



Analysis of Service Quality Performance in Inter-City Public Transportation Modes in North Sumatra Province

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ABSTRACT

Service quality is a key factor in increasing user satisfaction and loyalty. In North Sumatra Province, the number of train passengers decreased by 80% from 2017 to 2021, partly due to declining service quality performance. This study aims to analyze the level of customer satisfaction with Damri train and bus services and determine service quality improvement priorities using the SERVQUAL method. The assessment was conducted on 21 variables divided into five service quality dimensions: reliability (3 variables), tangibles (6 variables), empathy (4 variables), assurance (4 variables), and responsiveness (4 variables). The analysis results show a Customer Satisfaction Index (CSI) value of 59.03% for train users and 65.30% for Damri bus users, both of which are in the quite satisfied category. The dimension with the largest gap value for both modes of transportation is tangible, with a value of -8.8696 (train) and -7.2174 (bus), respectively. The main priority for improving service quality for train users is comfort and spacious seating (gap -2.3913), while for Damri bus users it is punctuality of departure (gap -3.0000). From a managerial perspective, the results of this study provide a basis for transportation service providers and local governments to improve the quality of physical facilities, punctuality, and customer experience to encourage a renewed increase in public interest in public transportation

1. Introduction

Transportation acts as a driving force, accelerator, and supporter in the development process. In particular, road infrastructure networks play a crucial role in supporting the smooth running of development activities in various sectors. More specifically, transportation has an important function in supporting various aspects of community life. [1], [2], [3].

Transportation serves to facilitate human mobility in carrying out various daily activities. The choice of transportation modes by the public is very diverse and tailored to the needs and characteristics of each region, whether by land, water, or air[2]. In the mode selection process, there are conditions where alternatives are limited, but when several options are available, people will generally choose the mode that offers shorter travel distances, lower costs, or a combination of both. [3].

Trains are a means of transportation powered by mechanical energy, operating either independently or in conjunction with other carriages, and moving along rail tracks.

Passenger train services fall under the category of mass rapid transit, which is a public transportation system that can be used by the general public by paying a predetermined fare [4]. This mode of transportation is designed to carry a large number of passengers at one time. One of the most common forms of rail service is the commuter train, which serves passengers in urban areas and between city centers and surrounding areas [5], [6].

According to data from the Central Statistics Agency, the number of intercity transport passengers in North Sumatra has fluctuated over the past five years, in line with the increase in the use of private vehicles and the development of online-based transportation services. It can be seen that from 2017 to 2021, the number of train passengers in North Sumatra province has decreased significantly. Based on the above data, the cause of the decline in the number of train passengers in North Sumatra province can be analyzed based on the quality of service performance of public train transportation services. To determine which transportation service has a higher quality level than railways, the researcher compared it with the quality of bus transportation services.

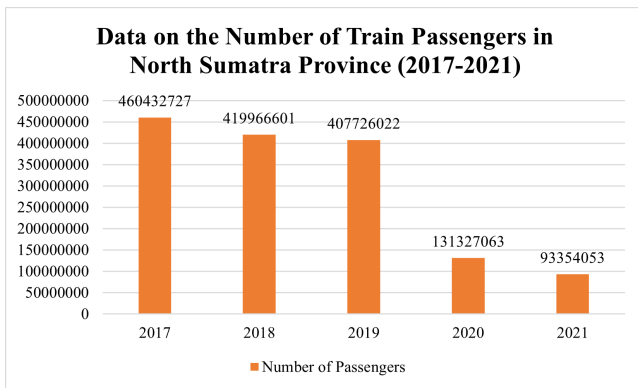


Figure 1 Data on the Number of Train Passengers in North Sumatra Province

Service quality can be assessed by measuring the extent to which user expectations match the actual performance provided by service providers [7]. Service quality measurement models such as SERVQUAL (Service Quality) are often used to assess the dimensions of reliability, responsiveness, assurance, empathy, and tangibles [8] [9]. Through this approach, it is possible to identify which dimensions are the main strengths and weaknesses in the intercity transportation service system. Service performance analysis is also an important basis for formulating service quality improvement strategies that are oriented towards user needs [10], [11].

There have been many studies on the quality of public transportation services in Indonesia, but most of them focus on modes of transportation within cities, such as the TransJakarta bus or other city transportation. Studies on service performance in intercity public transportation, particularly in North Sumatra Province, are still relatively limited. In fact, the diverse geographical characteristics and socioeconomic conditions of the people of North Sumatra require a deeper understanding of the needs and perceptions of intercity transportation service users [1]. Therefore, this study was conducted to analyze the quality of service performance in intercity public transportation modes in North Sumatra Province based on user perceptions.

The results of this study are expected to contribute in the form of recommendations for local governments and the Department of Transportation to improve the quality of public transportation services. In addition, this study is also expected to enrich the academic literature related to service quality management in the transportation sector, particularly in the context of regions with complex geographical and social characteristics such as North Sumatra Province.

2. Research methods

This research was conducted on intercity public transportation services operating in North Sumatra Province, namely buses and trains. The research locations were focused on several major terminals that represent intercity transportation activities, namely Amplas Terminal (Medan), Siantar Terminal (Pematangsiantar), and Tarutung Terminal (North Tapanuli). These locations were selected based on high passenger activity and the diversity of transportation service characteristics in each region.

The data collection methods used included observation, questionnaires, and documentation. Observations were

conducted to obtain a direct picture of the actual service conditions, such as terminal facilities, departure punctuality, and passenger service procedures. Questionnaires were distributed to passengers to measure their perceptions of the quality of intercity public transportation services. The documentation method was used to collect secondary data sourced from the Transportation Agency and transportation operator reports on service performance.

The types of data used consisted of quantitative and qualitative data. Quantitative data was obtained through the results of questionnaires filled out by respondents, while qualitative data was obtained from field observations and document analysis. The data sources in this study were divided into two types, namely primary data and secondary data. Primary data was collected directly from passengers through observation and questionnaire distribution, while secondary data was obtained from statistical reports, previous research results, and official documents related to transportation performance in North Sumatra Province.

The research population included all intercity public transportation passengers in North Sumatra Province during the data collection period (May–June 2022). Given the large population size, the sample size was determined using the Slovin formula with a margin of error of 10%, resulting in 96 respondents. Respondents were selected using accidental sampling, namely passengers who happened to use the transportation service and were willing to fill out the questionnaire at the research location.

Data analysis was conducted using the SERVQUAL (Service Quality) approach to measure the gap between users' expectations and perceptions of service quality. The five main dimensions analyzed included [12] tangible, reliability, responsiveness, assurance, and empathy. The gap analysis between perceptions and expectations was calculated for each dimension, then interpreted to determine the level of service performance and identify aspects that needed improvement [13], [14]. Conducting research requires a framework to explain the steps involved in the research process, so that the research becomes clearer and more systematic. The framework is the starting point used in problem solving. The research framework for this study can be seen in Figure 2.

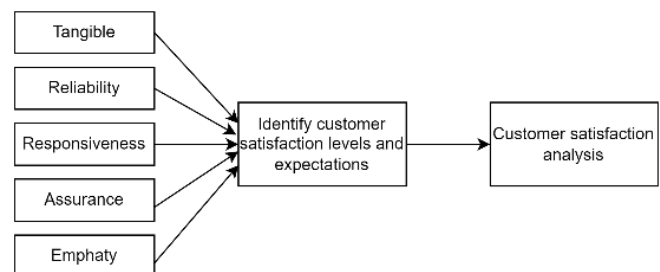


Figure 2 Research Framework

Each dimension in this study was adapted by considering the specific context of public transportation services in Indonesia and the results of previous relevant studies. The indicator formation process was carried out in two stages, namely (1) a literature review of the transportation service quality variables that had been used previously, and (2) adjustment of the indicators to the characteristics of

transportation service users, such as comfort, safety, and ease of access to services.

2.1. Reliability Dimension

This dimension describes the service provider's ability to deliver services accurately, consistently, and reliably [10]. Selected indicators:

- R1 – Knowledgeable employees, emphasizing that staff understanding of service procedures and systems determines service reliability [15].
- R2 – Use of online-based technology, indicating that digital systems (booking/payment applications) improve service reliability and speed [16], [17].
- R3 – Punctual departure times, an important indicator in the transportation sector because punctuality reflects the main reliability of public transportation services [18].

2.2. Tangible Dimension

This dimension assesses physical aspects and facilities that can be directly seen by service users [7].

- T1 – Employee appearance, indicating the professionalism of service providers [19].
- T2 – Availability of ticket counters, related to ease of access and smooth service processes [14].
- T3 – Availability of public facilities (toilets, waiting rooms, smoking areas, etc.) is an indicator of physical comfort that often determines customer [18].
- T4 – Comfort and spaciousness of seating, as well as T5 – Availability of multiple routes and T6 – Passenger capacity, emphasize the importance of facilities and route flexibility in the transportation sector as part of tangible quality attributes [20].

2.3. Empathy Dimension

This dimension describes the ability of service providers to give personal attention and understanding to customer needs [15].

- E1 – Friendliness in service, which confirms that positive personal interactions improve the perception of service quality [13].
- E2 – Availability of complaint services, E3 – Providing assistance to service users, and E4 – Ease of communication, which examine the empathy of officers in responding to the needs of public transportation customers [21].

2.4. Assurance Dimension

This dimension reflects customers' sense of security and trust in service providers [22].

- A1 – Fare fairness, which highlights fare fairness as a key factor in user trust [23].
- A2 – Availability of security services and A4 – Sense of security against crime during travel, which emphasizes the importance of security aspects in the perception of public transportation quality [14].

- A3 – Driver competence, as a representation of technical assurance related to the ability and professionalism of service personnel [10].

2.5. Responsiveness Dimension

This dimension describes the willingness and speed of service providers in assisting customers and providing fast and accurate services [15].

- RS1 – Employee readiness in responding to complaints, and RS2 – Fast, easy, and accurate service, are classic indicators of responsiveness [14].
- RS3 – Availability of information boards and directional signs, and RS4 – Service according to user preferences, add aspects of visual communication and service flexibility as an extension of the concept of responsiveness in the transportation sector [21].

3. Results and Discussion

3.1 Respondent Analysis

As a first step in understanding the results of research on Service Quality Performance Analysis in Intercity Public Transportation in North Sumatra Province, the characteristics of respondents were identified. This demographic analysis provides an overview of the profile of transportation service users who were sampled in the study, including gender, age, occupation, and frequency of transportation use. This can be seen in Table 1.

Table 1
Characteristics of Research Respondents

No	Characteristics	Category	Total	Percentage (%)
1	Gender	Male	55	57%
		Female	41	43%
2	Age (Years)	< 20 Years	10	10%
		21–30 Years	39	41%
		31–40 Years	28	29%
		> 40 Years	19	20%
4	Occupation	Student	19	20%
		Private employee	30	31%
		Entrepreneur	28	29%
		Civil servant/military/police officer	7	7%
		Other	12	13%
5	Frequency of Intercity Transportation Use	1–2 times per year	26	27%
		3–5 times per year	40	42%
		> 5 times per year	30	31%
6	Commonly Used Transportation Modes	Bus	51	53%
		Travel (minibus)	26	27%
		Train	19	20%
Number of Respondents		Total	96	100

3.2 Questionnaire Validity Test

Based on the results of the closed questionnaire tabulation that had been distributed, a validity test was first conducted on the customer satisfaction data and customer expectation data obtained from respondents who were users of Damri train and bus services before the data was processed.

The validity test was conducted on questions 1 to 21 using the product moment correlation equation (Pearson) method. The product moment correlation technique formula is as follows.

$$r = \frac{n \sum_{i=1}^n X_i Y_i - \left(\sum_{i=1}^n X_i \right) \left(\sum_{i=1}^n Y_i \right)}{\sqrt{\left[n \sum_{i=1}^n X_i^2 - \left(\sum_{i=1}^n X_i \right)^2 \right] \left[n \sum_{i=1}^n Y_i^2 - \left(\sum_{i=1}^n Y_i \right)^2 \right]}} \quad (1)$$

An example of calculating the r value for service satisfaction variable 1 based on train respondents is as follows:

$$r = \frac{23(3616) - (56)(1.430)}{\sqrt{[23(150) - (150)^2][23(93.188) - (1430)^2]}}$$

$$r = 0,5555$$

The table value for Damri train and bus data for N = 21 is 0.444, obtained from the Pearson product moment value for $\alpha = 0.05$ two-tailed test. If the calculated r value is > table r, then the service satisfaction variable is considered valid. The results of the validity test show that all 21 variables used in relation to customer satisfaction and customer expectations of Damri train and bus users are valid.

3.3 Questionnaire Reliability Test

Reliability testing was conducted using a questionnaire test involving 23 respondents who had used bus and train transportation services. The testing criteria were that if Cronbach's Alpha was >0.7, the data could be considered reliable. The testing using software can be seen in Figure 3.

Cronbach's Alpha

Alpha
0,8860

Figure 3 Reliability Test Calculation Using Software

The reliability test results show that Cronbach's Alpha value is 0.8860, which is greater than the minimum threshold value of 0.7000. Thus, the questionnaire used in this study is considered reliable, meaning that each item in the variable is consistent in measuring the same aspect.

3.3 Calculation of the Customer Satisfaction Index for Train Respondents

To measure the level of customer satisfaction (Customer Satisfaction Index) with intercity transportation services in North Sumatra province, see Table 2.

Table 2
Calculation of the Customer Satisfaction Index for Train Respondents

Dimension of Services		MSS	MIS	WF	WS
A. Reliability					
1	R1	2.4348	4.6087	0.0498	0.1212
2	R2	2.2174	4.4348	0.0479	0.1062
3	R3	3.3913	4.4348	0.0479	0.1624
B. Tangible					
1	T1	3.0000	4.6957	0.0507	0.1521
2	T2	3.3043	4.1739	0.0451	0.1489
3	T3	2.9565	4.4783	0.0484	0.1430
4	T4	2.2174	4.6087	0.0498	0.1103
5	T5	3.1739	4.6522	0.0502	0.1594
6	T6	3.2609	4.1739	0.0451	0.1470
C. Empathy					
1	E1	3.2609	4.2174	0.0455	0.1485
2	E2	3.2174	4.1304	0.0446	0.1435
3	E3	2.9565	4.6957	0.0507	0.1499
4	E4	3.3043	4.4348	0.0479	0.1582

Table 3
Calculation of the Customer Satisfaction Index for Train Respondents

Dimension of Services		MSS	MIS	WF	WS
D. Assurance					
1	A1	3.2609	4.1739	0.0451	0.1470
2	A2	2.8261	4.8261	0.0521	0.1473
3	A3	2.3913	4.4783	0.0484	0.1156
4	A4	3.3478	4.1304	0.0446	0.1493
E. Responsiveness					
1	RS1	3.0870	4.1304	0.0446	0.1377
2	RS2	2.8261	4.6957	0.0507	0.1433
3	RS3	2.6087	4.2609	0.0460	0.1200
4	RS4	3.1304	4.1739	0.0451	0.1411
Total		62.1739	92.6087	1.0000	2.9519

$$\text{Customer Satisfaction Index} = \frac{2,9519}{5} \times 100\% = 59,03\%$$

The customer satisfaction index value is used as the customer satisfaction level. The standard customer satisfaction level values can be seen in Table 4.

Table 4
Customer Satisfaction Criteria Standards

Value of Customer Satisfaction Index	Criteria
81% ≤ CSI ≤ 100%	Very Satisfied
66% ≤ CSI ≤ 80%	Satisfied
51% ≤ CSI ≤ 65%	Somewhat Satisfied
35% ≤ CSI ≤ 50%	Somewhat Dissatisfied
0% ≤ CSI ≤ 34%	Dissatisfied

From the customer satisfaction index calculation above, it was found that the level of customer satisfaction with the quality of intercity rail transportation services in North Sumatra province was 59.03%. The customer satisfaction criteria were in the fairly satisfied category.

3.4 Calculation of the Customer Satisfaction Index for Damri Bus Respondents

To measure the level of Damri bus consumer satisfaction with intercity transportation services in North Sumatra province, see Table 5.

Table 5
Calculation of the Customer Satisfaction Index for Damri Bus Respondents

Dimension of Services		MSS	MIS	WF	WS
A. Reliability					
1	R1	3.7391	4.4348	0.0470	0.1758
2	R2	3.9565	4.7826	0.0507	0.2007
3	R3	1.5652	4.5652	0.0484	0.0758
B. Tangible					
1	T1	3.0435	4.2609	0.0452	0.1375
2	T2	2.7826	4.1304	0.0438	0.1219
3	T3	2.9130	4.6522	0.0493	0.1437
4	T4	3.1739	4.4783	0.0475	0.1507
5	T5	3.5217	4.1304	0.0438	0.1542
6	T6	3.4348	4.4348	0.0470	0.1615
C. Empathy					
1	E1	3.9565	4.7391	0.0503	0.1988
2	E2	3.8261	4.4348	0.0470	0.1799
3	E3	3.4783	4.4783	0.0475	0.1652
4	E4	3.0435	4.5217	0.0479	0.1459
D. Assurance					
1	A1	3.7391	4.5217	0.0479	0.1793
2	A2	2.7826	4.5217	0.0479	0.1334
3	A3	3.7826	4.6522	0.0493	0.1866
4	A4	3.5217	4.1304	0.0438	0.1542

Table 6
Calculation of the Customer Satisfaction Index for Damri Bus Respondents

Dimension of Services		MSS	MIS	WF	WS
E. Responsiveness					
1	RS1	2.9130	4.6957	0.0498	0.1450
2	RS2	3.1739	4.6087	0.0489	0.1551
3	RS3	3.4348	4.3913	0.0466	0.1599
4	RS4	2.7826	4.7391	0.0503	0.1398
Total		68.5652	94.3043	1.0000	3.2652

$$\text{Customer Satisfaction Index} = \frac{3.2652}{5} \times 100\% = 65,30\%$$

From the customer satisfaction index calculation above, it was found that customer satisfaction with the service quality of Damri intercity bus transportation in North Sumatra province was 65.30%. Customer satisfaction criteria were in the fairly satisfied category.

3.5. The Gap Between Customer Satisfaction and Expectations Railways

After calculating the customer satisfaction index for train and Damri bus customers, the next step is to calculate the gap between customer satisfaction and customer expectations. This gap value shows that the quality of inter-city transportation services in North Sumatra Province is not yet in line with service users' expectations in certain variables.

To obtain this gap, the values used are the mean of the maximum satisfaction and expectations for each variable used. For variable R1, the gap value is:

$$\text{Gap R1} = \text{Mean value of maximum satisfaction R1} - \text{Mean value of maximum expectations R1}$$

$$\text{Gap R1} = 2.4348 - 4.6087 = -2.1739$$

Thus, the Gap value for variable R1 is -2.1739. The calculation of the gap for train service users can be seen in Table 7.

Table 5
Customer Satisfaction and Expectation Gap Value for Railways

Dimension of Services		Mean Value of Maximum Satisfaction	Mean Value of Maximum Expectations	GAP	Ranking
A. Reliability					
1	R1	2.4348	4.6087	-2.1739	3
2	R2	2.2174	4.4348	-2.2174	2
3	R3	3.3913	4.4348	-1.0435	13
B. Tangible					
1	T1	3.0000	4.6957	-1.6957	8
2	T2	3.3043	4.1739	-0.8696	20
3	T3	2.9565	4.4783	-1.5217	10
4	T4	2.2174	4.6087	-2.3913	1
5	T5	3.1739	4.6522	-1.4783	11
6	T6	3.2609	4.1739	-0.9130	17
C. Empathy					
1	E1	3.2609	4.2174	-0.9565	16
2	E2	3.2174	4.1304	-0.9130	19
3	E3	2.9565	4.6957	-1.7391	7
4	E4	3.3043	4.4348	-1.1304	12
D. Assurance					
1	A1	3.2609	4.1739	-0.9130	17
2	A2	2.8261	4.8261	-2.0000	5
3	A3	2.3913	4.4783	-2.0870	4
4	A4	3.3478	4.1304	-0.7826	21

Table 8
Customer Satisfaction and Expectation Gap Value for Railways

Dimension of Services		Mean Value of Maximum Satisfaction	Mean Value of Maximum Expectations	GAP	Ranking
E. Responsiveness					
1	RS1	3.0870	4.1304	-1.0435	14
2	RS2	2.8261	4.6957	-1.8696	6
3	RS3	2.6087	4.2609	-1.6522	9
4	RS4	3.1304	4.1739	-1.0435	14

3.6 Gap Between Customer Satisfaction and Expectation Levels Damri Bus

For the first variable, the Gap value is:

$$\text{Gap R1} = \text{Mean value of maximum satisfaction R1} - \text{Mean value of maximum expectation R1}$$

$$\text{Gap R1} = 3.7391 - 4.4348 = -0.6957$$

Therefore, the Gap value for variable R1 is -0.6957. The calculation of the gap for Damri bus users can be seen in Table 9.

Table 9
Damri Bus Customer Satisfaction and Expectation Gap Score

Dimension of Services		Mean Value of Maximum Satisfaction	Mean Value of Maximum Expectations	GAP	Ranking
A. Reliability					
1	R1	3.7391	4.4348	-0.6957	18
2	R1	3.9565	4.7826	-0.8261	15
3	R1	1.5652	4.5652	-3.0000	1
B. Tangible					
1	T1	3.0435	4.2609	-1.2174	10
2	T2	2.7826	4.1304	-1.3478	8
3	T3	2.9130	4.6522	-1.7391	4
4	T4	3.1739	4.4783	-1.3043	9
5	T5	3.5217	4.1304	-0.6087	20
6	T6	3.4348	4.4348	-1.0000	12
C. Empathy					
1	E1	3.9565	4.7391	-0.7826	16
2	E2	3.8261	4.4348	-0.6087	19

3	E3	3.4783	4.4783	-1.0000	11
4	E4	3.0435	4.5217	-1.4783	6
D. Assurance					
1	A1	3.7391	4.5217	-0.7826	17
2	A2	2.7826	4.5217	-1.7391	5
3	A3	3.7826	4.6522	-0.8696	14
4	A4	3.5217	4.1304	-0.6087	20
E. Responsiveness					
1	RS1	2.9130	4.6957	-1.7826	3
2	RS2	3.1739	4.6087	-1.4348	7
3	RS3	3.4348	4.3913	-0.9565	13
4	RS4	2.7826	4.7391	-1.9565	2

3.7 Calculation of Gap Values per Dimension of Railway Respondents

The calculation of the total difference between user satisfaction and expectations shows the extent to which intercity transportation services in North Sumatra Province meet customer desires. The overall gap value provides information about the level of expectations and the extent to which these criteria play a role in improving service quality. The results can be seen in Table 10.

Table 10
Overall Gap Score for Train Respondents

Dimension of Services	Mean Value of Maximum Satisfaction	Mean Value of Maximum Expectations	GAP	Ranking
Reliability	8.0435	13.4783	-5.4348	4
Tangible	17.9130	26.7826	-8.8696	1
Empathy	12.7391	17.4783	-4.7391	5
Assurance	11.8261	17.6087	-5.7826	2
Responsiveness	11.6522	17.2609	-5.6087	3

Based on these calculations, the difference between the satisfaction level and the expectation level for intercity train services in North Sumatra Province can be seen in Figure 4.

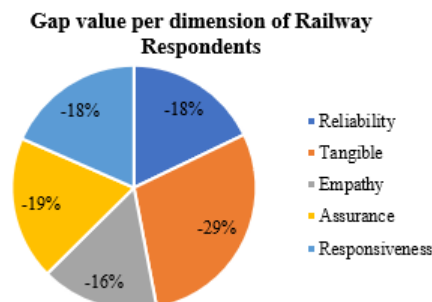


Figure 4 Calculation of Gap Values per Dimension of Railway Respondents

The tangible dimension has the largest gap value of -29%, indicating that physical aspects such as facility comfort, cleanliness, and infrastructure conditions are still the main weaknesses in train services. This condition is in line with the Service Quality Management theory proposed by Naini, Nurul Fitrian, et al [24] that tangibles are one of the important factors that shape the perception of service quality because they are directly related to the customer's actual experience of the service provided.

Meanwhile, the reliability dimension shows the smallest gap value of -18%, indicating that aspects of service reliability, such as departure punctuality, schedule consistency, and travel information accuracy, are relatively good compared to other

dimensions. This finding supports the research by Asawawibul and Sasiprapha [25], which states that in the public transportation sector, service reliability is the dimension that most influences customer satisfaction because it is directly related to the trust and comfort of users in planning their trips.

Overall, the results of this study indicate that service quality improvement is still needed in all dimensions of SERVQUAL, with the main priority being the improvement of the tangible aspect. Improvements can be made by enhancing the quality of physical facilities, the cleanliness of waiting areas, the comfort of seating, and the routine maintenance of facilities and infrastructure. This approach is in line with the principle of Continuous Service Improvement in service quality management, whereby public service organizations need to conduct periodic evaluations to bridge the gap between customer expectations and perceptions [26], [27].

3.8 Calculation of Gap Values per Dimension of Damri Bus Respondents

The results of the calculation of the total difference between the satisfaction and expectations of Damri bus users show the extent to which intercity transportation services in North Sumatra Province serve customer desires. The overall gap value will provide information about how high expectations are and how far these criteria play a role in improving service quality. The results can be seen in Table 11.

Table 11
Overall Gap Score for Bus Damri Respondents

Dimension of Services	Mean Value of Maximum Satisfaction	Mean Value of Maximum Expectations	GAP	Ranking
Reliability	9.2609	13.7826	-4.5217	3
Tangible	18.8696	26.0870	-7.2174	1
Empathy	14.3043	18.1739	-3.8696	5
Assurance	13.8261	17.8261	-4.0000	4
Responsiveness	12.3043	18.4348	-6.1304	2

Based on these calculations, the difference between the satisfaction level and the expectation level for Damri intercity bus services in North Sumatra Province can be seen in Figure 5.

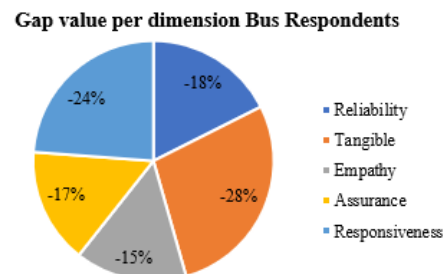


Figure 5 Calculation of Gap Values per Dimension of Damri Bus Respondents

The results of the calculations in Table 8 and Figure 5 show that all dimensions of Damri intercity bus service quality in North Sumatra Province also have a negative gap between user satisfaction and expectations. This condition illustrates that the service received by passengers does not fully meet their expectations.

The tangible dimension recorded the largest gap value of -28%, indicating that the comfort of the fleet, interior cleanliness, and the condition of supporting facilities (such as seats, air conditioning, and departure terminals) are the main factors that need to be improved. This finding is consistent with the results of research by Anawati and Firda Yuli [28] which states that in the context of land transportation, the physical quality and comfort of facilities are the main determinants of customer perceptions of the professionalism and credibility of service providers.

The reliability dimension has the smallest gap value of -18%, which indicates that Damri buses are relatively reliable in terms of punctuality and availability of travel schedules. However, these results still indicate room for improvement so that services can be more consistent and standardized [8].

From a Service Quality Management perspective, negative gaps across all dimensions indicate a service performance gap, which is the difference between the services provided by the company and customer expectations. According to Apornal, Arash [29], this gap occurs due to a mismatch between service design, service delivery, and customer expectations. Therefore, improving Damri's service quality must be done through operational system improvements, employee training in customer service, and modernization of physical fleet facilities to align with user expectations [30].

In general, the results of this study confirm that both Damri's train and bus services in North Sumatra Province still need to focus on customer-oriented service improvement strategies. This approach is in line with Kotler and Keller's [31] view that customer satisfaction is the result of a comparison between expectations and actual service performance (expectation-performance comparison), so that efforts to improve service quality must be directed at reducing this gap in each dimension of SERVQUAL.

4 Conclusion

Based on the processing of the Customer Satisfaction Index for trains and buses of 59.03% and 65.30%, customer satisfaction criteria are in the fairly satisfied category. Based on these CSI values, it can be concluded that customers feel more satisfied using bus transportation services than train transportation. There are 21 variables selected as assessments of customer satisfaction levels for trains and buses, divided into the dimensions of reliability (3 variables), tangibles (6 variables), empathy (4 variables), assurance (4 variables), and responsiveness (4 variables). The calculation of the service quality dimension gap for trains shows that the largest gap is in tangibles with a value of -8.8696, while for buses, the largest gap is in tangibles with a value of -7.2174. The dimension with the largest gap is then prioritized in evaluating service quality improvement.

From a managerial perspective, this study provides clear priority directions for transportation service providers. Train and bus conductors need to focus on improving physical facilities and customer comfort, as these aspects have a major influence on the overall perception of service quality. For example, increasing the capacity of waiting rooms, maintaining public facilities such as toilets and rest areas, and modernizing

vehicle interiors can be concrete strategies to reduce customer perception gaps.

Furthermore, the finding that bus customers feel more satisfied than train users can serve as a warning for train operator management to benchmark bus service providers, especially in terms of schedule flexibility, ease of access, and technology-based service innovation. On the other hand, bus operators need to maintain service consistency and ensure departure reliability to keep satisfaction levels stable.

From a public transportation policy perspective, these results have implications for government efforts to improve intermodal transportation competitiveness. Local governments and the Ministry of Transportation can use these research results as a basis for:

1. Developing more measurable minimum service standards (SPM) for each mode of transportation based on five dimensions of service quality.
2. Providing incentives and regulations that encourage operators to improve physical facilities and customer comfort, including accessibility for vulnerable groups.
3. Improving intermodal service integration (bus and train) through an integrated digital ticketing and information system, in order to create a more efficient and satisfying travel experience.

Thus, the results of this study not only describe customer satisfaction levels descriptively, but also provide a strategic basis for improving operational management and public transportation policy decision-making that is customer-oriented.

5 Reference

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