ANALYSIS OF USER SATISFACTION LEVEL OF PEMALANG BATANG TOLL ROAD

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ABSTRACT
The construction of toll roads serves as infrastructure that supports economic and social mobility and promotes regional development. However, toll road services often face issues such as deteriorating road quality, lack of road facilities, and traffic disruptions due to accidents or repairs. This study aims to describe toll road service variables, the characteristics, and the satisfaction level of toll road users. The method used is quantitative descriptive. Service variables include information, accessibility, reliability, mobility, safety and security, rest areas, and responsiveness, adapted from the Toll Road Service Quality (TRSQ) theory. Instrument testing tools and respondent distribution use SPSS, and Ms. Excel for descriptive analysis. The sample consists of 480 toll road users of Pemalang Batang in the past year. The results show that toll road users are satisfied with all service variables. To optimize services, the implementation of technological innovations following industrial developments can be carried out.

Keywords: descriptive; satisfaction level; toll road; toll road service quality; user satisfaction

INTRODUCTION

Essentially, toll road construction in Indonesia is focused on policies that offer alternative solutions to address the increasingly developing economic growth between regions and to build an efficient transportation system (Tahrir, Ramadan, Fatiqin, & Sukendar, 2023). Toll road construction is one of the government's efforts to facilitate the public in carrying out economic and social mobility quickly (Dewi, Usadha, & Kamala, 2022). The development of toll roads is an effort to provide road infrastructure with better performance. In this context, the government collaborates with toll road enterprises (BUJT) to provide good service facilities (Alfiansyah, Fatikasari, Wardhani, & Bowoputro, 2023). Often, the provision of toll roads is not accompanied by the best quality of service, making it a primary factor for users to avoid using toll roads (Kurnia, Pataras, & Permata, 2020). BUJT is required to meet service quality standards in toll road operations (Dina & Amin, 2023). Efforts to support this objective include setting minimum service standards (SPM) for toll roads. The SPM for toll roads in Indonesia consists of indicator criteria that must be met by all toll road sections in providing services. However, in practice, as perceived by the general public, many toll roads do not meet the SPM service standards, such as illegal charges by towing vehicles (Dina & Amin, 2023). Other issues include the incomplete availability of traffic signs and the inadequate maintenance of road support elements such as roadside barriers (rumija fences and guardrails), reflectors (delineators and guide posts). Damaged road surfaces lead to insecurity and discomfort for road users. Additionally, rest area facilities or service areas (TIP) often have inadequate toilets with no water, unclean conditions, bad odors, and fees. AAnother issue is the insufficient lighting installation along toll road sections, which poses a safety risk, especially when driving at night (Hendarto, Simorangkir, Ayuningtyas, & Prakoso, 2021). The relatively high toll rates also contribute to user dissatisfaction (Rangkuty & Tarigan, 2022). Furthermore, traffic disruptions caused by accidents, road repairs, and stalled vehicles often lead to congestion on toll roads (Atmodjo, 2023). The condition of physical infrastructure and supporting facilities on toll roads remains an issue for toll road users (Putra, Wicaksono, & Prayitno, 2022).

By understanding the perspectives of toll road users, it is hoped that toll road operations can provide better services compared to non-toll roads. It is important to conduct surveys among toll road users, as their input and expectations will become the standard for toll road service providers and serve as continuous improvement for the services provided (Makmur, 2021). Involving toll road users in the assessment process is essential, so that toll road service provision is not only based on existing technical guidelines but also incorporates user perceptions of the services provided (Alfiansyah et al., 2023). Meeting these service quality standards can create satisfaction among toll road customers (Imron, Suwaji, & W., 2023). Customer satisfaction is not entirely about what we want for them, but rather about meeting and fulfilling their needs (Setiawan & Defrizal, 2024).From this background, the research formulates the problem of what variables can be used to measure toll road services. Additionally, it seeks to understand the characteristics and satisfaction level of toll road users. The objective is to conduct a descriptive analysis of toll road service variables, characteristics, and user satisfaction levels.

Toll Road Services

Toll road operations aim to achieve equitable development and outcomes and balance regional development by fostering a toll road network. One of the objectives of toll road operations is to provide reliable and excellent services that prioritize public interests by meeting functional and competitive road performance standards. Toll roads have a higher level of safety and comfort than existing non-toll roads and can accommodate long-distance traffic flows with high mobility. During toll road operations, the Toll Road Enterprises (BUJT) are required to comply with the minimum service standards (SPM) for toll roads. The SPM for toll roads is a provision regarding the types and basic quality of services that every toll road user is entitled to receive. The SPM covers toll road conditions, safety and security infrastructure, and supporting facilities for toll road users.

TRSQ Model

The TRSQ model (Toll Road Service Quality) is a toll road service quality development model created by Dr. Herry Trisaputra Zuna (Humas FT UI, 2016). The TRSQ model is an adaptation of the SERVQUAL (service quality) model consisting of five service dimensions. This SERVQUAL model was then developed using the Minimum Service Standards (SPM) indicators for toll roads as the measurement dimensions. This modified SERVQUAL model can be used to evaluate the quality performance of toll road services. This model not only considers the physical aspects contained in the SPM but also incorporates indicators from the user's perspective (Hendarto et al., 2021). Research conducted on the development of the TRSQ model shows that it has the highest accuracy compared to the other two models (SERVQUAL and SPM). Therefore, the TRSQ model is selected to measure toll road services (Zuna, Hadiwardoyo, & Rahadian, 2016). The TRSQ model consists of seven variables: information, accessibility, reliability, mobility, safety and security, rest areas, and responsiveness.

Hypothesis

Based on the research background and the TRSQ model, the hypothesis in this study, which serves as a provisional answer (Syahputri, Fallenia, & Syafitri, 2023), is that toll road users are dissatisfied with toll road services, including the variables of information, accessibility, reliability, mobility, safety and security, rest areas, and responsiveness.

METHOD

The research location is on the Pemalang-Batang toll road section, part of the Trans Java Toll Road located in Central Java.

Source: PBTR (2023)
Figure 1. Map of Pemalang Batang Toll Road

The research was conducted over two months (July - August 2024), covering preparation, data collection and analysis, and the completion of the paper. The research approach is quantitative descriptive, used to analyze data by describing or depicting the collected data as it is (Mahbara, 2024). The required data is primary data in the form of questionnaires representing user perceptions of toll road services. The sampling method used is non-probability sampling, specifically purposive sampling, a technique that selects respondents based on specific criteria (Putra et al., 2022).. The sample selection is based on the characteristics of toll road users within the past year, and respondents not meeting these criteria will be filtered or excluded through judgmental sampling. Sampling is conducted by distributing questionnaires offline to users visiting rest areas and online through social media platforms such as WhatsApp and Instagram. Before the widespread distribution of the questionnaire, a pilot test was conducted with 36 respondents and processed using IBM SPSS Statistics 26 software. The questionnaire scale uses the Likert scale, a psychometric scale commonly applied in questionnaires and frequently used for survey research (Tahrir et al., 2023). With a 5% significance level and an r-table value of 0.329, the results of the questionnaire validity test are shown in the table below.

Table 1.
Validity Test Results

Variable	Code	r statistic	Result
Information	IN1	0,577	Valid
	IN2	0,557	Valid
Accessibility	AK1	0,364	Valid
	AK2	0,617	Valid
	AK3	0,400	Valid
	AK4	0,557	Valid
	AK5	0,686	Valid
Reliability	KE1	0,630	Valid
	KE2	0,477	Valid
	KE3	0,697	Valid
	KE4	0,545	Valid
	KE5	0,668	Valid
Mobility	MO1	0,470	Valid
	MO2	0,628	Valid
Safety and Security	KK1	0,673	Valid

Variable	Code	r statistic	Result
	KK2	0,587	Valid
	KK3	0,676	Valid
	KK4	0,710	Valid
	KK5	0,670	Valid
	KK6	0,702	Valid
Rest Area	TI1	0,608	Valid
	TI2	0,740	Valid
	TI3	0,617	Valid
	TI4	0,789	Valid
	TI5	0,726	Valid
Responsiveness	KET1	0,755	Valid
	KET2	0,817	Valid
	KET3	0,775	Valid
	KET4	0,766	Valid

Next, a reliability test was conducted to determine the consistency of the measuring instrument. A research instrument is considered reliable if the Cronbach's Alpha value is greater than 0.60 (Ghozali, 2016) in (Slamet & Wahyuningsih, 2022). The Cronbach's Alpha value obtained is 0.96, which exceeds 0.60, indicating it is reliable.After being validated and found reliable, the questionnaire was distributed to a broader range of respondents. Based on the results obtained, the total number of respondents who completed the questionnaire was 537, and after filtering, only 480 respondents were included as research data.In the descriptive data analysis, calculating the score for each component involves multiplying the total data frequency by its weight value (Ridho, 2023). Lowest score: lowest weight x total sample = 1 x 480 = 480. Highest score: highest weight x total sample = 5 x 480 = 2400. To determine the scale range, the following formula is used:

$$RS = \frac{n(m-1)}{m}$$

Note:

Rs : scale range
n : number of samples
m : number of alternative answers per item

Based on the formula, with 480 respondents and five alternative answers per indicator, the scale range is 384. Based on this value, the interval class table is formed as follows:

Table 2.
Interval Classes

Class	Description
480 - 864	Very Dissatisfied (VD)
865 - 1249	Dissatisfied (D)
1250 - 1634	Neutral (N)
1635 - 2019	Satisfied (S)
2020 - 2400	Very Satisfied (VS)

RESULT AND DISCUSSION

Toll Road Service Variables

This research uses toll road service variables based on the TRSQ model. There are seven variables, which are further broken down into indicators to measure the toll road services. The following is the research design illustrated in the figure.

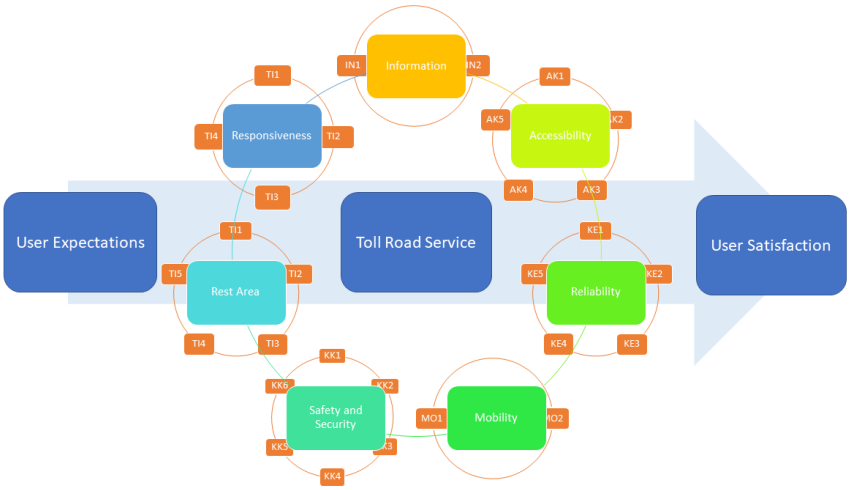

Figure 2. Research Variables

The figure above shows that there are seven TRSQ variables (information, accessibility, reliability, mobility, safety and security, rest areas, and responsiveness). These variables serve as factors that may influence toll road services and can be measured through indicators for each variable. From these variables, it can be determined the level of satisfaction of toll road users, whether it meets expectations or not. The indicators used to measure toll road service variables are listed in the table below:

Table 3.
Variable Indicators

Variable	Indicator
Information (IN)	1. Availability of real-time traffic and road repair information 2. Availability of markings, signs, and information boards
Accessibility (AK)	3. Toll rates 4. Travel time savings 5. Availability of toll booths (number) 6. Distance of toll gates from destination/origin 7. Service of officers at toll booths if ETC machine is disrupted
Reliability (KE)	8. Road width 9. Road surface smoothness (cracks, potholes, etc.) 10. Road geometry (curves, inclines, declines) 11. Environmental conditions (cleanliness, pollution, etc.) 12. Road maintenance and repair
Mobility (MO)	13. Queue length at toll gates 14. Traffic flow conditions (congestion level)
Safety and Security (KK)	15. Road lighting 16. Vulnerability to traffic accidents 17. Protection from crime 18. Safety against environmental conditions (floods, landslides, etc.) 19. Ambulance and rescue vehicles 20. 24-hour highway patrol police
Rest Area (TI)	21. Food and beverage outlets 22. Vehicle parking 23. Toilets 24. General workshop 25. Public fuel stations (SPBU)
Responsiveness (KET)	26. Call center response 27. Accident handling 28. Towing service for broken down vehicles 29. Emergency or standby officer service

Source: Hendarto (2021)

Respondent Characteristics

The respondents in this study are users of the Pemalang-Batang toll road, totaling 480 people. Respondents are grouped by gender, age, occupation, education, frequency of toll road usage, type of vehicle used, and purpose of using the toll road. This follows the format specified in the distributed questionnaire. The overall depiction according to the most dominant proportion of each category is as follows:

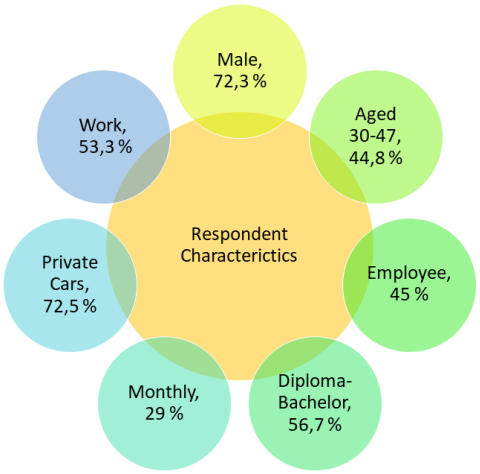

Figure 3. Respondent Characteristics

The figure above shows that the most dominant characteristics of respondents participating in this study are male (72.3%) aged 30-47 years (44.8%), working as employees (45%), with education level at Diploma-Bachelor/DI-IV/S1 (56.7%). The frequency of using the Pemalang-Batang toll road is monthly (29%), using private cars (72.5%) for work purposes (53.3%).

User Satisfaction Level

From the questionnaire data obtained, data tabulation, calculations, and presentation of each toll road service variable were carried out.

Table 4.
Information Variable

Response	Indicator		Average	Percentage
	IN1	IN2		
VD	23	24	23,5	5%
D	40	41	40,5	8%
N	41	42	41,5	9%
S	195	190	192,5	40%
VS	181	183	182	38%
Total	480	480	480	100%
Score	1911	1907	1909	
Cat	Satisfied	Satisfied	Satisfied	

Table 5.
Accessibility Variable

Response	Indicator					Average	Percentage
	AK1	AK2	AK3	AK4	AK5		
VD	24	27	28	27	29	27	6%
D	42	37	35	36	37	37,4	8%
N	38	31	39	38	34	36	8%
S	168	197	181	183	201	186	39%
VS	208	188	197	196	179	193,6	40%
Total	480	480	480	480	480	480	100%
Score	1934	1922	1924	1925	1904	1922	
Cat	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	

Table 6.
Reliablity Variable

Response	Indicator					Average	Percentage
	KE1	KE2	KE3	KE4	KE5		
VD	28	30	24	21	28	26,2	5%
D	36	36	39	43	33	37,4	8%
N	40	39	40	44	43	41,2	9%
S	174	202	192	171	184	184,6	38%
VS	202	173	185	201	192	190,6	40%
Total	480	480	480	480	480	480	100%
Score	1926	1892	1915	1928	1919	1916	
Cat	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	

Table 7.
Mobiity Variable

Response	Indicator		Average	Percentage
	MO1	MO2		
VD	33	23	28	6%
D	28	43	35,5	7%
N	37	41	39	8%
S	196	169	182,5	38%
VS	186	204	195	41%
Total	480	480	480	100%
Score	1914	1928	1921	
Cat	Satisfied	Satisfied	Satisfied	

Table 8.
Safety and Security Variable

Response	Indicator						Average	Percentage
	KK1	KK2	KK3	KK4	KK5	KK6		
VD	19	21	26	26	23	27	23,6	5%
D	44	47	41	38	42	39	41,8	9%
N	41	37	37	38	41	39	38,8	8%
S	179	195	193	196	181	188	188,6	39%
VS	197	180	183	182	193	187	187	39%
Total	480	480	480	480	480	480	480	100%
Score	1931	1906	1906	1910	1919	1909	1914	
Cat	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	

Table 9.
Rest Area Variable

Response	Indicator					Average	Percentage
	TI1	TI2	TI3	TI4	TI5		
VD	22	21	19	28	24	22,8	5%
D	39	45	42	38	41	41	9%
N	42	37	38	34	42	38,6	8%
S	164	175	198	196	197	186	39%
VS	213	202	183	184	176	191,6	40%
Total	480	480	480	480	480	480	100%
Score	1947	1932	1924	1910	1900	1923	
Cat	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	

Table 10.
Responsiveness Variable

Response	Indicator				Average	Percentage
	KET1	KET2	KET3	KET4		
VD	24	17	25	25	22,7	5%
D	37	50	40	42	42,2	9%
N	39	33	35	40	36,7	8%
S	201	194	195	194	196	41%
VS	179	186	185	179	182,2	38%
Total	480	480	480	480	480	100%
Score	1914	1922	1915	1900	1913	
Cat	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	

The tables above present survey results regarding respondent satisfaction with information, accessibility, reliability, mobility, safety and security, rest areas, and responsiveness on the Pemalang-Batang toll road. The results indicate that respondents are satisfied with all evaluated variables. The satisfaction score diagram is presented below for more details:

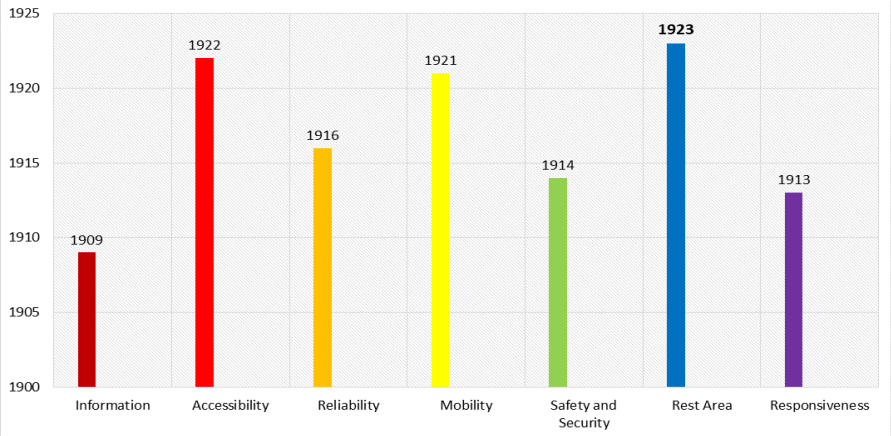

Figure 4. Satisfaction Diagram

Based on the diagram above, the toll road service variables show a score in the "satisfied" category with values ranging from 1635 to 2019. Among all the variables used in this study, the rest area variable received the highest satisfaction score from toll road users with a score of 1923.This study's variables are based on the TRSQ (Toll Road Service Quality) model, which is a model for developing service quality. The service quality consists of seven variables: information, accessibility, reliability, mobility, safety and security, rest areas, and responsiveness. The analysis results show that users of the Pemalang-Batang toll road are satisfied with the services provided, thus rejecting the hypothesis in this study. This is because PT PBTR (Pemalang Batang Toll Road), as the toll road operator, has fulfilled the minimum service standards according to the regulations stipulated by the government in the Ministry of Public Works Regulation No. 16/PRT/M/2014 regarding Minimum Service Standards (SPM) for Toll Roads. The SPM includes provisions on indicators, coverage/scope, benchmarks, and fulfillment timelines for applicable standards. PBTR has followed up on field findings by carrying out repairs and testing in accordance with quality and timeline requirements. Therefore, the services provided on the Pemalang-Batang toll road meet the expectations of the toll road users.

Good toll road service quality can provide excellent service to its users, creating a sense of satisfaction with the services received. This study is supported by several relevant previous studies, including one conducted by (Rezky, Hajji, & Siswanto, 2023), which found that

74.11% of users of the Balikpapan-Samarinda toll road were satisfied with the services provided, including accessibility, speed, mobility, rescue units, service units, road conditions, safety, environment, and rest areas. Research by (Kurnia et al., 2020) found that users of the Palindra toll road were quite satisfied with the toll road services. Research by (Imron et al., 2023) showed that the service quality of the Cipali toll road significantly influenced customer satisfaction by 85.6%. Research by (Putra et al., 2022) reported a satisfaction level of 63% for users of the Pekanbaru-Dumai toll road, which falls into the "quite satisfied" category. Additionally, (Dewi et al., 2022) stated that service quality positively and significantly affects customer satisfaction, while research by (Dina & Amin, 2023), showed that customer satisfaction on toll roads in the Greater Jakarta area is significantly influenced by the substance of service accessibility, mobility, safety, rescue/service assistance, and environment. (Purnama, 2020) also found that service quality positively affects toll road user satisfaction.

CONCLUSION

The TRSQ (Toll Road Service Quality) model can be used to measure the services of the Pemalang-Batang toll road. Users of the Pemalang-Batang toll road feel satisfied with the services they receive. The existing toll road services should be maintained to ensure stability in providing services to users. Even though users are already satisfied, toll road services can be optimized with the implementation of technological innovations in line with industrial developments.

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