no attributes that are less important to passengers, but the results are satisfactory.

5 Conclusions and Suggestions

Based on the study of Quality of Service measurements carried out on the South Sumatra LRT using the Servqual and IPA methods, several conclusions were obtained, namely the expected value and actual passenger value of the South Sumatra LRT Minimum Service Standard based on PM No. 63 of 2019 is in the measurable dimension which has an expected value of 3.2 while the actual value is 3.33. While in the reliability aspect, the expected value is 3.41 while the actual value is 3.39. The dimension of responsiveness has an expected value of 3.48 compared to the actual value of 3.5. The assurance dimension has an expected value of 3.47, giving an actual value of 3.49. Finally, on the empathy side, the expected value is 3.41, while the actual value is 3.46. The condition of the South Sumatra LRT minimum service standard based on expected passenger measures reflected in actual service counts and service scores. Based on service quality metrics, the reliability dimension is the dimension that does not match expectations. In addition, the aspects of measurable evidence, responsiveness, empathy, and assurance all exceed expectations. The actual Servqual score is 101%. This achievement shows that the overall service performance of South Sumatra LRT has met 101% of passenger expectations compared to before using the train. Based on Performance-Importance Analysis (IPA) using Cartesian diagrams, the preferred attributes for improving service quality are appropriate travel time and appropriate station stop time.

From the above conclusions, some suggestions that researchers can provide include As an operator that aims to maximize customer satisfaction, in order to improve services such as the expectations of South Sumatra LRT passengers. When viewed from the servqual value, responsiveness is a dimension that must be improved. However, when viewed more deeply, there are several indicators that must be improved including the suitability of stopping time at the station, the presence of officers serving priority passengers, passenger seating according to tickets, and the ability of officers to serve passengers. Prioritizing improvements in service quality to South Sumatra LRT passengers with attributes that are considered important and considered unsatisfactory passengers, namely the suitability of travel time and the suitability of stopping time at the station.

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