Journal of Infrastructural in Civil Engineering (JICE)
Vol. 06, No. 02, July 2025, pp: 01-14
available online at: https://ejurnal.teknokrat.ac.id/index.php/jice

COMPARISON OF SERVICE PERFORMANCE ON BAKAUHENI-TERBANGGI BESAR (BAKTER) TOLL ROAD USING IMPORTANCE PERFORMANCE ANALYSIS METHODS

Jamaludin[1], Dewanti[2] and Panti Wahyu Ningsih[3*]

[1]*Faculty of Infrastructure and Regional Technology, Department of Urban and Regional Planning - Institut Teknologi Sumatera*
[2]*Department of Civil and Environmental Engineering, Master of System and Transportation Engineering - Universitas Gadjah Mada Bulaksumur Caturtunggal, Depok Subdistrict, Sleman Regency, Yogyakarta Special Region 5528, Indonesia*
[3]*Faculty of Engineering and Computer Science, Civil Engineering Study Program - Universitas Teknokrat Indonesia, Jl. ZA. Pagar Alam No.9-11 Labuhan Ratu, Kedaton, Lampung 35132, Indonesia*

*E-mail: jamaludin@pwk.itera.ac.id

Received: 04 April 2025 **Accepted**: 11 Mei 2025 **Published**: 31 July 2025

Abstrak

Tol Bakauheni-Terbanggi Besar (Bakter), yang dikelola oleh PT. Hutama Karya adalah jalan bebas hambatan yang menghubungkan pergerakan lalu lintas antar-kota, dan antar-provinsi. Tujuan dari penelitian ini yaitu untuk mengetahui kinerja layanan jalan tol dan faktor apa saja yang mempengaruhinya. Data yang digunakan berupa data kuesioner, observasi terhadap fasilitas jalan tol yang tersedia, dan data dari instansi terkait. Pengambilan sampel untuk kuesioner menggunakan *purposive sampling* kepada 306 responden secara online dan offline. Metode analisis yang digunakan yaitu analisis deskriptif untuk mendeskripsikan karakteristik responden. Metode analisis *service quality* digunakan untuk penilaian kinerja layanan jalan tol oleh pengguna. Terdapat juga metode *important performance analysis* yang berfungsi untuk mengetahui tingkat harapan dan kinerja pengguna jalan tol. Berdasarkan hasil analisis *importance performance analysis* (IPA) terdapat urutan atau rangking dari atribut yaitu urutan pertama adalah kualitas permukaan jalan tol memiliki nilai *gap* sebesar -1,93, yang kedua adalah kondisi lampu penerangan jalan memiliki nilai *gap* sebesar -1,8, dan yang ketiga adalah geometri jalan tol memiliki nilai *gap* sebesar -1,71. Berdasarkan hasil kedua metode dapat disimpulkan bahwa layanan jalan Tol Bakauheni-Terbanggi Besar dianggap belum memuaskan kinerja dan harapan bagi penggunanya

Kata Kunci: Tol Bakauheni-Terbanggi Besar, kinerja layanan, kepuasan pengguna, *service quality, important performance analysis*

Abstract

Bakauheni-Terbanggi Besar (Bakter) Toll, managed by PT. Hutama Karya, connects inter-city and inter-provincial traffic. This study aims to determine the performance of toll road services and the influencing factors using questionnaire data, observations of toll road facilities, and data from relevant agencies. The sample for the questionnaire was selected through purposive sampling, involving 306 respondents both online and offline. Descriptive analysis was used to describe respondent characteristics, while service quality analysis assessed toll road service performance. The importance performance analysis (IPA) method determined the level of user expectations and performance. IPA results ranked attributes, with the quality of the toll road surface having the largest gap value of -1.93, followed by the condition of street lighting (-1.8),

and the geometry of the toll road (-1.71). These findings indicate that the Bakauheni-Terbanggi Besar toll road service is unsatisfactory in terms of performance and user expectations.

***Keywords**: Bakauheni-Terbanggi Besar Toll Road, service performance, user satisfaction, service quality, important performance analysis*

To cite this article:
Jamaludin, et al. (2025). Comparison Of Service Performance on Bakauheni-Terbanggi Besar (Bakter) Toll Road Using Service Quality and Importance Performance Analysis Methods. *Jurnal of Infrastructural in Civil Engineering,* Vol. (06), No. 02, pp: 01-14

INTRODUCTION

Traffic growth on the island of Sumatera before the existence of toll roads had reached an average daily volume (LHR) of 20,000 units [1-2]. Therefore, in order to meet transportation needs, the government through the Ministry of Public Works and Public Housing built paid road infrastructure on the island of Sumatra, namely the Trans Sumatra Toll Road (JTTS), to facilitate traffic flow, equitable development, and improve services in the distribution of goods and services to support economic growth on the island of Sumatra. This toll road is expected to facilitate and accelerate vehicle movement for the distribution of goods and services in supporting regional development. The Trans Sumatra Toll Road will connect Lampung Province in the south to Aceh Province in the northern part of Sumatra Island [3-4]. One of the longest toll road sections is the Bakauheni - Terbanggi Besar section with a road length of 140.938 Km located in Lampung Province. Its route is from Bakauheni Port (Lampung Selatan Regency) to Terbanggi Besar (Lampung Tengah Regency) and this toll road was inaugurated on March 9, 2019.

The existence of toll roads has a very positive impact on both the environment and the community, as seen from the existence of toll roads, community competitiveness has increased with the development of areas around the toll road. A number of sections of the Lampung Toll Road have been complained about by drivers because of potholes, excessive road repairs that disrupt the safety of road users. The Trans Sumatra Toll Road, which is quiet, is indeed prone to crime such as robbery and extortion due to the lack of lighting on the toll road, making the Trans Sumatra Toll Road tend to be somewhat risky when passed at night [5-6].

The Bakter Toll Road has several problems that it faces, ranging from quiet toll roads, potholes, and minimal lighting conditions along the toll road. It should be a concern for operators to evaluate the level of toll road service performance that has been provided.

There are several things that toll road users have complained about, such as the lack of complete rest area facilities, the occurrence of crime, and the less than optimal response to emergency calls [7-10].

From various conditions, it is necessary to discuss the level of satisfaction of toll road users as an implementation of the minimum toll road service standards. The Bakter Toll Road has been operating for the past 3 years, but there has been no research on the service performance provided by the Bakter Toll Road to meet the satisfaction of its users. Therefore, this research is considered necessary to analyze the Bakter Toll Road service in meeting the satisfaction of its users. The use of comparative techniques in this study aims to draw a conclusion by comparing ideas, methods, and meanings, in order to determine the similarities and differences of methods in minimum toll road service standards. It is hoped that the results of this comparison can provide results on which method is most appropriate and obtain factors that influence the satisfaction of toll road users.

RESEARCH METHODOLOGY

Service Quality Method

The Servqual method is a method used to measure service quality from the attributes of each dimension, so that a gap value (gap) is obtained which is the difference between consumer perception of the service received and expectations of the service to be received. The measurement of this method is by measuring service quality from the attributes of each dimension, so that a gap value is obtained which is the difference between consumer perception of the service received and consumer expectations of the service to be received. This method uses a user-based approach pattern, which measures service quality quantitatively in the form of questionnaires and contains service quality dimensions. The five dimensions of Servqual are the reliability dimension, the responsiveness dimension, the assurance dimension, the tangible dimension, and the empathy dimension [11].

Servqual Dimensions

The servqual instrument defines service quality measurement attributes in 22 attribute items that represent the five dimensions of its measurement. Attribute measurement uses a 5-point Likert scale. These attributes will be used as external variables in this study. In this study, there are 22 basic servqual attributes. These 22 attributes are mostly derived from previous research which were then developed by researchers based on the service

conditions on the Lampung toll road. Here are the 22 attributes (Table 1). In the reliability dimension (reliability), it is done according to the naming, namely RL, the responsiveness dimension (responsiveness) is RS, the assurance dimension (assurance) is AS, the empathy dimension (empathy) is EP, and the tangible dimension (measurable) is TA.

Table 1. List of *Servqual Attributes*

Dimensions			**Modified Servqual Attributes**	**Source Attributes**
Reliability	RL1	1	Travel time consistency	Researcher
	RL2	2	Performance of smooth and safe traffic flow	[7]
	RL3	3	Smoothness of traffic flow in and out of toll gates	Researcher
	RL4	4	Resolution of customer complaints/problems quickly and accurately	[7]
Responsiveness	RS1	5	Speed of response to emergency calls (operator/police/ambulance/tow truck)	[7]
	RS2	6	Toll booth officers provide fast transaction services	[7]
Assurance	AS1	7	Official towing services that can always be relied on	[7]
	AS2	8	Road conditions are safe from crime	Researcher
	AS3	9	Rest area conditions that are very comfortable and safe	Researcher
	AS4	10	Service from highway patrol officers (PJR) makes you feel safe	[7]
	AS5	11	Toll road hotline can provide information or answers to customer questions	[7]
Empathy	EP1	12	All officers on duty in the toll road environment are friendly and polite	[7]
	EP2	13	The number of toll gates opened during peak hours is sufficient for the large volume of traffic	[7]
Tangible	TA1	14	Officer appearance looks neat and polite	[7]
	TA2	15	Tariff consistency with existing facilities	Researcher
	TA3	16	Strategic location and sufficient number of rest areas	[7]
	TA4	17	Rest areas are available with complete facilities	[7]
	TA5	18	Geometry (curves, inclines, and declines) of the toll road is comfortable and safe when traversed	[7]
	TA6	19	The quality of the toll road surface is flat, not slippery when traversed	[7]
	TA7	20	Street lighting conditions make it	[7]

		comfortable when using toll road services at night	
TA8	21	Toll road facilities (signs, booths, etc.) are already modern	[7]
TA9	22	The function of directional, command, and prohibition signs on the toll road can help you on your journey	[7]

IPA (Importance Performance Analysis) Method

The IPA method is a method of measuring the Importance and Performance that bases its analysis pattern on the influence of two factors, namely customer expectations of the performance of a product/service and the reality they receive after consuming the product/service. Consumers will feel satisfied if the performance of the product/service is the same or even exceeds their initial expectations. Conversely, consumers will be dissatisfied if the performance of the product/service does not meet their expectations. The Cartesian diagram is a structure that is divided into four parts, bounded by two lines that intersect perpendicularly at points (x, y), where x is the average value of the consumer satisfaction score from all attributes and y is the average value of the consumer importance score from all attributes that influence consumer satisfaction [12].

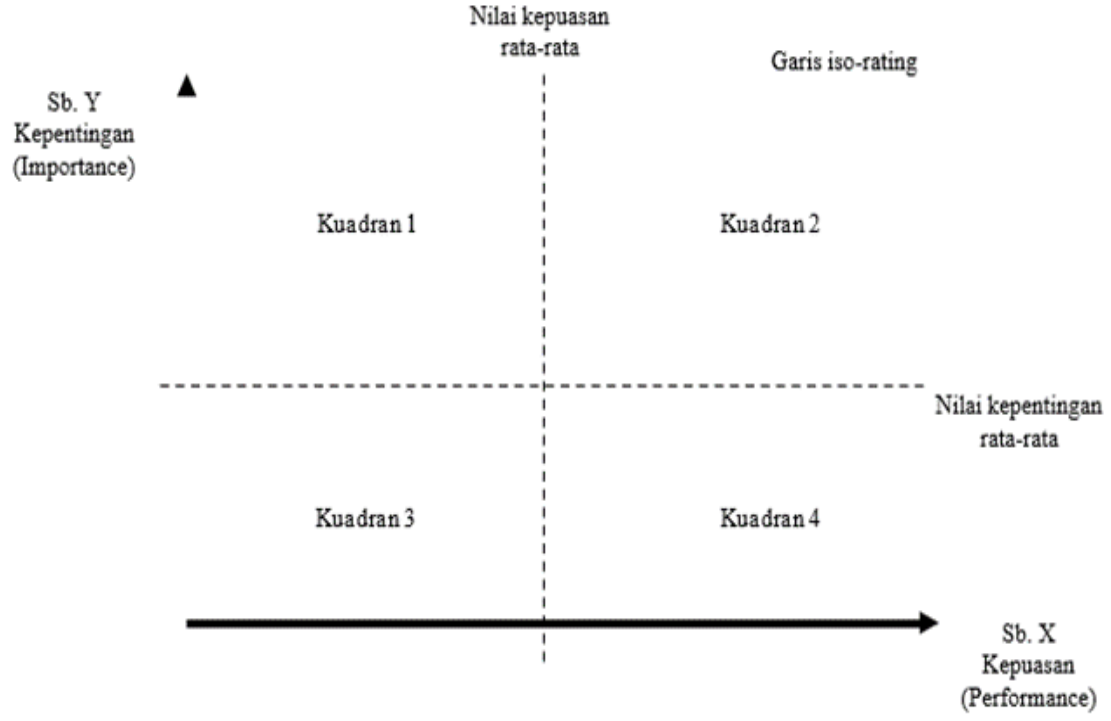

Figure 1. Important Performance Analysis Diagram (Kitcharoen, 2004)

RESULTS AND DISCUSSION

Service Quality Data Scoring Method

The first thing to do is to find the average value of each indicator question, both in the performance dimension (K) and the expectation dimension (H). The formula used is:

$$QXiv = \frac{\sum_{i=1}^{n} \mathrm{QX}_1}{n} \text{ dan } QYiv = \frac{\sum_{i=1}^{n} \mathrm{QY}_1}{n}$$

Description:

a. $QXiv$ = the average score of each respondent's answer to the i-th indicator on the v-th variable in the performance dimension (K)
b. $QYiv$ = the average score of each respondent's answer to the i-th indicator on the v-th variable in the expectation dimension (H)
c. QXiv = the score of each respondent's answer to the i-th indicator on the v-th variable in the performance dimension (K)
d. QYiv = the score of each respondent's answer to the i-th indicator on the v-th variable in the expectation dimension (H)
e. N = total respondents

Table 2. *Service Quality* Gap Ranking Data

Modified Servqual Attributes	Performance	Expectation	GAP	Rangking
Travel time consistency	3,89	4,75	-0,86	19
Performance of smooth and safe traffic flow	3,86	4,79	-0,93	17
Smoothness of traffic flow in and out of toll gates	3,82	4,78	-0,96	14
Resolution of customer complaints/problems quickly and accurately	3,49	4,73	-1,24	9
Speed of response to emergency calls (operator/police/ambulance/tow truck)	3,34	4,76	-1,42	5
Toll booth officers provide fast transaction services	3,75	4,76	-1,01	13
Official towing services that can always be relied on	3,3	4,73	-1,43	4
Road conditions are safe from crime	3,58	4,81	-1,23	10
Rest area conditions that are very comfortable and safe	3,49	4,75	-1,26	8
Service from highway patrol officers (PJR) makes you feel safe	3,7	4,64	-0,94	16
Toll road hotline can provide information or answers to customer questions	3,8	4,66	-0,86	20
Officer appearance looks neat and polite	3,88	4,58	-0,70	22

Tariff consistency with existing facilities	3,33	4,74	-1,41	6
Strategic location and sufficient number of rest areas	3,6	4,71	-1,11	11
Rest areas are available with complete facilities	3,38	4,71	-1,33	7
Geometry (curves, inclines, and declines) of the toll road is comfortable and safe when traversed	3,05	4,76	-1,71	3
The quality of the toll road surface is flat, not slippery when traversed	2,81	4,74	-1,93	1
Street lighting conditions make it comfortable when using toll road services at night	2,95	4,75	-1,80	2
Completeness of toll road facilities (signs, toll booths, etc.) is modern	3,68	4,76	-1,08	12
The function of the directional, command, and prohibition signs on the toll road can help you on your journey	3,85	4,80	-0,95	15
All officers on duty in the toll road environment are friendly and polite	3,87	4,70	-0,83	21
The number of toll booths opened during peak hours is sufficient for the large traffic volume	3,92	4,79	-0,87	18

From the results of Table 2, we can see that the factors or attributes that influence the performance of the Bakter Toll road service. Based on the table, there is an order or ranking of attribute items, namely the first item is the quality of the toll road surface that is even, not slippery when traversed, with a gap value of -1.93, the second is the road lighting conditions that make it comfortable to use the toll road at night, with a gap value of -1.8, and the third is the geometry (curves, inclines, and declines) of the toll road that is comfortable and safe when traversed, with a gap value of -1.71. Based on the ranking results above, it is obtained from the gap value calculated using the formula Performance (K) - Expectation (H).

Service Quality Method

In analyzing the quality of service provided by the company to customers. According to Besterfield in Handoko (6), the following formula can be used:

$$\text{Service Quality (Q)} = \frac{Penilaian\ Kinerja}{Harapan}$$

From the results of the calculation, if Q ≥ 1, then the gap in service quality is considered good, if (Q) < 1, then the gap in service quality cannot be said to be good or not yet satisfactory.

Based on the results of the research using the service quality method, it is known that there are five dimensions, namely the reliability dimension, responsiveness dimension, assurance dimension, tangible dimension, and empathy dimension (Table 3). The results of several dimensions with the service quality method are that the reliability dimension has a Q value of 0.791, the responsiveness dimension has a Q value of 0.745, the assurance dimension has a Q value of 0.758, the tangible dimension has a Q value of 0.717, and the empathy dimension has a Q value of 0.821. Based on these results, the largest dimension is the empathy dimension of 0.821. If we look at what is shown in Table 3, then the empathy dimension has the highest service quality value of 0.821, but it does not exceed 1, so it can be concluded that the service quality is not good/not yet satisfactory. For the average value of the service quality calculation is 0.766.

Table 3. Service Quality

No	Dimensi	Performa nce	Hope	GAP	Q
1	Reliability	3,765	4,762	-0,997	0,791
2	Responsivness	3,545	4,76	-1,215	0,745
3	Assurance	3,574	4,718	-1,144	0,758
4	Tangible	3,392	4,728	-1,336	0,717
5	Empathy	3,895	4,745	-0,85	0,821
Average		3,634	4,743	-1,108	0,766

Source: Authors' Analysis, 2023

Importance Performance Analysis (IPA)

The next step after knowing the overall gap value will be continued with an analysis of performance and expectations. This analysis is used to determine the position of each attribute in service to toll road users in Lampung based on performance level and expectation level. The quadrant analysis of perception - expectations uses a Cartesian diagram, before displaying the results in the diagram, first determine the perception and expectation levels obtained from the average of each perception level (X) and the average of the importance/expectation level (Y), then the data is explained in the Cartesian diagram, so that the location of each quadrant is known. each dimension or overall. Next, the calculation of the level of consistency (ratio) between the level of expectation and the assessment of the performance of the service provided, as well as the calculation of the

average weight of each attribute of the level of importance and the assessment of the performance of the service provided, as in Table 4 below.

Table 4. Correlation ratio of service performance and expectations

No	Variabel	Performance	Expectation
1	X1.1	3,89	4,75
2	X1.2	3,86	4,79
3	X1.3	3,82	4,78
4	X1.4	3,49	4,73
5	X2.1	3,34	4,76
6	X2.2	3,75	4,76
7	X3.1	3,3	4,73
8	X3.2	3,58	4,81
9	X3.3	3,49	4,75
10	X3.4	3,7	4,64
11	X3.5	3,8	4,66
12	X4.1	3,88	4,58
13	X4.2	3,33	4,74
14	X4.3	3,6	4,71
15	X4.4	3,38	4,71
16	X4.5	3,05	4,76
17	X4.6	2.81	4,74
18	X4.7	2.95	4,75
19	X4.8	3,68	4,76
20	X4.9	3,85	4,80
21	X5.1	3,87	4,70
22	X5.2	3,92	4,79
Total		72,58	104,20
Average		3,63	4,74

Furthermore, a mapping is done between the level of importance (importance) and the level of performance (performance) into the Cartesian diagram Importance Performance Analysis. The Cartesian diagram Importance Performance Analysis can be seen in Figure 2 below. 22 (Twenty-two) question items are divided into four quadrants, including:

a. Quadrant I shows that attributes x2.1, x3.3, x4.2, x4.5, x4.6, and x4.7 are important factors for users, but users have not yet received satisfaction with the performance of the service provided. Attributes that are in quadrant IV include:
    1. Speed of response to emergency calls (operator / police / ambulance / towing)
    2. Rest area conditions are very comfortable and safe
    3. Tariff consistency with existing facilities

Geometry (curves, inclines, and declines) of the toll road is comfortable and safe when traversed

4. Quality of the toll road surface that is even, not slippery when traversed
5. Road lighting conditions make it comfortable to use the toll road at night

These attributes are also in quadrant I, the performance of Bakter Toll Road services, which should be the focus of improvement efforts, is considered quite poor. From the results of the IPA mapping and the distribution of vehicle groups, it can be seen that for the road geometry attribute, it is not only complained about by users with large vehicles but also by other vehicle users. The attribute of the toll road surface quality that is uneven and slippery when traversed during rain. For the road lighting attribute, it has no relationship with age, it is related to a person's ability to see, with increasing age, the possibility of their vision declining. In this study, it was found that the majority of respondents had an age of under 45 years, while those over 45 years were only 10.5%.

b. Quadrant II shows that attributes x1.1, x1.2, x1.3, x2.2, x3.2, x4.8, x4.9, x5.1 are considered appropriate by users by successfully providing services that meet user performance standards in areas that are considered relevant by Bakauheni-Terbanggi Besar toll road users. Service factors in this quadrant must be maintained or even improved because these factors represent the main strengths and potential competitive advantages of Bakter Toll that must be maintained or utilized. These attributes are considered important by Bakauheni-Terbanggi Besar toll road users and are consistent with what they feel, so their satisfaction levels are relatively higher. These attributes represent the personal perceptions of each user regarding the services provided by Bakter Toll. Therefore, these attributes are sufficient to maintain their performance. Attributes that are in quadrant II include:

    1. Travel time consistency
    2. Smooth and safe traffic flow performance
    3. Smooth flow of traffic in and out of the toll gate
    4. Toll booth officers provide fast transaction services
    5. Road conditions are safe from crime
    6. Completeness of toll road facilities (signs, toll booths, etc.) is modern
    7. The function of the directional, command, and prohibition signs on the toll road can help you on your journey

8. The number of toll booths opened during peak hours is sufficient for the large traffic volume

The research results regarding travel time based on user perceptions are consistent with the actual conditions in the field, where the travel time is consistent with the expectations of Bakauheni-Terbanggi Besar toll road users. At the Toll Booth service, it is consistent with the large traffic volume, making it easier to enter/exit the toll booth. There are directional, command signs, making it easier for users to help on the journey.

c. Quadrant III shows that attributes x1.4, x3.1, and x4.4 are not considered important by Bakauheni-Terbanggi Besar toll road users, and the performance of the service provided is also not very good. In quadrant III, increasing the factors that are in this quadrant needs to be reconsidered because the influence on the benefits felt by users is very small. Attributes that are in quadrant III include:

1. Quick and accurate resolution of customer complaints/issues
2. Official towing services that are always reliable
3. Rest areas available with complete facilities

The research results regarding the quick and accurate resolution of customer complaints/problems based on user perceptions are consistent with the actual conditions in the field, where official towing services that are always reliable are consistent with the expectations of Bakauheni-Terbanggi Besar toll road users.

d. Quadrant IV shows that attributes x3.4, x3.5, x4.1, x4.3, x5.1 are not considered important by Bakauheni-Terbanggi Besar toll road users, but the service provided is excessive. Attributes that are in quadrant IV include:

1. Roadside assistance (PJR) service makes you feel safe
2. Toll road hotline can provide information or answers to customer questions
3. Officer appearance looks neat and polite
4. Strategic location and sufficient number of rest areas
5. All officers on duty in the toll road environment are friendly and polite

In the field conditions according to observation, the appearance of officers is neat and polite, and the location of rest areas is already abundant. Roadside assistance services have made Bakauheni-Tebanggi Besar toll road users feel safe. For attributes whose importance level is felt to be less by users, it is recommended to carry out effectiveness and efficiency processes so that they are more useful in the overall service performance process of the toll

road. This process is oriented towards two techniques, namely increasing the level of user importance perception and cutting and optimizing resources. Increasing user importance perception is done by introducing users to the importance of a particular attribute, which has been considered less important by most users, but it turns out to be very important for some users.

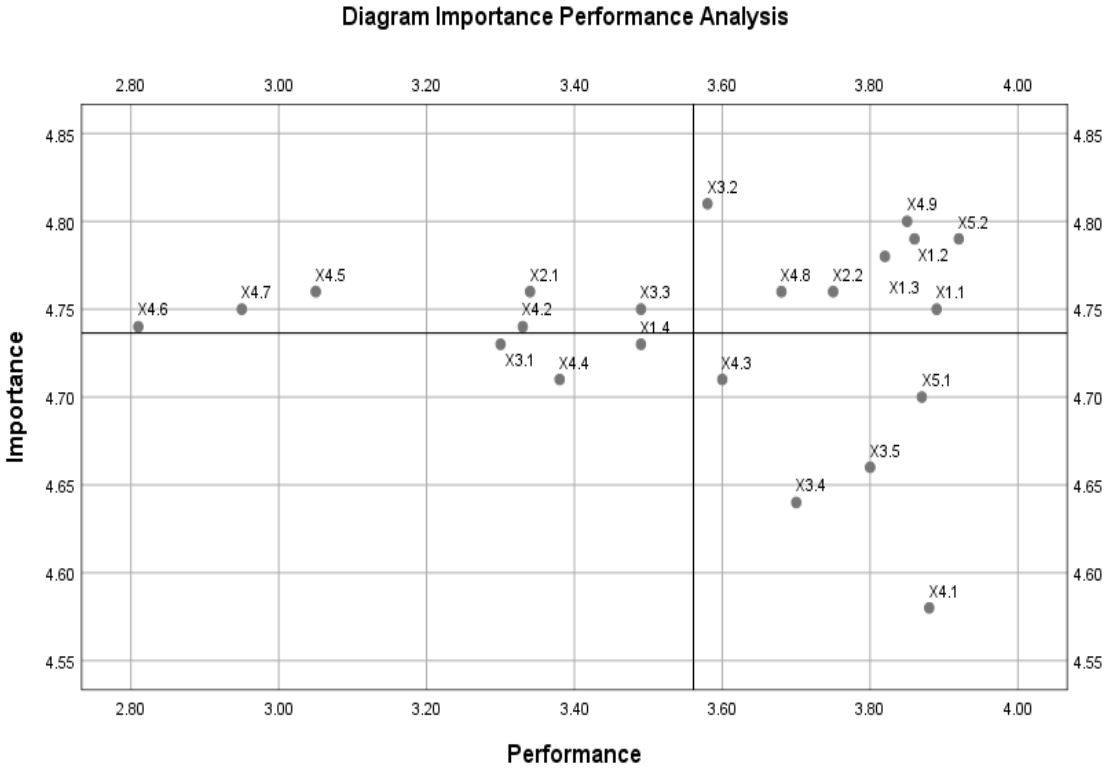

Figure 2. Importance Perfromance Analysis

Table 5. Attributes in the IPA diagram

No	Quadrant I (Top Priority)
1	Quality of the toll road surface that is even, not slippery when traversed
2	Road lighting conditions make it comfortable to use the toll road at night
3	Geometry (curves, inclines, and declines) of the toll road is comfortable and safe when traversed
4	Tariff consistency with existing facilities
5	Speed of response to emergency calls (operator/police/ambulance/tow truck)
6	Rest area conditions are very comfortable and safe
No	**Quadrant II (Priority that must be maintained)**
1	Road conditions are safe from crime
2	Toll road facilities (signs, booths, etc.) are modern
3	Toll booth officers provide fast transaction services
4	Smooth flow of traffic in and out of the toll gate
5	The function of directional, command, and prohibition signs on the toll road can help you on your journey

6	Smooth and safe traffic flow performance
7	Suitability of travel time
8	The number of toll booths opened during peak hours is sufficient for the large traffic volume
No	**Quadrant III (Low Priority)**
1	Official towing services that are always reliable
2	Rest areas with complete facilities are available
3	Customer complaints / problems are resolved quickly and accurately
No	**Quadrant IV (Over-prioritisation)**
1	Strategic location and the number of rest areas is sufficient
2	Services from highway patrol officers (PJR) make you feel safe
3	The toll road hotline can provide information or answers to customer questions
4	All officers on duty in the toll road environment are friendly and polite
5	Officer appearance looks neat and polite

CONCLUSION

Overall, based on user perceptions, the performance of the toll road service is not yet satisfactory to users. This condition must continue to be improved and enhanced so that toll road users enjoy facilities and services according to their expectations. To increase user satisfaction with service performance on toll roads, strategies can be implemented with resource optimization. This is important because good quality and service are one of the determining factors in the level of user satisfaction with toll roads. The three attributes that have the lowest satisfaction levels are the road surface condition, the lighting conditions, and the road geometry. These attributes have the highest gap values among all the attributes measured.

The results of the analysis using the Importance Performance Analysis method regarding the factors that influence the performance of the Bakauheni-Terbanggi Besar toll road service show that there are six influential factors, namely road surface conditions, lighting conditions, road geometry, tariff suitability, speed of response to assistance, and rest area conditions. Based on the results of this study, it can be concluded that the Bakauheni-Terbanggi Besar toll road service is considered ineffective in terms of satisfying its users. This is indicated by the low level of user satisfaction with services that are considered important by users. Based on the results of the importance performance analysis (IPA), there is an order or ranking of attributes, namely the first order is the quality of the toll road surface with a gap value of -1.93, the second is the road lighting conditions with a gap value of -1.8, and the third is the toll road geometry with a gap value of -1.71. Based on

the results of both methods, it can be concluded that the Bakauheni-Terbanggi Besar toll road service is considered not to meet the performance and expectations of its users.

REFERENCES

[1] Rahmadhiani, A,"Lalu-lintas Harian Rerata, Tol Medan-Binjai Dikebut". 29 februari 2016, [Online] Available: https://properti.kompas.com/read/2016/02/29/152014621/Lalu.Lintas.Harian.Rerata.Tinggi.Tol.Medan-Binjai.Dikebut?page=all [Diakses 16 februari 2022]

[2] KPIP."Jalan Tol Trans Sumatra". 2019, [Online] Available: https://kppip.go.id/proyek-prioritas/jalan-jembatan/15-ruas-jalan-tol-trans-sumatera/ [Diakses 20 Februari 2022)

[3] Kencana, M, "Sepi dan Kurang Penerangan, Jalan Tol Trans Sumatra Rawan Kejahatan. 2020, [Online] Available : https://www.liputan6.com/bisnis/read/4422506/sepi-dan-kurang-penerangan-jalan-tol-trans-sumatera-rawan-kejahatan [Diakses 1 Maret 2022]

[4] Jasamarga, "Menuju Pertumbuhan Berikutnya". Jakarta: Jasamarga, 2013.

[5] Satriotomo, D. "Efektivitas Layanan Jalan Tol Kota Semarang dalam Memenuhi Kebutuhan Pengguna". Tesis, Universitas Diponogoro. Semarang 2011.

[6] Darmanto, dkk. "Implementasi Standar Pelayanan Jalan Tol". Banyumas: CV Amerta Media, 2021.

[7] Rangkuti, Freddy. "Teknik mengukur dan strategi meningkatkan kepuasan pelanggan". Jakarta: PT Gramedia Pustaka Utama. 2006.

[8] Sugiyono. "Metode Penelitian Kuantitatif, Kualitatif, dan R&D". Bandung: CV Alfabeta. 2017

[9] Kuswanto. "Faktor-faktor yang Mempengaruhi *Auditor Switching* pada Bank yang Tercatat di BEI". Jurnal, Universitas Gunadarma, Hal 1-19. 2012

[10] Fauzy, A. "Statistik Industri". Jakarta: Erlangga, 2009.

[11] Iwaarden , J, T Van der wiele, L Ball, and R Millen. "*Applying Servqual to Website*". *International journal of quality & reliability management* 20. 2022

[12] Hamim, R S. "Analisis Efektivitas Portal Siska (sentra informasi satuan kerja) dalam Memenuhi Kebutuhan Pengguna Internal Badan Pemeriksa Keuangan Republik Indonesia". Skripsi, Yogyakarta: Universitas Gadjah Mada. 2011.